

**THE NEW HAMPSHIRE TASK FORCE ON AUTISM
PART ONE**

ASSESSMENT AND INTERVENTIONS

**State of New Hampshire
Department of Health and Human Services
Division of Developmental Services
In Collaboration with Other State and Local Agencies, Private Providers, and Families**

ACKNOWLEDGEMENTS

In November 2001 the New Hampshire Division of Developmental Services brought together family members, private providers, and representatives from State and local agencies to form the New Hampshire Task Force on Autism. Over the next year and a half the Task Force, working in five subcommittees, examined issues affecting the care, treatment, and quality of life of individuals with autism spectrum disorder (ASD). The work of the subcommittees on Etiology and Diagnosis of ASD and on Interventions and Treatment Approaches is presented here. The work of the three other subcommittees – the Role of Publicly Funded Agencies, Accessibility and Inclusion, and Statewide Capacity Building – is documented in the New Hampshire Autism Task Force Report Part Two.

Members of the Task Force put in hundreds of hours, much of it donated. Without their sustained commitment this report could not have been completed. For this commitment and for the depth of experience, skill, and wisdom that the members brought to their work a sincere appreciation is extended.

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NEW HAMPSHIRE TASK FORCE ON AUTISM

INTRODUCTION

In the fall of 2001, at the invitation of the State's Division of Developmental Services, advocates, physicians, private providers, State administrators, community agency representatives, and family members assembled in Concord to form the New Hampshire Task Force on Autism. The purpose of the Task Force was to establish a vision and make recommendations to the state of New Hampshire concerning the care and treatment of individuals, both children and adults, with autism spectrum disorder (ASD) and their families. It was recognized from the start that this would be no easy undertaking. There are numerous approaches to the treatment of ASD and strong opinions about the efficacy of each. In addition, every person with ASD is unique; individuals have different combinations of characteristics, different needs for assistance, and respond differently to the same treatment approaches. Absolute agreement from this diverse group about best practices for treating individuals with autism spectrum disorder was not expected. What was expected was that Task Force members would draw upon their considerable knowledge, skills, and experience to analyze the challenges posed by ASD and to develop recommendations that would support individuals with autism spectrum disorder to be valued and participating members of their communities.

During their first meeting Task Force members agreed, for the following reasons, that the focus on autism spectrum disorder was especially important at this time.

- The number of individuals with autism spectrum disorder is rapidly increasing.
- There are increased numbers of families seeking information and support.
- Families frequently are frustrated in their efforts to support their family members with autism spectrum disorder.
- The State Medicaid office is receiving an increasing number of requests to cover a variety of treatment approaches, equipment, and supplies; the agency has had difficulty knowing how to respond to these requests.
- There is a current lack of State-level, inter-agency agreement on how best to support individuals with ASD and their families.
- There is a need to rule out treatment approaches that do not meet best practice expectations.
- Nationally there has been a heightened attention to autism.
- At the State level there needs to be an opportunity to look carefully at the issues raised by ASD and to develop recommendations for improving supports and services for individuals with autism spectrum disorder and their families.

While Task Force members had strong and diverging opinions about specific treatment approaches, they agreed upon the values that should guide the provision of treatment to individuals with autism spectrum disorder and their families.

Guiding Values in Providing Supports and Services

- Do no harm
- Provide intervention and treatment as early as possible.
- Leave no person - child or adult - behind.
- Assure resources are not limited by geography.
- Listen to individuals with autism spectrum disorder and to their families.
- Tailor supports to the needs and preferences of individuals and their families.
- Support families to keep their children safely at home and in their communities.
- Draw from all available community resources and make community inclusion a priority.
- Adapt physical environments to the needs and preferences of individuals with autism spectrum disorder.
- Adapt social environments to the needs and preferences of individuals with autism spectrum disorder.
- Recognize the dynamic and changing needs of individuals across the lifespan.
- Offer a variety of life choices and provide individuals with the supports they need to take advantage of these choices.
- Promote interagency collaboration at the State and local levels.
- Ensure that individuals with autism spectrum disorder and their families experience a seamless coordination of services and resources.
- Provide quality preservice and inservice training and mentorship on the best practices for treating and supporting individuals with autism spectrum disorder.
- Value and promote vocations that support individuals with autism spectrum disorder and their families.
- Think “people” first, “autism” second.

NEW HAMPSHIRE TASK FORCE ON AUTISM

DEFINITION, ETIOLOGY, AND DIAGNOSIS OF AUTISM SPECTRUM DISORDER

What is “Autism”?

In the years since its earliest formal descriptions, “autism” has come to be recognized as a group of conditions that share essential behavioral features. Modern writers will refer to the “pervasive developmental disorders” or to “autism spectrum conditions”, and each of these terms captures something important. For example, the term “pervasive” highlights the fact that individuals with autistic disorders have differences not only in the way they take in the world, but also in terms of their language and behavior. The words “developmental disorder(s)” underscore the difference between autism and an illness like the flu. Autism is more like epilepsy in the sense that it seems to be a function of how the brain develops, in this case during the first years of life. Autism as a “spectrum” disorder emphasizes both the fact that two people with autism may be affected to varying degrees, and also that there are probably many different disorders that are collectively known as “autism”. The term “autism spectrum disorder” (ASD) will be used in this document to denote the broad spectrum of autism and related conditions.

Pervasive Developmental Disorders

Currently, there are five conditions – autism, Asperger syndrome, childhood disintegrative disorder, Rett syndrome, and pervasive developmental disorder-not otherwise specified (PDD/NOS) - that are formally designated as “pervasive developmental disorders”, but these are likely to change as knowledge about each one grows.

- *Autism* or *autistic disorder* requires the presence of abnormalities in three areas of function: language development, social interaction, and individual preoccupation or interest.

For individuals with autism there will be a history of delays or abnormalities in language development. For example, speaking in sentences is usually a late development for children with autism. In addition, these individuals may confuse pronouns like “you” and “I.” Most people with autism find it difficult to carry on a conversation.

Second, there will be a history of difficulties in the way the person with autism interacts with others. Even though they might want very much to have friends and to play with others, most children with autism have a very difficult time with such things. Frequently, people with autism will avoid eye contact and appear to be ignoring others. Some scientists believe that difficulties with perceiving social and emotional cues and being able to put oneself in another’s shoes are among the core problems in autism.

The third area of difficulty for people diagnosed with autism relates to unusual preoccupations or interests. The earliest writings about autism, including those of Kanner and Asperger, describe children who are preoccupied with things like string or traffic lights or license plates or spinning wheels. Individuals with autism also may be fascinated by the way the sunlight bounces off of their fingers or the way it feels when they twirl around or jump up and down. These interests and behaviors can seem strange to others and may get in the individual's ability to make friends.

- *Asperger syndrome* is essentially the same as autism except, by definition, there is no history of early language disturbance. Children with Asperger syndrome may even have histories of being outstanding readers from early in life. Individuals with this syndrome have problems understanding how others view their behavior and often experience difficulties in forming friendships. Just as in autism, unusual preoccupations and interests characterize people with Asperger syndrome.
- *Childhood disintegrative disorder* is diagnosed using the same criteria that apply for autism, except that these children seem to have very normal early life histories that dramatically change after their second year. They seem to lose many of the skills that they had developed up to that time, and may stop talking and playing normally as autistic behaviors emerge.
- *Rett syndrome* takes its name from Dr. Andreas Rett, who in 1966 described a group of girls who seemed to have normal very early developmental histories but then, as in childhood disintegrative disorder, lost virtually all of their acquired skills including the ability to meaningfully use their hands. We now know that the cause of Rett syndrome, which occurs only in females, is an abnormal gene on the X-chromosome called methyl-CpG-binding protein 2, or MECP-2. Unlike the other pervasive developmental disorders, Rett Syndrome is a degenerative condition with gradual worsening of neurological status.
- *Pervasive developmental disorder-not otherwise specified (PDD/NOS)* includes individuals who have some symptoms in common with autism, but who do not meet all of the criteria that are required for the diagnosis. In these situations, the diagnosis of PDD/NOS is often used. The "not otherwise specified", or "NOS" qualifier, simply means that a person has an autism spectrum disorder, but the condition is different in some way from the other conditions described above.

Prevalence of Autism Spectrum Disorder

The most recent studies show the prevalence of autism spectrum disorder in the United States to be approximately 1 in 250; this is substantially more than earlier estimates of 2 to 5 per 10,000, supporting the public assertion that autism is more common than previously thought. Although the increasing incidence of ASD might suggest an environmental link, at present no environmental factor has been confirmed, and the improved recognition and diagnosis of the

disorder may account, in part, for the apparent growth in the number of children diagnosed with autism spectrum disorder.

Causes of Autism Spectrum Disorder

Perhaps because of the fact that autism is a spectrum condition, and there is such variability within a group of persons identified as having autism spectrum disorder, the elaboration of what causes autism has been very challenging. Scientists are exploring many potential causes, including genetic and environmental factors.

Genetics and Autism Spectrum Disorder

Many researchers have found that autism is more common in some families than in the general population. For example, studies of identical twins or of siblings in which one child is affected all show that autism spectrum disorder is more common in the sibling than one would predict based on its incidence in the general population. This finding is supportive of a strong genetic component for autism susceptibility.

Rett syndrome, however, is the only one of the pervasive developmental disorders for which the gene responsible has been clearly identified. Autism susceptibility genes have been suggested on chromosomes 7 and 15 at regions that contain what are called “imprinted” genes, adding further support for the hypothesis that “regulation of transcription”, or the way genes are turned on and off, may be important in understanding autistic disorders. The gene(s) that predispose an individual to autism spectrum disorder may be those that are responsible for managing the production or regulation of many other genetic building blocks. The genetics of autism spectrum conditions is one of the most active areas of current research.

Environmental Factors and Autism Spectrum Disorder

Little is known about environmental factors that may contribute to the development of autism spectrum disorder, but for some children who seem to be developing on track and then experience regression in social and language skills, the search for environmental causes has been particularly keen. While no cause has yet been identified, considerable attention has been given to the possibility that exposure to a toxin, or infection, or the presence of immune deficiencies or other problems may be causal. For example, untreated epilepsy in children with infantile spasms associated with tuberous sclerosis appears to increase the likelihood of autistic symptoms.

Some parents are worried that childhood immunizations are the cause of their children's autism. Unfortunately, there is as yet no way to definitively distinguish whether such an association is actually causal or merely coincidental. Studies seeking a relationship between MMR (mumps, measles, and rubella) vaccine and autism have been reviewed by the Medical Research Council in the United Kingdom and by a panel of experts convened by the American Academy of Pediatrics and the national Centers for Disease Control and Prevention in the United States. These expert panels have failed to find a causal relationship between MMR vaccine and autism. As the number of recommended immunizations has grown in recent years, concerns also have

been raised about the connection between autism and the ethyl-mercury containing additive, thimerosal contained in some immunizations. On the other hand, thimerosal has never been present in MMR, chicken pox, or polio vaccines and according to the Centers for Disease Control and Prevention, as of 2001, thimerosal has been removed from all of the routine immunizations given to children in the United States.

People with Autism Spectrum Disorder are Diverse

As already noted, the condition(s) we recognize as “autism” are probably many. Moreover, many of the associated conditions or behaviors that are of great concern are not necessarily core components of the autism diagnosis (see Table 1). For example, some persons with autism spectrum disorder appear to have significant sensory sensitivities, and as a result may become anxious or upset in certain environments. Self-injurious behavior may be a problem for some persons. Some children with autism spectrum disorder may have mental retardation. Given the extensive range of strengths and challenges that characterize the population with autism, it is essential that interventions be individualized and employ a wide variety of approaches and treatments.

The presence of a particular maladaptive behavior is not enough to confirm the diagnosis of autism spectrum disorder; nor is the presence of adaptive behaviors enough to rule out ASD. Children with autism can and do show affection to others; their ability to form social attachments, or make eye contact, or smile, does not rule out the diagnosis of autism spectrum disorder.

Screening and Evaluation of Children for Autism Spectrum Disorder

There is agreement among physicians and other clinicians that children with autism spectrum disorder who receive treatment by the age of 24-36 months, have a better prognosis than children whose treatment is postponed until later. For this reason it is critical that children be identified and referred for intervention as early as possible.

Indeed, the American Academy of Child and Adolescent Psychiatry, and more recently, the American Academy of Neurology and Child Neurology Society and Academy of Pediatrics have published practice parameters relating to routine developmental surveillance, screening specifically for autism spectrum disorder, and to its treatment. Specific recommendations include the use of screening tools that are sensitive to “red flags” early in life. The progression from general to more specific assessment is illustrated in Figure 1.

Common Characteristics of individuals with Autism Spectrum Conditions

SOCIAL	LANGUAGE	BEHAVIOR	SENSORY
Poor eye contact	Non-Verbal	Self-injurious behaviors	Self-stimulatory behaviors
Limited social interests - Rule governed - Socially inappropriate - Can't see another viewpoint	No pointing response or other communicative gestures (wave bye-bye)	Prolonged and intense tantrum/aggressive behaviors	Over or under arousal to certain forms of sensory stimulation (sensitivity to specific sounds, textures, touch, smells, movement)
	Indicates needs by gestures	Significant sleep disturbance	Selective/limited food interests
	Uses challenging behaviors to communicate	Hyperactivity	Unpredictable behavior when exposed to sensor stimulation
	Echolalic (borrowed) speech Immediate echolalia Delayed echolalia	Limited interests	Arousal or withdrawl in multisensory environments (birthday parties, gyms, malls)
Poor reading of social cues	Jargon	Preoccupations	Inability to modulate sensory input
Poor turn taking skills	Verbal preservation and rituals	Attachment to select objects or activities (strings, vacuum cleaners)	
Difficulty forming and maintaining friendships	Impaired comprehension of language	Repetitive routines or ritual	
	Uses language chiefly to make requests	Insistence on sameness	
	Difficulty in initiating or sustaining a conversation despite adequate speech	Difficulty with transitions	
	Uses unintelligible jargon	Distinctive learning styles - Rote learners - Strong visual learners - Poor skill generalization	
		Preoccupation with specific subject matter (flags of the works, monopoly)	
		Encyclopedic knowledge	

Figure 1

This table is not a diagnostic tool. It is meant for illustrative purposes only. Not all individuals exhibit these specific characteristics.

Screening Instruments and the Elements of a Proper Assessment

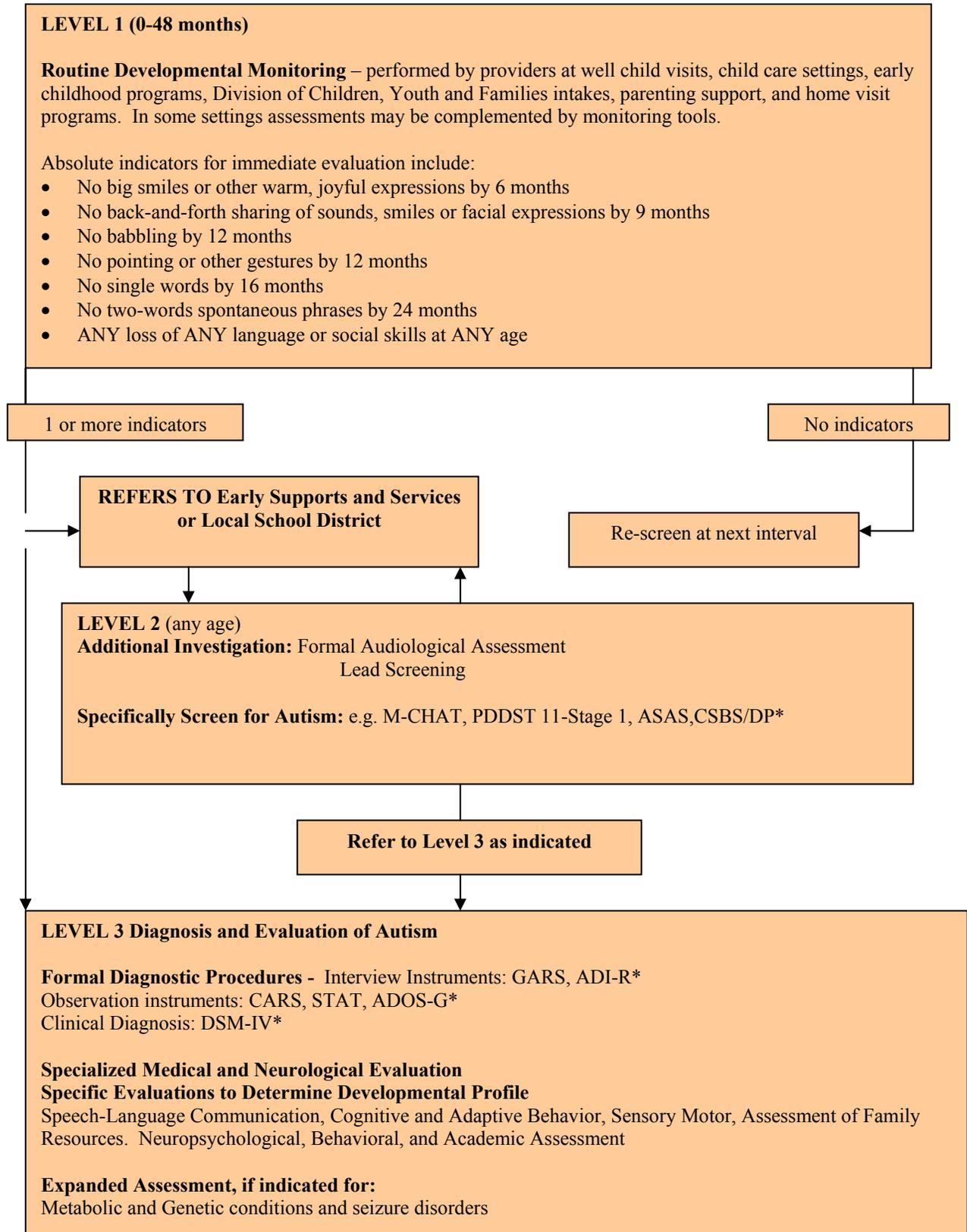
The diagnostic process is an active and ongoing one. Neither the child nor the presentation of specific developmental and behavioral concerns remains a constant. For this reason, parents, clinicians, and educators must be sensitive to potential difficulties in the diagnostic process. Premature conclusions that lead to a narrow focus of treatment, or to unnecessary interventions, may be just as problematic as ignoring the presence of difficulties altogether. In each case, appropriate intervention is delayed. As noted above, the diagnostic process encompasses both general observations and more specific evaluations.

It also must be stressed that the “whole child” should not be lost in the diagnosis of autism spectrum disorder. Attention to the possibility of co-occurring conditions, for example, a medical condition such as epilepsy or physical illnesses, must be ongoing. A link between allergies and ASD has not been scientifically established, and for this reason routine allergy testing is not recommended as part of the autism diagnostic process (see below). However, that is not to say that a child with autism spectrum disorder cannot suffer from allergies or that his or her behavior may not be affected by allergies.

Level 1: Careful and Repeated Observation

Failure to achieve any of the following milestones are absolute indicators for a more detailed developmental evaluation and the use of specific autism screening instruments: babbling by 12 months; gesturing (e.g. pointing, waving bye-bye) by 12 months; single words by 16 months; two-word phrases by 24 months; or loss of any language or social skills at any age (Figure 1). In the preschool years, problems relating to difficulties with social interactions may become more prominent. Children who seek isolation, who have limited play skills, who appear to have sensory sensitivities or unusual preoccupations or interests should be evaluated in more detail.

Diagnosis of Autism - Figure 2



* All above references to instruments are intended as examples and not an endorsement for any specific tool.

The American Academy of Pediatrics suggests the following questions be presented to parents (in the absence of more standardized screening tools) in routine visits:

“Does your child...

- Not speak as well as his or her peers?
- Have poor eye contact?
- Not respond selectively to his or her name?
- Act as if he or she is in his or her own world?
- Seem to “tune others out?”
- Not have a social smile?
- Seem unable to tell you what he or she wants, preferring to lead you by the hand or get desired objects on his or her own, even at risk of danger?
- Have difficulty following simple commands?
- Not bring things to you simply to “show” you?
- Not point to interesting objects to direct your attention to objects or events of interest?
- Have unusually long and severe temper tantrums?
- Have repetitive, odd, or stereotypic behaviors?
- Show an unusual attachment to inanimate objects, especially hard ones (e.g. a flashlight or a chain vs. teddy bear or blanket)?
- Prefer to play alone?
- Demonstrate an inability to play with toys in the typical way?
- Not engage in pretend play (if older than 2 years)?”

If the answer to any of these questions is yes, a more specific ASD assessment is recommended.

Level II: More Detailed Assessment

While Level I involves the screening and developmental tracking that should be part of the routine well child and preventive care of all children, Level II requires a more specific and focused assessment at the primary health care or community level. Level II includes a more detailed evaluation, as well as other assessments that examine contributing or alternative explanations for atypical development of early language, social, and play skills. All children whose Level I screening and surveillance raise concerns should undergo a careful audiologic evaluation to answer the question: “Does this child have a hearing impairment?” The results of recent lead screening should be confirmed as normal or repeated.

A Level II assessment requires the use of a standardized screening instrument specifically intended to identify children who may have a disorder on the autism spectrum. Several such tools are available and easily adapted to the primary pediatric care environment.

- The Checklist for Autism in Toddlers (CHAT) and a more recent modified version (M-CHAT) target children at around 18 months of age or slightly older. The full checklist contains 14 items of which 9 are questions for parents and 5 involve direct observation of the child’s behavior. There is a high correlation between failing five checklist items and

a later diagnosis of an autism spectrum disorder. The CHAT will not easily distinguish children with ASD from children with global developmental delays, but will identify most children who require further (Level III) assessment. The original CHAT may fail to identify children with Asperger syndrome or with high functioning autism in whom early speech development may appear to be normal.

- The Pervasive Developmental Disorder Screening Test involves a parent survey for children under age 3. It is available in three forms that correspond to three levels of assessment: primary care level, general developmental clinic level, and multidisciplinary autism clinic level. The primary care level instrument (PDDST-II-Stage 1) contains items that relate to language, social skills, joint attention, pretend play, attachment, sensory responses, and motor stereotypic behavior.
- The Australian Scale for Asperger Syndrome (ASAS) is available for somewhat older, verbal children in whom Asperger disorder is suspected.
- The Communication and Symbolic Behavior Scales Developmental Profile (CSBS/DP) is a 24-item screening tool that may detect a wider range of early language disorders including autism, PDD-NOS, and Asperger syndrome.

It is important that primary pediatric care providers familiarize themselves with at least one of these screening tools for ASD. In general, children in whom a problem is suspected based on findings during well child visits, developmental surveillance, or because of concerns raised by parents or other caregivers should be scheduled for a prompt follow-up visit during which more specific screening can be conducted. Based on the results, appropriate referrals for early intervention or special education services and for a specialized diagnostic evaluation can be made. It should be emphasized that the referral for early intervention or special education services should be made based on the Level II screening results and that a specific diagnosis of ASD need not be confirmed. Primary care practitioners should have an informed preliminary discussion with parents about the implications of autism spectrum disorder, to either provide or direct parents to appropriate information, to connect families with general and autism-related support organizations, and to offer ways to contact other parents of children with ASD.

Level III: Formal Diagnostic Evaluation

According to practice parameters published by organizations representing child neurology, pediatrics, and child psychiatry, the diagnosis of autism spectrum disorder and related conditions is best performed by a clinician with experience in this area. The diagnosis incorporates information gleaned from parents, educators, and others who may have professional or personal experience with the child.

The diagnosis should include the use of an instrument with recognized sensitivity and specificity for autism. Instruments recommended for this purpose include:

- The Childhood Autism Rating Scale (CARS)
- The Autism Behavior Checklist
- The Gilliam Autism Rating Scale (GARS)
- The Autism Diagnostic Interview-Revised (ADI-R)
- The Autism Diagnostic Observation Schedule (ADOS-G)

Additional components of the formal diagnostic assessment include a medical and neurological examination and ongoing monitoring (at least yearly); speech, language and communication evaluation; cognitive and adaptive behavior evaluations; sensorimotor and occupational therapy evaluations; and neuropsychological, behavioral, and academic assessments as needed.

With respect to detailed medical tests, the following are recommended. Genetic testing in children with ASD is indicated in the presence of mental retardation, a family history of mental retardation, or dysmorphic or unusual physical features evident on physical examination. Selective metabolic testing also is indicated in the presence of abnormal physical appearance, the presence of mental retardation or a family history of mental retardation, or the presence of signs and symptoms that suggest metabolic problems, including a history of lethargy, seizures, or cyclic vomiting. An electroencephalograph (EEG) is not indicated as a matter of course for all children with ASD. If clinical or even subclinical seizures are present or suspected, or if there is a history of regression (loss of any previously acquired skills), an EEG is recommended.

Magnetoencephalography and other newer methods for brain imaging and accessing brain functions are still in the experimental stages and are not widely available. There currently is no evidence of their usefulness in routine clinical settings. Similarly, there is not sufficient evidence to support the routine use of clinical neuroimaging (e.g. MRI, CT scan, PET scan) in the assessment of a child with autism spectrum disorder, even in the presence of enlarged head circumference. In the diagnostic process for ASD there currently is not sufficient evidence to call for additional diagnostic tests, for example, hair analysis, allergy testing (e.g. gluten, casein, candida, molds), immunologic or neurochemical tests, measurement of micronutrients, intestinal permeability studies, stool analysis, urinary peptides, mitochondrial disorders, thyroid function tests or erythrocyte glutathione peroxidase studies.

Conclusion

In summary, autism is considered a spectrum disorder that includes the pervasive developmental disorders of autism, Asperger syndrome, childhood disintegrative disorder, Rett syndrome, and pervasive developmental disorder-not otherwise specified (PDD/NOS). The incidence of autism spectrum disorder has increased dramatically in recent years, affecting approximately 1 in every 250 people. Early identification and intervention are crucial; children with autism spectrum disorder who receive treatment before the age of three have a far better prognosis for a successful future than those whose treatment is delayed. For this reason pediatricians and others who work with children and families need to be familiar with the screening tools for ASD and be able to refer families to appropriate early intervention and special education services. Because individuals with ASD are a diverse group exhibiting a wide range of strengths and challenges, intervention needs to be highly individualized. Individuals with ASD and their families should be able to choose from a wide variety of approaches and treatments to address their specific needs and preferences.

References

- American Academy of Pediatrics. (2001). The pediatrician's role in the diagnosis and management of autistic spectrum disorder in children: *Pediatrics*, 107(5), 1-18.
- American Psychiatric Association. (1994). Diagnostic and statistical manual of mental disorder (4th ed.). Washington, DC.
- Archives of Pediatric & Adolescent Medicine (2003). Dipping deeper into the reservoir of autistic spectrum disorder. Editorial Comment. 157(7), 619-621.
- Bricker, D. and Squires, J. (1999). Ages & stages questionnaires (ASQ). A parent-completed, child-monitoring system (2nd ed.). Baltimore: Paul H. Brookes Publishing Co.
- Carter, A. and Briggs-Gowan, M. (2000). The infant-toddler social and emotional assessment revised (ITSEA).
- Courchesne, E., Carper, R., & Akshoomoff. (2003). Evidence of brain overgrowth in the first year of life in autism. *Journal of the American Medical Association*, 290(3), 337-352.
- Coury, D. & Nash, P. (2003). Epidemiology and etiology of autism spectrum disorders: Difficult to determine. *Pediatric Annals*, 32:10, 696-700.
- Filipek, P., Accardo, P.J., Ashwal, S., Baranek, G., Cook, E., Dawson, G., Gordon, B., Gravel, J., Johnson, C., Kallen, R., Levy, S., Minshew, N., Ozonoff, S., Prizant, B., Rapin, I., Rodgers, S., Stone, W., Teplin, S., Tuchman, R. & Volkmar, F. (2000). Practice parameter: Screening and diagnosis of autism. *Neurology*, 55, August (2 of 2), 468-479.

- Garnett, M. & Attwood, A. The Australian scale for Asperger's syndrome. *Online Asperger Syndrome Information and Support*.
- Gilliam, J. (1995). Gilliam autism rating scale (GARS). Austin, TX: Pro-Ed Publishing.
- Greenspan, S., Prizant, B., & Wetherby, A. (2001). Key social, emotional, and communication milestones for your baby's healthy development. First Signs, Inc.
- Gurney, J., Fritz, M., Ness, K., Sievers, P., Newschaffer, C. & Shapiro, E. (2003). Analysis of Prevalence trends of autism spectrum disorder in Minnesota. *Archives of Pediatric & Adolescent Medicine*, 157(7), 662-627.
- Herbert, J., Sharp, I. & Gaudiano, B. (2002). Separating fact from fiction in the etiology and treatment of autism: A scientific review of the evidence. *The Scientific Review of Mental Health Practice*, 1(1), 23-43.
- Le Couteur, A., Rutter, M. & Lord, C. (1995). Autism diagnostic interview. University of Chicago.
- Lord, C. (1997). Diagnostic Instruments in Autism Spectrum Disorders. In D. Cohen & F. Volkmar (Eds.), Handbook of autism and pervasive developmental disorders. (460-483). New York: John Wiley & Sons, Inc.
- Madsen, K., Hvid, A., Vestergaard, M., Schendal, D., Wohlfahrt, J., Thorsen, P., Olsen, J., & Melbye, M. (2002). A population-based study of measles, mumps, and rubella vaccination and autism. *New England Journal of Medicine*, 347(19), 1477-1482.
- Mikhail, A. & King, B. (2001). Autism spectrum disorders: Update of evaluation and treatment. *Current Psychiatry Reports*, 3(5), 361-365.
- Nash, P., & Cury, D. (2003). Screening tools to assist with the diagnosis of autism. *Pediatric Annals*, 32:10, 664-670.
- National Institute on Child Health and Human Development (NICHD). 2002. *Fact Sheets on Autism*. www.nichd.nih.gov/autism.
 Autism Facts
 Autism and Genes
 Autism and the MMR Vaccine
 The NICHD/NIDCD Network on Neurobiology & Genetics
 Autism Questions and Answers for Health Professionals
- National Research Council. (2001). Educating children with autism. Washington, DC: National Academy Press.
- Rapin, I. (2002). The autistic-spectrum disorders. *New England Journal of Medicine*, 347(5), 302-303.

- Robins, D., Fein, D., Barton, M. & Green, J. (April 2001). Modified checklist for autism in toddlers (M-CHAT). *Journal of Autism and Developmental Disorders*.
- Schopler, E., Reichler, R.J., & Renner, B.R. (1988). The childhood autism rating scale (CARS). Los Angeles: Western Psychological Services.
- Scott, F., Baron-Cohen, S., Bolton, P., & Brayne, C. (2002). The CAST (Childhood Asperger syndrome test). *Autism*, 6 (1), 9-31.
- Siegel, B. (2001). Pervasive developmental disorders screening Test – II (PDDST-II/Stage I). University of California, San Francisco.
- Stone, W., Coonrod, E. & Ousley, O. (2000). Brief report: Screening tool for Autism in Two-Year-Olds (STAT): Development and preliminary data. *Journal of Autism and Developmental Disorders*, 30(6), 607-612.
- Wetherby, A. & Prizant, B. (2001). Communication and symbolic behavior scales developmental profile (CSBS DP). Baltimore: Paul H. Brookes, Pub.
- Wetherby, A. & Prizant, B. (1998). CSBS developmental profile: Caregiver questionnaire. Applied Symbolix.
- Wilson, K., Mills, E., Ross, C., McGowan, J. & Jadad, A. (2003). Association of autistic spectrum disorder and the measles, mumps, and rubella vaccine. *Archives of Pediatric & Adolescent Medicine* 157(7), 628-634.
- Yeargin, M., Rice, C., Karapurka, T., Doernberg, N., Boyle, C. & Murphy, C. (2003). Prevalence of autism in a US Metropolitan area. *JAMA*, 289(1), 49-55.
- _____ (1999). Practice parameters for the assessment and treatment of children, adolescents, and adults with autism and other pervasive developmental disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, 38, 325-545.

THE NEW HAMPSHIRE TASK FORCE ON AUTISM
INTERVENTIONS AND TREATMENT APPROACHES

Introduction

Whether you are just beginning on a journey to discover all you can about autism spectrum disorder (ASD) or are a seasoned parent or professional in the field, understanding and sorting through the pages of research and information on ASD is an overwhelming task. To assist you in your search, easy-to-read summaries of interventions and treatments are provided in the pages that follow. Each review includes:

- a description of the intervention or treatment,
- the advantages of the approach,
- concerns with the approach, and
- considerations when implementing the intervention.

A reference page also accompanies each summary to help you locate additional resources. Summaries are organized under the general categories: *behavioral, developmental, combined, communication, sensory and motor, pharmacological, and alternative interventions*. The report also includes descriptions of traditional therapies and frequently used treatment tools.

Each person with the diagnosis of autism spectrum disorder has very individual and unique needs. Effective treatments should reflect that individuality, promote personal growth, and offer support to families and caregivers. In reviewing the literature and research on ASD, it is clear that there is no one treatment or intervention that works well for all people. However, there are many approaches that are effective and work well for specific individuals. In recent years there has been a move towards more eclectic approaches to treatment that combine the most effective aspects of Applied Behavior Analysis and Developmental-Social-Pragmatic interventions. Many experts in the field of autism now support a combination of behavioral and developmental approaches that are selected to address the individual's needs and circumstances and focus on goals that are important to the person and his or her family.

Considering Treatments

The intervention strategies that work best for a particular individual with autism spectrum disorder are those that fit the needs of that individual. As you read about each intervention, be aware that while an approach may help in one area, it may restrict learning or opportunities in other areas. In addition, individuals may need different interventions at different points in their lives. An intervention may not be initially effective, yet at another point in the person's life it may be quite successful.

Recent research indicates that effective interventions for children with ASD should include the following components:

- Services beginning as early as possible
- Active engagement in goal-directed activities for at least 25 hours/week, 12 months/year
- Repeated, planned learning opportunities
- Developmentally appropriate activities that are planned and purposeful
- Family involvement
- Low student/teacher ratio
- Ongoing assessment and program adjustments at least every 3 months
- Specialized instruction in settings where ongoing interactions with typically developing peers are possible
- Instruction priorities including:
 - * Functional, spontaneous communication
 - * Social instruction in a variety of natural settings
 - * Teaching of play skills focusing on appropriate use of toys and play with peers
 - * Instruction leading to generalization and maintenance of cognitive goals in natural contexts
 - * Positive approaches to address problem behaviors
 - * Functional academic skills when appropriate

Connecting with other families, individuals with autism spectrum disorder, and their caregivers is one of the best ways to gather information and get support. Resources in New Hampshire that can help you make connections include the Autism Society of New Hampshire, Parent to Parent, and your local Area Agency. (Addresses and phone numbers for these and other resources are included in the Resource Guide, an addendum to this report.)

Evaluating Treatments

Parents are very concerned about making the right choices for their child and family; the following guidelines, developed by B.J. Freeman, Ph.D. at the University of California, Los Angeles, offer questions for you to use in evaluating different treatment options. 1

Principles of Evaluating New Treatments of Autism

1. Approach any new treatment with hopeful skepticism. Remember the goal of any treatment should be to help the person with autism become a fully functioning member of society.
2. Beware of any program or technique that is touted as effective or desirable for every person with autism.
3. Beware of any program that thwarts individualization and potentially results in harmful program decisions.
4. Be aware that any treatment other than education represents one of several options open for a person with autism.
5. Be aware that treatment should always depend on individual assessment information that points to it as an appropriate choice for a particular child.
6. Be aware that no new treatment should be implemented until its proponents can specify assessment procedures necessary to determine whether it will be appropriate for an individual with autism.
7. Be aware that debate over use of various techniques is often reduced to superficial arguments over who is right, moral, and ethical, and who is a true advocate for the children.
8. Be aware that, often, new treatments have not been validated scientifically.

BEHAVIORAL INTERVENTIONS

APPLIED BEHAVIOR ANALYSIS

Description - Applied Behavior Analysis or ABA includes a wide variety of interventions that are based on scientifically derived principles of how people learn. ABA interventions for individuals with autism spectrum disorder (ASD) are typically intense, both in terms of time spent and techniques employed. **Most** ABA interventions include:

1. Functional assessment of behavior (used to understand the reasons for the behavior and to develop individualized treatment and educational plans).
2. Task analysis to break complex behavior into smaller, teachable steps.
3. Specific guidelines for prompting, cueing, and fading of cues.
4. Positive behavioral support and environmental modification to increase adaptive behavior.
5. Reinforcement for existing adaptive behaviors and for newly learned target behaviors.
6. Data collection to evaluate progress and teaching effectiveness.

Below are questions you as a parent should ask yourself prior to initiating new treatment.

Questions to Ask Regarding Specific Treatments

1. What is the treatment program's rationale and purpose?
2. Is there written information?
3. What is involved for child and family?
4. What is the length of treatment, frequency of session, time, and cost to the family?
5. Does the treatment focus on one skill or is it a comprehensive program?
6. Will the treatment result in harm to the child?
7. Is the treatment developmentally appropriate?
8. What is the background and training experience of the staff?
9. Does the treatment staff allow input from the family?
10. Are assessment procedures specified and is the program individualized for each child?
11. How will progress be measured?
12. How often will effectiveness of the intervention be evaluated?
13. Who will conduct the evaluation?
14. What criteria will be used to determine if a treatment should be continued or abandoned?
15. What scientific evidence supports the effectiveness of the program?
16. How will failure of treatment affect child and family?
17. How will treatment be integrated into the child's current program?
18. Do not become so infatuated with a given treatment that functional curriculum, vocational, life, and social skills are ignored.

Will My Child Regress?

The answer to this question generally is "no." All people have good days and bad days. However, people with autism may have more extreme swings. Generally, in a well-structured program after early diagnosis, people with autism continue to improve throughout life.

1 B.J. Freeman, Ph.D., (2002) unpublished paper, printed with permission of the author.

In addition, the intervention program may include any or all of the following:

1. Shaping and chaining procedures to develop new behaviors.
2. Programs to eliminate challenging or interfering behaviors.
3. Discrete trial training (DTT) to build foundation behaviors such as imitation and attention.
4. Systematic desensitization, exposure, and response prevention, and other strategies for reducing fearful or repetitive behaviors.
5. Errorless learning/precision teaching to maximize instructional effectiveness.
6. Planned incidental teaching, observational learning, and generalization training to ensure the application and development of skills across contexts.
7. Discrimination training to develop the when/where of behaviors.
8. Behavioral contracting and self-management plans to facilitate independence.
9. Cognitive behavioral techniques to increase control over behavior, thoughts, and emotions.

Advantages of the Approach

- Individualized treatment is based on clear definitions, specific goals, and observable behavior.
- Techniques are specific and clear-cut, increasing the likelihood of consistency across treatment providers and settings.
- ABA techniques are useful for individuals at different developmental levels who possess a variety of skills and/or problem behaviors.
- ABA is objective and data-driven, allowing rapid identification and fine-tuning of problem areas.
- There is more objective research for ABA techniques than for any other class of interventions.
- Certain ABA interventions have been shown to be highly effective for the creation of specific adaptive behaviors or for the elimination of specific challenging behaviors across the lifespan.
- Discrete trial training is effective in increasing cognitive, functional, and communication skills in many young children.
- ABA techniques in general are promising in improving overall functioning in children, adolescents, and adults.

Concerns with the Approach

- There is often a lack of trained personnel to both oversee and implement the ABA procedures.
- Overemphasis on one-to-one direct instruction may prevent participation in community and inclusive activities.
- Early intensity of the treatment may be excessively intrusive for some individuals and families.
- Stereotypes about ABA from its early development or inappropriate application may bias people against these interventions.
- Time and monetary demands are high.

Considerations when Implementing the Approach

- Ensure that adequate training, oversight, time, and rigor are devoted to the program.
- Avoid any use of punishment that induces shame or pain.
- Include adequate family and child input, choice, and education.
- Ensure adequate development of generalization skills, natural reinforcement strategies, discrimination training, and maintenance procedures for more complex behaviors such as social skills and play.
- Use only developmentally appropriate interventions.
- Be aware that overemphasis on discrete trial instruction may foster dependence on prompts from others.
- Avoid overemphasis on the methods and techniques; make sure to stress the importance of the person's quality of life.
- While focusing on the individual do not ignore the need for changes in the systems that support people with ASD.

APPLIED BEHAVIOR ANALYSIS

References

Dunlap, G. & Fox, L. (1999). A demonstration of behavioral support for young children with autism. *Journal of Positive Behavioral Interventions, 1*(2), 77-87.

McEachin, J., Smith, T., & Lovaas, O. (1993). Long-term outcome for children with autism who received early intensive behavioral treatment. *American Journal of Mental Retardation, 97*, 359-372.

Smith, T., Eikeseth, S., Klevstrand, M., & Lovaas, O. (1997). Intensive behavioral treatment for preschoolers with severe mental retardation and pervasive developmental disorder. *American Journal on Mental Retardation, 102*, 238-249.

For Further Information

Bondy, A. & Sulzer-Azaroff, B. (2001). The Pyramid approach to education in autism. Newark, DE: Pyramid Educational Associations. (This is a behavioral approach from the author of the Picture Exchange Communication System.)

Cooper, J., Heron, T., & Heward, W. (1987). Applied behavior analysis. Upper Saddle River, NJ: Prentice Hall. (This is a graduate level textbook.)

Discrete Trial Teaching (videotape)
Available through New York Families for Autistic Children, Inc.
(718) 641-6711
<http://www.nyfac.org>

Koegel, R. & Koegel, L. (1995). Teaching children with autism. Baltimore: Paul H. Brookes. (This includes pivotal response training and other contemporary ABA approaches)

Leaf, R. & McEachin, J. (1999). A work in progress. New York, NY: DRL Books. (This includes information about programs for discrete trials learning.)

Sulzer-Azaroff, B. & Mayer, G. (1991). Behavior analysis for lasting change. Belmont, CA: Wadsworth/Thompson Learning. (This is an introductory textbook.)

DEVELOPMENTAL APPROACHES

DEVELOPMENTAL/SOCIAL-PRAGMATIC INTERVENTIONS

Description - This broad category includes relationship-based interventions and therapies such as floor time or DIR (Developmental-Individual-Relationships, Greenspan and Wieder), SCERTS (Prizant and Wetherby), and the Denver Model (Rogers). While terminology and techniques may differ, the approaches share several common elements:

- 1) the assumption that relationships are necessary for optimal development;
- 2) a focus on skills such as joint attention, imitation, initiation, reciprocal interaction, and attachment of meaning;
- 3) interventions that emerge from functional assessment of current skills;
- 4) interventions at home, school, or therapist's office;
- 5) activities and materials selected on the basis of the individual's interest;
- 6) "teachable moments" that are continuous and in response to the person's "lead";
- 7) the belief that all behaviors represent social communications;
- 8) instruction within the context of reciprocal communication;
- 9) adult responses that are immediate and linked to the meaning of the individual's behavior; and
- 10) "naturalistic" reinforcement that includes access to desired objects, activities, or social contact.

Advantages of these Approaches

- Interventions that follow the individual's lead are more likely to be enjoyable and meaningful to the individual.
- Focus is on social communicative development, not only cognitive development.
- Focus upon initiation reduces the risk of prompt-dependent behavior.
- These are easier for families to learn than the more technical behavioral approaches.
- These approaches can be used across different environments.

Concerns with these Approaches

- The focus is on relationship-based communication, not on the development of skills.
- These will not be as effective for children who have not yet developed imitation skills.
- Controlled studies of effectiveness have not been published to date. Support lies primarily in chart reviews, pre-post designs, case studies, and anecdotal reports.
- Curricula have been developed only recently.

Considerations when Implementing these Approaches

- Ensure adequate training and oversight are provided.
- Ensure sufficient time and rigor are devoted to the program.
- Try not to implement the program in the midst of competing activities.
- Do not use these as the sole interventions when individuals also need direct, skill-based intervention (especially to learn imitation skills).

DEVELOPMENTAL/SOCIAL-PRAGMATIC INTERVENTIONS

References

- Delprato, D. (2001). Comparisons of discrete-trial and normalized behavioral language intervention for young children with autism. *Journal of Autism and Developmental Disorders*, 31, 315-325.
- Greenspan, S. & Wieder, S. (1997). Developmental patterns and outcomes in infants and children with disorders in relating and communicating: A chart review of 200 cases of children with autism spectrum diagnoses. *Journal of Developmental and Learning Disorders*, 1, 87-142.
- Prizant, B. & Wetherby, A. (1998). Understanding the continuum of discrete-trial traditional behavioral to social-pragmatic developmental approaches in communication enhancement for young children with autism/PDD. *Seminars in Speech and Language*, 19, 329-352.
- Rogers, S. & DiLalla, D. (1991). A comparative study of a developmentally based preschool curriculum on young children with autism and young children with other disorders of behavior and development. *Topics in Early Childhood Special Education*, 11, 29-48.
- Rogers, S., Herbison, J., Lewis, H., Pantone, J., & Reis, K. (1986). An approach for enhancing the symbolic, communicative, and interpersonal functioning of young children with autism and severe emotional handicaps. *Journal of the Division of Early Childhood*, 10, 135-148.
- Rogers, S. & Lewis, H. (1989). An effective day treatment for young children with pervasive developmental disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*, 28, 207-214.
- Tanguay, P. (2000). Pervasive developmental disorders: A 10-year review. *Journal of the American Academy of Child and Adolescent Psychiatry*, 39, 1079-1095.

For Further Information

Floor Time: Tuning in to Each Child. (videotape published by Scholastic 1-800-325-6149).

Greenspan, S. & Wieder, S. (2001). Training Videotape Series--Floor Time Techniques and the DIR Model for Children and Families with Special Needs. Bethesda, MD: Interdisciplinary Council on Developmental and Learning Disorders. (<http://www.icdl.com>)

COMBINED APPROACHES

GENTLE TEACHING

Description - Gentle teaching is a relational approach to assist individuals who have learning and behavioral challenges. The approach includes errorless learning, environmental organization, choice making, and fading prompts.

This approach focuses on four primary goals of caregiving: teaching the person to feel safe, to feel engaged, to feel unconditionally loved, and to feel loving towards others. John McGee and others developed gentle teaching techniques to help caregivers form relationships leading to the individual's focused and productive involvement in life. Gentle teaching also eliminates the use of punishment as a means of controlling behavior. Achieving interdependence is the ultimate goal of gentle teaching.

Advantages of the Approach

- Gentle teaching can be used along with other teaching approaches.
- This approach includes warm praise and rewards.
- The caregiver's presence and interactions encourage a strong bond with the individual.
- Gentle teaching is a nonaversive interaction.

Concerns with the Approach

- The approach relies on subjective reporting by caregivers.
- The effectiveness of the intervention is based on reports from 540 clients and success has not been replicated by others.
- Inter-rater reliability is poor.

Consideration when Implementing the Approach

- Caregivers should be directly taught and closely supervised by a teacher or therapist trained in this approach.
- Self assessment through video review is a common evaluation method for this intervention.
- Observations should be conducted over a period of months rather than days.
- The approach may lead to an increase of the behaviors targeted.

GENTLE TEACHING

References

Cullen, C. (1998). An examination of the effects of gentle teaching on people with complex learning disabilities and challenging behavior. *British Journal of Clinical Psychology, 37(2)*, May, 199-211.

Jones, R. (1994). The aversive nature of gentle teaching. *Behavioral Intervention, 9(2)*, April, 115-121.

Mudford, O. (1995). A review of the gentle teaching data. *American Journal on Mental Retardation, 99(4)*, 345-355).

Wolf-Schein, E. (1994). Treatment of the autistic-spectrum disorder. Where we are now? *Developmental Disabilities Bulletin, 22(1)*, 35-53.

For Further Information

Contact Gentle Teaching at the NH Department of Health and Human Services, 1-800- 852-3345, ext. 5034 or 603-271-5034.

COMBINED APPROACHES

POSITIVE BEHAVIORAL SUPPORTS (PBS)

Description - In Positive Behavioral Supports (PBS), components of Applied Behavior Analysis are combined with strong values that center on the person with autism spectrum disorder (ASD) having choice and control over what happens to him or her. PBS addresses the needs of individuals within their families and communities. A functional assessment allows the team to identify the purpose of the individual behavior and target adaptive skills to replace challenging behaviors. This leads to the development of a support plan that addresses the reasons for the behaviors, long term supports for the individual and family, teaching plans, prevention supports, and a crisis plan. Prevention includes modification of the physical environment as well as the behavior of those people supporting the individual. This plan can be used in all environments by anyone who provides support to the individual. Enhanced quality of life of the individual, including increased independence and community inclusion, is an expected outcome of the model. A person centered planning approach is used to guide the individual and those around him or her in a vision of a positive and possible future and a life in the community. The need for systems change is considered and implemented in this model.

Advantages of the Approach

- PBS is both values based and research based.
- The effects of PBS can be generalized across settings.
- PBS supports an enhanced quality of life and broad life changes for the individual.
- The approach uses person-centered planning.
- PBS stresses functional communication in natural contexts.
- The approach focuses on inclusion.

Concerns with the Approach

- This approach requires commitment of support people across environments.
- A large time investment is required to set up the plan.

Considerations when Implementing the Approach

- Be careful not to over-emphasize methods and techniques: the emphasis should be on helping the individual to have a high quality of life.
- Focusing only on the individual may prevent needed changes from occurring in the systems that support the person.
- Provide the supports that are needed at home and in other natural environments.
- Those providing support should be adequately trained and supervised.
- The initial assessment phase needed to create the individual's support plan takes time to complete. Results may not be seen during the assessment phase.
- Once the support plan is in place, results should be evident fairly soon; if things are not going well, rethink the plan.

POSITIVE BEHAVIORAL SUPPORTS (PBS)

References

Carr, E., Dunlap, G., Horner, R., Koegel, R., Turnbull, A., Sailor, W., Anderson, J., Albin, R., Koegel, L., & Fox, L., (2002). Positive behavior support: Evolution of an applied science. *Journal of Positive Behavioral Interventions*, 4(1), 4-16, 20.

Carr, E. (1996). The transfiguration of applied behavior analysis: Strategies for survival. *Journal of Behavioral Education*, 6, 263-270.

Dunlap, G. & Fox, L. (1999). A demonstration of behavioral support for young children with autism. *Journal of Positive Behavioral Interventions*, 1(2). 77-87.

Florida Department of Education. 1999. Facilitators guide: Positive behavioral support. Tallahassee, FL: Bureau of Instructional Support and Community Services.

Horner, R., Carr, E., Strain, P., Todd, A., & Reed, H. (2000). Problem behavior interventions for young children with autism: A research synthesis. Paper prepared for the National Academy of Sciences Committee on Early Intervention for Children with Autism.

For Further Information

Autism National Committee: <http://www.autcom.org>

Center for Autism and Related Disabilities: <http://card.ufl.edu>

Family Resource Connection – New Hampshire State Library 1-800-298-4321

Indiana Resource Center for Autism: <http://www.iidc.indiana.edu/irca>

Institute on Disability/UCE

Jumpstart: Early Success in Autism (603)-862-0793

Training and Technical Assistance in PBS, Inclusive Education, Support to Families
1- 800-238-2048 <http://www.iod.unh.edu>

National Early Childhood Technical Assistance Center: <http://www.nectas.unc.edu/>

TASH: <http://www.tash.org>

COMBINED APPROACHES

THE SCERTS MODEL

Description - The SCERTS (Social-Communication, Emotional Regulation and Transactional Support) model is an eclectic approach that combines developmental-social pragmatic theory and intervention with positive behavioral supports. SCERTS is geared toward enhancing both the spontaneous language in young children with autism spectrum disorder (ASD) and the social qualities associated with communication. This approach builds on a child's initiations and emphasizes spontaneity, modeling, and responses from the communication partner that convey acceptance and understanding of the meaning of the child's communication. Reciprocal interpersonal interaction is viewed as critical to building social competence. Learning is activity-based and woven into daily routines. Children are encouraged and supported to communicate about things they know and the emotions they feel. Communication partners exchange information, provide models, and follow the interests of the child.

Advantages of the Approach

- The approach stresses social aspects of communication, emotionally fulfilling interactions, and inclusion.
- It uses a positive behavioral supports framework.
- SCERTS builds on the child's initiations and spontaneous communication.
- The approach builds social competence.
- SCERTS is based in Rhode Island and Massachusetts.

Concerns with the Approach

- It may be difficult to obtain access to full team evaluations and follow-up by a team trained in this approach.
- It may be difficult to find providers who are trained in SCERTS.
- SCERTS requires a significant commitment of time.
- There are no published controlled studies on the effectiveness of SCERTS.

Considerations when Implementing the Approach

- Make sure that the positive supports portion of the model is adequately addressed.
- Be aware that it takes time to build relationships (the basis for the SCERTS model), results of this intervention may take a bit longer.
- Individuals providing this intervention should be properly trained and supervised.
- Before beginning SCERTS an adequate assessment of the individual's strengths and challenges is needed.

THE SCERTS MODEL

References

Prizant, B. & Rubin, E. (1999). Contemporary issues in interventions for autism spectrum disorders: A commentary. *Journal of the Association for Persons with Severe Handicaps*, 24,(3). 199-208.

Prizant, B. & Wetherby, A. (2000). Autism spectrum disorders: A transactional developmental perspective. Baltimore, MD: Paul H. Brookes.

Prizant, B. & Wetherby, A. (1998). Understanding the continuum of discrete-trial traditional behavioral to social-pragmatic developmental approaches in communication enhancement for young children with Autism/PDD. *Seminars in Speech and Language*, 9, 329-352

For Further Information

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See Positive Behavioral Supports summary for related information

COMBINED APPROACHES

TEACCH

Description TEACCH (Treatment and Education of Autistic and related Communication handicapped Children) is an approach that combines developmentally appropriate practice and behavioral techniques (especially control of the environment) with active family involvement. It was established in the 1960's and is used in the United States and internationally. It rests upon five key principles:

1. the use of strengths and interests as a bridge to the adult community,
2. careful and ongoing assessment of skills as a way of optimizing independence and success,
3. provision of environmental structure as a way of ensuring that the individual with autism spectrum disorder (ASD) understands the meaning of an activity or task,
4. viewing "noncompliance" as a mismatch between the individual and the task or environment, and
5. involvement of the family (especially parents) as key collaborators on the treatment team.

TEACCH classrooms (and home programs) include posted classroom schedules, individualized schedules, visually supported work systems, clearly organized materials, and a carefully structured physical environment. Interventions are targeted to address skills that have been shown to be "emerging" during the assessment process.

Advantages of the Approach

- It is used in a wide variety of educational and community settings.
- There is an intensive focus upon the involvement of the family and community.
- It is one of the few approaches that has targeted the development of skills across the lifespan (rather than being restricted to early childhood).
- There is a direct relationship between assessment and intervention.
- It combines task analysis and other Applied Behavior analysis techniques with developmental approaches.
- Follow up studies have demonstrated slight gains in IQ for children enrolled in TEACCH as preschoolers. Other studies show home programs based on TEACCH produce gains in imitation, fine and gross motor development, and cognitive performance.

Concerns with the Approach

- Though its use is widespread, there is insufficient rigorous experimental research to support its effectiveness.
- Intervention strategies are dependent upon the ability of the therapists to assess accurately and design a workable program.

Consideration when Implementing the Approach

- Assessment/intervention team members should be adequately trained and supervised.
- Ensure that there is adequate data collection.

TEACCH

References

Gresham, F., Beebe-Frankenberger, M., & MacMillan, D. (1999). A selective review of treatments for children with autism: Description and methodological considerations. *School Psychology Review, 29*, 559-575.

Lord, C. & Schopler, E. (1989). Stability of assessment results of autistic and nonautistic language-impaired children from preschool years to early school age. *Journal of Child Psychology and Psychiatry, 30*, 575-590.

Lord, C. & Schopler, E. (1994). TEACCH services for preschool children. In S.L. Harris & J.S. Handelman (Eds.), Preschool education programs for children with autism. Austin, TX: Pro-Ed.

Ozonoff, S. & Cathcart, K. (1998). Effectiveness of a home program intervention for young children with autism. *Journal of Autism and Developmental Disorders, 28*, 25-32.

Schopler, E., Mesibov, G., & Hearsey, K. (1995). Structured teaching in the TEACCH system in E. Schopler and G.B. Mesibov (Eds.), Learning and cognition in autism (pp. 243-268). New York: Plenum.

For Further Information

Division TEACCH
The University of North Carolina at Chapel Hill
Chapel Hill, NC 28599

Faherty, C. & Hearsey, K. (1996). Visually structured tasks: Independent activities for students with autism and other visual learners. Chapel Hill, NC: Division TEACCH.

TEACCH structured teaching assessment: Guides to individualizing the schedule and the work system (1998). Chapel Hill, NC: Division TEACCH.

<http://www.teacch.com>

COMMUNICATION FOCUSED INTERVENTIONS

AUDITORY INTEGRATION THERAPY

Description – There are a variety of listening techniques that claim to improve listening skills and build language competency; almost all of these use specialized ear phones and filtered music.

Auditory integration therapy (AIT)- There are two common AIT approaches used in the United States, one by Tomatis and one by Berard. Both approaches provide music through earphones with selected frequencies filtered out. Treatment usually consists of 20 half-hour sessions during a 10-12 day period, with two sessions conducted daily. Proponents claim that music “massages” the hair cells in the middle ear reducing hypersensitivity and improving overall auditory processing ability. These purportedly improve sound modulation, attention, arousal, language, and social skills.

Therapeutic Listening - a variation on the above approaches also uses headphones with filtered music, but can be done in the child’s natural settings.

Advantages of the Approach

- Some families report that auditory hypersensitivity is reduced.
- This intervention is intense, but compared to other approaches is relatively brief.

Concerns with the Approach

- Recent studies have not shown differences in children who have had AIT and control groups, especially in regard to auditory hypersensitivity.
- AIT may require the family to travel great distances.
- The treatment can be very expensive.
- There may be some concerns about the quality control characteristics of the equipment and the potentially unsafe sound levels produced by it.
- A child may not tolerate wearing headphones.

Errors to Avoid

- This treatment has been recommended for children with autism spectrum disorder, learning disabilities, depression, migraine headaches, and epilepsy without sufficient data to support its efficacy.
- Parents should make sure that practitioners are appropriately trained.
- Parents need to be cautious about claims of “curing” a child.
- Some studies have shown the positive effects, if any, are short-lived.

AUDITORY INTEGRATION THERAPY

References

- Bettison S. (1996). Long-term effects of auditory training on children with autism. *Journal of Autism Developmental Disorders*, 26, 361-367.
- Gravel, J. (1994). Auditory Integration Training: placing the burden of proof. *American Journal of Speech Language Pathology*, 3, 25-29.
- Rankovic, C. & Rabinowitz, W. (1996) Maximum output intensity of the *Audiokinetron*. *American Journal of Speech Language Pathology*, 5, 68-72.
- Rimland B. & Edelson S. (1995). Pilot study of auditing integration training on autism. *Journal of Autism Developmental Disorders*, 25, 61-70.
- Silver L. (1995). Controversial therapies. *Journal of Child Neurology*, 10, S95-S100.
- Tallal, P., Miller, S., Redi, G., Byma, G., Wang X., Nagarajan, S., Schreiner, C., Jenkins, W., & Merezenich, M. (1996). Language comprehension in language-learning impaired children improved with acoustically modified speech, *Science*, 271 (January), 81-84.

For Further Information

Society for Auditory Integration Training (SAIT)
1020 Commercial St. SE # 306
Salem, OR 97302
<http://www.teleport.com/~sait/>

COMMUNICATION FOCUSED INTERVENTIONS

AUGMENTATIVE AND ALTERNATIVE COMMUNICATION

Description - Communication is the ability to express and receive thoughts, feelings, and information. Augmentative and Alternative Communication (AAC) refers to ways of sending a communication message either by augmentative (in addition to) or alternative (instead of) means. People with speech or expressive difficulties may need to use more unique means of AAC to get their messages across. For example, AAC may include visual aids such as language boards or picture exchange systems (PECS), or electronic devices that have voice-output or visual display. Using AAC methods, basic words and concepts are represented through the use of symbols, pictures, or written language. Occasionally, individuals may need physical/emotional supports to use their communication devices effectively. Whichever options are chosen, the ultimate goal of AAC is to assist individuals in achieving their highest personal means of communication for use in all aspects of their life at home and in the community.

Advantages of the Approach

- Evaluations ideally involve teams of professionals with an array of talents.
- AAC supports an individual's ability to communicate.
- AAC may decrease frustration and behavioral issues.
- AAC can support individuals to increase verbalizations (by relieving pressure and receiving reinforcement for communicating).
- AAC may support fuller participation in one's community.

Concerns with the Approach

- Evaluators may not be adequately trained in ACC.
- Individuals using ACC may not receive the level of training and support that they need.
- There may be inadequate training and support of those responsible for assisting in the learning and use of the communication system or device.
- Cost can be a factor and insurance coverage may be an issue.

Considerations when Implementing the Approach

- If possible, do a trial evaluation of systems or devices before purchasing.
- Seek recommendations from AAC users or others you trust.
- Ensure members of evaluation teams have expertise in the area.
- AAC use is more successful when an individual is motivated to communicate. However, it can be used successfully to help develop interest in social and communication skills.

Facilitated Communication is addressed in a separate summary.

AUGMENTATIVE AND ALTERNATIVE COMMUNICATION

References

American Speech-Language-Hearing Association (ASHA), (2001). Scope of Practice. Rockville, MD.

ASHA, (2002). Augmentative and alternative communication: Knowledge and skills for service delivery. Rockville, MD.

Beukelman, D. & Mirenda, P. (1992). Augmentative and alternative communication - management of severe communication disorders in children and adults. Toronto, Baltimore, London, Sydney: Paul H. Brookes.

Frost, L. & Bondy, A. (2002). The picture exchange system. Newark, DE: Pyramid Educational Products.

Hodgdon, L. (1995). Visual strategies for improving communication. MI: Quirkroberts Publishing.

Miranda, P. & Erickson, K. (2000). Augmentative communication and literacy. In Wetherby, A. & Prizant, B. (Ed.), Autism spectrum disorders: A transactional approach (pp. 333-367). Baltimore: Paul H. Brookes.

Quill, K. (1995). Teaching children with autism: Strategies to enhance communication and socialization. New York: Delmar Publishers Inc.

For Further Information

- American Speech-Language-Hearing Association (ASHA)
<http://www.asha.org>
- AAC Institute
<http://www.aac institute.org> or telephone 814-392-6625
- ISAAC (International Society for Augmentative and Alternative Communication).
49th Downway West, Suite 308
Toronto, Ontario, CAN M3C3M9 <http://www.isaac.org>
- NH ATECH (Assistive Technology, Education and Community Health) Services
<http://www.nhassistivetechology.org>
- Institute on Disability/UCE (for information concerning training on AAC)
<http://www.iod.unh.edu>
- Crotched Mountain Rehabilitation Center
<http://www.crotchedmountain.org>

COMMUNICATION FOCUSED INTERVENTIONS

FACILITATED COMMUNICATION

Description - Facilitated Communication (FC) is a form of Augmentative and Alternative Communication (AAC) that is used by some children and adults with little or no speech who are unable to communicate consistently through the use of other AAC systems. It is a technique in which physical and other supports are provided by a facilitator to an individual (the FC user) to point to symbols such as letters, pictures, or numbers on a picture or letter board, or on a typewriter or computer keyboard.

FC has given rise to controversy because it is difficult to prove if the FC user is really creating the messages. Indeed, many studies have concluded that authorship could not be established. Supporters of FC argue that the procedures used in those studies did not take into account the difficulty of establishing the competencies of individuals with severe communication disabilities. They have developed individualized testing protocols, by which FC has been validated in several studies. Some FC users eventually have achieved physical independence in using a computer or typewriter to communicate.

Concerns about the effectiveness and potential risk of FC have been expressed by the American Psychological Association, the American Academy of Child and Adolescent Psychiatry, and the American Speech-Language-Hearing Association. In response to these concerns, guidelines for best practices in the use and training of FC and the screening of candidates have been published in NH and other states (VT, PA, and MI) and by the Facilitated Communication Institute of Syracuse University.

Advantages of the Approach

- Permits some people with no or very limited speech to communicate and increases their ability to participate in everyday life and their capacity for self-determination.
- Can be used with different devices – pictures, letter boards, computer keyboards – to fit the FC user's needs and abilities.
- May reduce some individuals' problem behaviors and increase their attention span.

Concerns with the Approach

- Can be misused by the facilitator intentionally or inadvertently by influencing the FC user; strict ethics and validation in every individual case are essential.
- There is a lack of controlled studies establishing the effectiveness of FC.
- FC requires long-term training and supervision of facilitators (parents, teachers, caregivers, and other team members), and qualified trainers are in short supply.

Considerations when Implementing the Approach

- Ensure adequate training and supervision of facilitators and follow FC Guidelines.
- Proof of literacy should not be required before trying FC.
- FC should not become the only modality used for communication; other communication modalities should be pursued.

FACILITATED COMMUNICATION

References

- American Academy of Child and Adolescent Psychiatry (1994, February). Policy statement on facilitated communication. *AACAP Newsletter*
- American Speech-Language-Hearing Association (1995, March). Position statement facilitated communication. *ASHA*, 37,22.
- Biklen, D. (2001) Expanding horizons for new research into facilitated communication. (Summary of proceedings of April 30, 2000 conference at Syracuse University.) *Facilitated Communication Digest* 9(2).
- Cardinal, D., Hanson, D. & Wakeham, J. (1996). Investigation of authorship in facilitated communication. *Mental Retardation*, 34(4), 231-242.
- Duchan, J., Calculator, S., Sonnenmeier, R., Diehl, S. & Cumley, G.D. (2001). A framework for managing controversial practices. *Language, Speech and Hearing Services in Schools*, 32,133-141.
- Eberlin, M., McConnachie, G., Abel, S., & Volpe, L.(1993). Facilitated communication: A failure to replicate the phenomenon. *Journal of Autism and Developmental Disorders*, 23, 507-530.
- Mostert, M. (2001). Facilitated communication since 1995: A review of published studies. *Journal of Autism and Developmental Disorders*, 31(3), 287-313.
- Sheehan, C. & Matuoizzi, R. (1996). Investigation of the validity of facilitated communication through the disclosure of unknown information. *Mental Retardation*, 34(2), 94-107.
- Weiss, M., Wagner, S. & Baumann, M. A validated case study of facilitated communication. *Mental Retardation*, 34(4), 220-230.
- Wheeler, D., Jacobson, J., Paglieri, R., & Schwartz, A. (1995). An experimental assessment of facilitated communication. *Mental Retardation* 31(1), 49-60.
- New Hampshire guidelines for the use of facilitated communication (2000). Department of Health and Human Services, Division of Developmental Services. (603) 271-5034.

For Further Information

Autism Society of New Hampshire (603) 679-2424 info@nhautism.com
<http://www.autism-society-nh.org>

Facilitated Communication Institute, Syracuse University (315) 443-2274
<http://soeweb.syr.edu.thefci/> (Source of Training Standards)

COMMUNICATION FOCUSED INTERVENTIONS

SPEECH AND LANGUAGE THERAPY

Speech and language therapy is an important component of any program for an individual with autism spectrum disorder (ASD). Speech and language pathologists are specialists in the area of communication disorders. Their training, a minimum of a Masters Degree and subsequent Clinical Fellowship Year, includes extensive coursework and clinical practicums in the areas of normal speech and language development and learning, neurophysiology, and communication disorders. The field of speech-language pathology is a large one, and there are speech and language pathologists who specialize in working with individuals with ASD. There are also pediatric speech and language pathologists who have training and experience working with children and others who primarily work with adults. The speech and language pathologist typically is a part of the evaluation process and also provides both direct therapy and consultative services to the entire team of professionals working with individuals with ASD.

The speech and language pathologist plays a critical role in the initial assessment of and subsequent treatment of individuals who are diagnosed with autism spectrum disorder. Given that communication is one of the three major areas used in determining a diagnosis of ASD, an experienced speech and language pathologist is an important member of the evaluation team. In addition, since ASD does not always occur in isolation, there can be, and often are, associated or separate speech or communication disorders (e.g. motor planning or verbal dyspraxia, hearing impairment, cleft lip and/or palate) which require careful and skilled evaluation. The presence of additional or associated speech and language disorders and their proper diagnosis plays a significant role in determining the appropriate therapies or treatments.

As part of speech and language therapy with an individual with ASD, the speech and language pathologist determines the specific approaches to be used to help the individual learn how to communicate to the best of his or her ability. For a nonverbal person, this might include enhancing communication skills through the use of sign language, object communication exchange, picture communication exchange, written language, or varied types of communication boards/systems. The design or selection of the appropriate augmentative or alternative communication device is done following careful evaluation. Speech and language therapy for individuals who are verbal might include developing strategies for someone who uses echolalia, expanding vocabulary and/or sentence structures, supporting ways to increase understanding/comprehension skills, or teaching conversational skill development.

CRANIO-SACRAL THERAPY

Description - Cranio-sacral therapy (CST) is a non-invasive, hands-on technique which is used for the treatment of many conditions at all ages. CST uses gentle touching to restore balance to the cerebrospinal fluid and the membranes and tissues surrounding the spine and brain, the cranio-sacral system. CST involves placing the hands on the identified parts of the body to create a sense of ease, calmness, and well being. The practitioner seeks out and identifies areas of restriction, compression or tension throughout the body that may be impeding proper function of organs, muscles, nerves, blood vessels, and body tissues in general. Supporters of CST claim that restrictions may be the result of injury, infections, inflammation, tensions, compressive pressures of the birth process, or underlying pathologies or emotional traumas. Dr. John E. Upledger, who developed this technique, believes that individuals who have autism spectrum disorder (ASD) show symptoms of restricted fluid movement by head banging, wrist biting, teeth grinding, and hyperactivity.

Advantages of the Approach

- CST is non-invasive, gentle, and hands on.
- CST can be done with the person asleep and fully clothed.
- CST may promote a feeling of calmness, relaxation, and well-being.
- CST addresses behavioral symptoms.
- Anecdotal parental reports indicate that CST intervention has resulted in: relaxation, improved/increased ability for eye contact, increased verbalization and communication, more regulated sleep patterns, decreased self-injurious behaviors, and decreased restlessness and hyperactivity.

Concerns with the Approach

- Anecdotal reporting is the primary source of information regarding treatment results; there is no scientific research data substantiating results of this intervention.

Considerations when Implementing the Approach

- Practitioners should be appropriately trained in CST and have experience in working with people with autism spectrum disorder.
- CST should not be regarded as a cure, but rather a treatment of symptoms.

CRANIO-SACRAL THERAPY

References

George, M., Costs, D., Kouris, K., Ring, H., & Eli, P. (1992). Cerebral blood flow abnormalities in adults with infantile autism. *Journal of Nervous and Mental Disease*, 180,7, 413-417.

Upledger, J. (1991). Your inner physician and you. North Atlantic Books and The Upledger Institute.

Weil, A. (1995). Spontaneous healing, New York: Knopf.

Edelson, S. (2002). How to determine if a treatment really helped. Salem, OR: Center for the Study of Autism.

For Further Information

Upledger Institute
11211 Prosperity Farms Road
Suite 0-325
Palm Beach Gardens, FL 33410
(561) 622-4334
<http://www.upledger.com>

SENSORY MOTOR MODALITIES AND THERAPIES

SENSORY INTEGRATION THERAPY

Description - Sensory integration (SI) is the term used to describe the basic neurological (brain) function that organizes sensory information for use in daily life. SI theory and therapy were developed by Dr. A. Jean Ayres and are commonly used in the field of occupational therapy. SI theory focuses on processing information from the five senses (taste, touch, smell, vision, hearing) and also addresses the vestibular (movement) and the proprioceptive (joints and muscles) systems. Faulty sensory processing can result in inability to interact with people and the environment appropriately. Many individuals with autism spectrum disorder (ASD) have poor sensory processing with some or all of the following:

- over-reaction or under-reaction to sensory input
- limited awareness (registration) of sensations
- difficulty controlling or understanding sensory input, which may make the individual avoid or seek particular sensations
- difficulty organizing sensations, which can affect the person's movements (praxis or motor planning) or cause difficulty with attention, behavior, or emotion).

Advantages of the Approach

- Parents, caregivers, and individuals with ASD have reported good results when SI has been carefully implemented.
- Making changes in the environment and being aware of the individual's specific sensory style may help the person to be more social and more open to learning.
- SI gives parents and other caregivers a positive framework for daily activities.

Concerns with the Approach

- Research studies are still limited, but are showing good results.
- There is confusion about the difference between sensory integration, sensory processing disorder, and self-regulatory disorder.
- Many professionals and paraprofessionals are using SI therapy without adequate training and results are therefore mixed.
- Although SI techniques can be used as part of the daily routine, pure SI therapy requires a clinic based program with specialized equipment.
- There is confusion about the importance of SI certification. Certification is only required for the administration of the standardized Sensory Integration and Praxis Tests (SIPT); it is not required for clinical evaluation and treatment.

Considerations when Implementing the Approach

- Evaluations should be done in natural environments in order to obtain a clear understanding of the individual.
- Overstimulation from sensory input can be harmful.
- Therapists should have a solid foundation in SI theory and treatment.
- SI should only be provided with adequate training and oversight.

SENSORY INTEGRATION THERAPY

References

- Baranek, G. & Berkson, G. (1997). Sensory defensiveness in persons with developmental disabilities. *Occupational Therapy Journal of Research*, 17(3), 173-185.
- Baranek, G. & Berkson, G. (1997). Tactile defensiveness and stereotyped behavior. *Occupational Therapy Journal of Research*, 51(2), 91-95
- Case-Smith, J. & Bryan, T. (1999). The effects of occupational therapy with sensory integration emphasis on preschool-age children with autism. *American Journal of Occupational Therapy*, 53, 489-497.
- Case-Smith, J. & Miller, H. (1999). Occupational therapy with children with pervasive developmental disorders. *American Journal of Occupational Therapy*, 53, (5), 506-513.
- Fisher, A., Murray E. & Bundy, A. (1991). Sensory integration: theory and practice. Philadelphia: F.A. Davis.
- Keintz, M. & Dunn, W. (1997). A comparison of the performance of children with and without autism on the sensory profile. *American Journal of Occupational Therapy*, 51, 530-537.
- Mailloux, Z. & Burke, J. (1997). Play and the sensory integrative approach. In L. Parham and L. Fazio (Eds.), Play in occupational therapy for children (pp. 112-125). St. Louis: Mosby.
- Kranowitz, C. (1998). The Out of Sync Child. New York: Penguin Putnam Co.
- Trott, M. (1993). SenseAbilities: understanding sensory integration. Tucson: Therapy Skill Builders.

For Further Information

Sensory Integration International (SII)
1602 Cabrillo Ave.
Torrence, CA 90501
(310) 320-9986
<http://www.sii.org>

American Occupational Therapy Association
1-800-668-8255
<http://www.aota.org>

MEDICATIONS

Description – Psychoactive medications are those that primarily affect a person’s behavior, moods, or thought processes. Many psychoactive medications used to treat other neurological or psychiatric conditions also have been tried as treatments for autism. The purpose of using psychotherapeutic medications with individuals with autism spectrum disorder (ASD) is to lessen the psychiatric or behavioral symptoms that interfere with the individual’s participation in educational, social, work, and family settings. They also may help increase the benefits from other interventions. The clinical symptoms of ASD may differ at different chronological ages. For example, in early childhood, hyperactivity, stereotyped behaviors, irritability, and temper tantrums may be prominent. Tic-like behaviors, aggressiveness, and self-injurious behaviors may be present in older children. In adolescence and adulthood, depression, anxiety, or obsessive-compulsive symptoms may develop.

Although there is no specific medication for ASD in general, research suggests that pharmacological interventions do have a role in improving social and communication skills in individuals with ASD. Medication may be helpful in decreasing hyperactivity and impulsivity and in reducing aggression and obsessive preoccupations. There is preliminary evidence that medications can reduce self-injurious behavior and increase communication and social interaction to some degree. Types of medications that can be useful include: mood stabilizers, neuroleptics, opiate antagonists, sedatives, selective serotonin re-uptake inhibitors (SSRIs), and stimulants. Sedating medications may be useful for sleep problems. Individuals with ASD and/or their families should contact their physician regarding the specific medications that may be appropriate.

Advantages of the Approach

- Medications target specific behaviors and address individual needs.
- There are a variety of psychotherapeutic drugs available for specific symptoms (such as depression, hyperactivity, aggressiveness, self-injurious behavior, obsessive-compulsive behavior, tics, etc.).
- There is a growing body of research showing that certain medications are effective and safe for specific symptoms in specific age groups.
- When effective, medication allows individuals to be more receptive to other forms of treatment.
- The combination of medication and other treatments in an individualized and comprehensive program have led to encouraging and significant changes in persons with ASD.

Concerns with the Approach

- Clear conclusions regarding the effectiveness and safety of some medications cannot be made because the research studies had small sample sizes, were not well controlled, had unclear measures, and/or had effects that did not last.

- It is important to periodically reevaluate the individual and modify the treatment plan as needed.
- There is very little research on the effectiveness and safety of medications for young children with ASD.
- Current research often does not include specific measurement of meaningful behavior change.
- Because many individuals with ASD also have additional medical and/or psychiatric disorders, it is possible that multiple drugs would be prescribed to the same individual.
- Every medication has side effects and may interact with others.
- There is currently a shortage of physicians who are highly trained in the use of medications with individuals with ASD.

Considerations when Implementing these Approaches

- Be aware that different medications may be prescribed by different doctors.
- Every medication has side effects and may interact with others.
- Regular re-evaluations of a medication's effectiveness and toxicity are needed.
- It is important to keep objective data regarding symptoms (i.e. tallies of the number of tantrums the child has in a day).

MEDICATIONS

References

- Cambell, M., Schopler, E., Cueva, J., & Hallin, A., (1996). Treatment of autistic disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 35(2), February.
- Howlin, P., (1998). Practitioner review: psychological and educational treatments for autism. *Journal of Child Psychology Psychiatry*, 39(3), 307-32.
- Lonigan, C., Elber, J., & Johnson, S. (1998). Empirically supported interventions for children: An overview. *Journal of Clinical Child Psychology*, 27, 138-145.
- Tanguay, P., (2000). Pervasive developmental disorders: a 10 year review. *Journal of the American Academy of Child and Adolescent Psychiatry*, 39(3), September.
- Tsai, L., (1999). Psychopharmacology in autism, University of Michigan Medical Center, *Psychosomatic Medicine*, 61, 651-665.
- Zimmerman, A., Bonfardin, B., & Myers, S., (2000). Neuropharmacological therapy in America, autism and clinical research issues. Baltimore: York Press.

For Further Information

Autism Society of America
7910 Woodmont Avenue
Suite 300
Bethesda, MD 20814-3067
(301)657-0881
<http://www.autism-society.org>

Focus on autism and other developmental disabilities. Austin, TX: Pro-Ed.
<http://www.proedinc.com>

ALTERNATIVE APPROACHES

ALTERNATIVE BIOMEDICAL AND/OR NUTRITIONAL APPROACHES

Description – Alternative biomedical and/or nutritional approaches are treatments that focus on physical and emotional well-being. For many years parents and some professionals have observed that certain physiological and biomedical characteristics may influence the behavioral and psychological symptoms in persons with autism spectrum disorder (ASD). The number of alternative approaches increases as the population of individuals with ASD continues to rise. Some non-traditional/unconventional interventions include:

- nutritional and diet therapies (i.e., gluten and dairy free diets)
- hormone medications (growth hormone and secretin)
- vitamin therapy
- enzyme therapy
- immunological agents (immune globulin)
- anti-fungal medications
- chelation therapy (detoxification for toxins and heavy metals such as thimerosal and mercury)
- metabolic therapy.

There is a need for further study of these interventions. Individuals with ASD vary greatly in their degree of need for medical and alternative intervention. As no one treatment will help everyone with ASD, careful observations will help parents and others to decide whether treatment is truly beneficial.

Advantages of the Approach

- Some parents report reduction of autistic behaviors.
- Some parents also report increased social and communication skills.

Concerns with the Approach

- Solid scientific evidence for claims of safety and effectiveness is lacking.
- Research may be inconclusive or faulty. For example, studies may be too small, lack controls, or lack effective measurements.
- Anecdotal reporting by parents and physicians are the primary source of information about results.

Considerations when Implementing the Approach

- Avoid fad diets and other interventions that pose significant risk.
- Ensure that measurement is objective and specific rather than based on subjective reports (i.e. The child fell asleep within 15 minutes of going to bed for 7 nights vs. she's sleeping better now).
- Do not attempt several alternative interventions at once, particularly when trying to determine allergy reactions.

- Traditional treatments that have been found effective should be continued while alternative interventions are explored.

ALTERNATIVE BIOMEDICAL AND/OR NUTRITIONAL APPROACHES

References

American Academy of Pediatrics, (2001). Technical report: the pediatrician's role in the diagnosis and management of Autistic Spectrum Disorder in children. *Pediatrics*, 107(5). <http://www.pediatrics.org/cgi/content/full/107/5/e85>

Lewis, L. (1998). Special diets for special kids. Arlington, TX: Future Horizons. 1- 800-489-0727.

Shaw, W. (2002). Biological treatments for autism and PDD. Lenexa, KN: Great Plains Laboratory. <http://www.greatplainslaboratory.com>

For Further Information

Allergy Induced Autism
8 Hollie Lucas Road
King's Heath
Birmingham, B130QL United Kingdom

Association for Science in Autism Treatment
175 Great Neck Road Suite 406
Great Neck, NY 11021
(516) 466-4400
<http://www.ASAT@autism-treatment.org>

Autism Network for Dietary Intervention
PO Box 17711
Rochester, NY 14617-0711
<http://www.autismNDI.com>

Autism Research Institute
4182 Adams Avenue
San Diego, CA 92116
<http://www.Autismresearchinstitute.com>

<http://www.pittbiomed.com> (for information about recent research on treatments)

National Library of Medicine
<http://www.PubMed.com>

ALTERNATIVE APPROACHES

HEMI-SYNC

Description –Hemi-Sync is a patented audio technology developed over the past 40 years by the Monroe Institute. Hemi-Sync is part of a learning process for achieving focused states of consciousness. Blends and sequences of stereo sound patterns are created to produce beneficial brainwave states. The brain produces different wave patterns in different states of consciousness. Supporters of Hemi-Sync claim that the relaxation tape encourages the brain to produce brain waves that are characteristic of a relaxed state and the concentration tape helps the brain to achieve a sharp focus of attention. At the Monroe Institute, a combination of music, verbal suggestion, relaxation exercises, guided imagery, group dynamics, and an educational curriculum are used.

Advantages of the Approach

- Hemi-Sync is a nonintrusive, relatively inexpensive intervention.
- It can be used with different types of headphones.
- Supporters claim that it helps with anxiety, allowing more focused attention during the day and better sleep at night.

Concerns with the Approach

- Hemi-Sync is not intended to replace medical diagnosis and/or treatment.
- It should be used in combination with other approaches.

Consideration when Implementing the Approach

- Hemi-Sync should not be used with Dolby® or other noise reduction systems.
- It should not be used with so-called light and sound devices.
- It should not be listened to while driving or operating heavy equipment.
- Individuals with a seizure disorder, auditory disorder, or mental condition(s) should not listen to Hemi-Sync without first consulting a physician.
- It should be immediately discontinued if there is physical or mental discomfort.

For Further Information

Monroe Institute
62 Roberts Mountain Road
Faber, VA 22938-2317
(804) 361-1237
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<http://hemi-sync.com>

ALTERNATIVE APPROACHES

HOLDING THERAPY

Description - Holding therapy is a controversial technique that involves forced holding by the parent or therapist in order to create an emotional bond with an individual. Supporters of this therapy claim that it is possible to bridge the gap in interpersonal relations and convey love and attachment through sessions of intensely close physical contact. Pioneered by child psychiatrist Dr. Martha Welch, holding therapy is usually done under the guidance of an expert in this technique. In a therapy session the parent, typically the mother, holds the child close while the child is showing resistant, “tantrum” type, behavior. The child is reassured vocally and physically that the parent is close. Sessions can last from a few minutes to a number of hours until the “tantrum” ends and the child relaxes and establishes eye contact. This technique has been used with children who have autism spectrum disorder (ASD), attachment disorders, and infants with “residual birth trauma.”

Advantages of the Approach

- It may provide an emotional release for the child during the crying/raging episodes.
- It provides deep pressure, which for some children can be a technique that is calming and organizing.

Concerns with the Approach

- Force can engender feelings of fear, confusion, helplessness, anger, and betrayal rather than love and trust.
- If the parent is angry, the child won't feel safe while being held.
- It can be very difficult to regulate by professionals as parents may practice this technique at home.
- Holding therapy is considered to be at odds with attachment theory because it interferes with mutual trust.
- It is considered by some to be a kind of violation and the child may view force as a way to achieve a level of well-being.
- ASD is considered a biological condition and holding therapy cannot repair a part of the brain that may be impacted.
- It can serve to reinforce problematic behavior, i.e. the child learns that screaming gets a big reaction.
- It may pose risk of injury to the child, parent, or therapist.

Considerations when Implementing the Approach

- Holding therapy should not take the place of other needed interventions or treatments.

HOLDING THERAPY

References

Lester, V. (1997). Behavior Changes as reported by caregivers of children receiving holding therapy. Paper accepted for presentation at the annual meeting of ATTACH, Omaha, NE.

Maier, S. & Seligman, M. (1976). Learned helplessness: Theory and evidence. *Journal of Exceptional Psychology, 105*, 3-46.

Maurice, C. (1993). Let me hear your voice- A family's triumph over autism. New York: Fawcett Columbine.

Miller, A. (1997). Breaking Down the Wall of Silence. New York: Penguin.

ALTERNATIVE APPROACHES

OPTION PROGRAM

Description - The premise of the Option Program, also known as the Son Rise Program, is to accept the child with autism spectrum disorder (ASD) and capitalize on his or her unique abilities. The ultimate goal is to connect with the child and form a mutually beneficial relationship. The method is to follow the child's lead and enter his world by imitating his actions. The assumption is that imitating the child's actions demonstrates unconditional love, and the child will be enticed from his solitary world. The Son-Rise Program is designed for both children and adults, however, it appears to be predominately applied with children.

Advantages of the Approach

- Using a child's own motivation may advance learning and may build the foundation for education and skill acquisition.
- Teaching through interactive play may result in increased socialization and communication.
- As a child-directed approach, it may maximize the child's attention and desire to engage.

Concerns with the Approach

- The Option Program has no set curriculum.
- To date there is no publicized research about the program.
- The Option Program is an intervention for which training and information is only available through one organization.
- Training is expensive; even phone consultations have a high fee.
- Training is done only at the Option Institute and follow-up is done infrequently with associated high costs.
- The one-on-one, intensive nature of the intervention places great demands on family and/or caregiving staff.
- The program's motto, "Autism doesn't need to be a life sentence", may set up families for feelings of guilt and failure.
- Reliance solely on the Option Program may prevent the child from receiving other needed treatments and therapies.

Considerations when Implementing the Approach

- Families should be careful not to put all their hopes and expectations on this one approach.
- Families should be aware that the cost of intervention is high and includes fees for ongoing consultation.

OPTION PROGRAM

References

Heflin, L. & Simpson, R. (1998). Interventions for children and youth with autism: prudent choices in a world of exaggerated claims and empty promises. *Intervention and Treatment Option Review, Focus on Autism and Other Developmental Disabilities*, 13, (4), Winter, 194-211.

Kauffman, B. (1976. revised 1994). Son rise. New York: Warner Books, Harper and Row.

For Further Information

Autism Treatment Center of America
<http://www.son-rise.org>.

Option Institute
2080 Undermountain Road
Sheffield, MA 01257
(413) 229-2100

ALTERNATIVE APPROACHES

VISION THERAPY

Description – Vision therapy encompasses a variety of techniques used to enhance visual processing or visual-spatial perception; it includes oculomotor exercises, Irlen lenses, and ambient prism lenses.

Oculomotor exercises: involve having the child follow specific movement patterns with the eyes; they are usually prescribed by a developmental optometrist. The exercises typically begin with simple visual arousal activities and gradually proceed to more difficult visually directed tasks.

Irlen Lenses: usually prescribed for children with autism spectrum disorder (ASD), dyslexia, and other visual sensitivities, including a condition known as Scotopic Sensitivity Syndrome. Visual problems may include abnormal sensitivity to light, blinking/squinting, red/watery eyes, frequent headaches, word blurring, or reading problems. Irlen lenses are precision tinted lenses worn as glasses.

Prism Lenses: shift the field of vision to produce a more stable visual perception and improved behavior or performance. With prism lenses, the eyes see images in a new position in space, the motor system readjusts, and the person must adapt himself to spatial orientation. Supporters claim this change causes a reorganization of the motor and sensory data in the brain.

Concerns with the Approach

- Studies are inconclusive. One study of prisms indicated some short-term positive behavioral effects, but follow-up did not show improvements were lasting.
- Performance on orientation and visual-spatial tasks did not show significant differences.
- A child may not tolerate vision exercises.
- A child may not tolerate glasses or prisms.
- Some children with cognitive limitations are not able to follow optometric exercises.
- Initial testing and Irlen lenses and prisms can be costly and annual reviews are required.
- Glasses may strengthen eye muscles, but do not change how the brain interprets vision.

Considerations when Implementing this Approach

- Make sure to have the child examined by an optometrist who specializes in vision therapy (Fellow of the College of Optometrists in Vision Development- FCOVD).
- If an ophthalmologist recommends eye surgery, get a second opinion as most visual problems may be perceptual rather than muscular.
- Many vision problems in children with ASD are misdiagnosed as attentional or behavioral. Make sure the problem is correctly identified.
- Difficulties with eye contact or visual attention may be a result of primary attention, behavioral, or visual problems, therefore a comprehensive evaluation is essential.

VISION THERAPY

References

Kaplan, M., Carmody, D. & Gaydos, A. (1996). Postural orientation modification in autism in response to ambient lenses. *Child Psychiatry and Human Development*, 27(2), 81-91.

Kaplan, M., Rimland, B. & Edelson, S. (1999). Strabismus in autism spectrum disorder. *Focus on Autism and other Developmental Disabilities*, 14(2), 101-105.

Rose, M. & Torgeson, N. (1994). A behavioral approach to vision and autism. *Journal of Vision Development*, 25, 269-275.

Schulman, R. (1994). Optometry's role in the treatment of autism. *Journal of Vision Development*, 25, 259-268.

For Further Information

American Academy of Optometry: <http://www.aaoptom@aol.org>

American Optometric Association: <http://www.aoanet.org>

College of Optometrists in Vision Development (COVD).

243 N. Lindbergh Blvd. Suite 310

St. Louis, MO 63141-7851

(888) 268-3770

<http://www.covd.org>

For referrals to behavioral optometrists

TRADITIONAL THERAPY OPTIONS

Individuals with autism spectrum disorder (ASD) often benefit from various types of therapeutic interventions. Evaluation and interventions should stress the individual's functional performance across a variety of settings and environments. A child and family-centered approach is strongly recommended in order to fully address the person's ability to function in natural environments. Most traditional therapies are offered during a child's school years, but also are available to adults through private clinics and agencies.

- **Art Therapy** Art therapy uses art media, images, individuals' creative art processes, and their responses to their created art productions as reflections of their development, abilities, personality, interests, concerns, and conflicts. Art therapy can be a tool for communication, can assist in problem solving, and can help individuals with their social relationships.
- **Music Therapy** Music therapy provides a variety of musical experiences in an intentional and developmentally appropriate manner. For individuals with ASD, it may help to bring about positive changes in behavior and support the development of skills. It can be used to enhance the relationship between the individual and music therapist or between the individual and others.
- **Hippotherapy** In this therapy, horseback riding is used to improve motor skills, coordination, posture, mobility, and muscle tone. These in turn can carry into daily functional life skills such as dressing, sitting, washing, etc. Hippotherapy differs from therapeutic horseback riding, which teaches an individual the skills of horseback riding, but may not include functional goals for the person.
- **Occupational Therapy** Occupational therapists assess and provide interventions for individuals with ASD in the areas of fine and gross motor development, visual motor integration, visual perception, neuromuscular control, responses to sensory stimuli, bilateral coordination, and motor planning. Occupational therapy for individuals with ASD focuses on the enhancement of sensory integration (for more information see the Sensory Integration treatment summary), and the development of self-care and other daily living skills. Additional therapy interventions also may assist in the development of specific motor skills necessary for vocational success.
- **Physical Therapy** Physical therapists assess and provide interventions for individuals with ASD in the areas of muscular control and motor coordination. A physical therapist may use a variety of techniques including: massage, whirlpool baths, ultrasound, therapeutic horseback riding, and strengthening exercises.

Speech Therapy Speech and language pathologists are specialists in communication disorders. They assess and provide appropriate interventions in the areas of expressive language, receptive language, oral motor functions, voice quality, auditory memory, and social/interactive abilities. As communication is one of the three critical areas for determining a diagnosis of ASD, a speech and language pathologist is a critical member of the individual's assessment and treatment team.

Advantages of Therapeutic Interventions

- Therapy can enhance functional and daily living skills in most individuals.
- Therapeutic interventions can address multiple developmental skills at the same time.
- Therapeutic interventions can be very motivating and enjoyable.
- Therapeutic interventions have been successfully used for many years and are well respected within each individual field of expertise.
- Most traditional therapies are offered as part of early supports and services and are available during the school years through a student's Individual Education Plan.
- Therapy is usually one on one, an approach that works well for individuals with ASD.

Concerns with Therapeutic Interventions

- Some therapies can be costly and time consuming.
- Insurance companies do not always cover therapies or only provide minimal coverage. The number of therapy sessions covered by insurance may not be adequate to address the person's need for therapeutic intervention.
- Most functional skills are learned early in life; therapeutic interventions may or may not be as effective in later life.
- Once a person is no longer covered by special education services, traditional therapies often are not available due to lack of funding sources.

Considerations when Implementing Therapeutic Interventions

- Personnel providing traditional therapies should have a good understanding of ASD and be well-qualified in their field.
- Therapists should be knowledgeable about advances in their field and open to trying new techniques of merit.
- Insurance coverage can be very limited and physician referral and prior approval may be needed.
- Therapists should frequently coordinate and communicate with one another regarding the individual's progress.
- Coordination may be difficult if different agencies are involved.
- Therapists should work closely with families and those supporting the individual.

TRADITIONAL THERAPY OPTIONS

For Further Information

American Art Therapy Association
1202 Allanson Road
Mundelein, IL 60060
1-888-290-0878
<http://www.arttherapy.org>

American Occupational Therapy Association
4720 Montgomery Lane
Bethesda, MD 31220
(301) 652-7711
<http://www.aota.org>

American Physical Therapy Association
1111 N. Fairfax St.
Alexandria, VA 22314
(703) 684-2782
<http://www.apta.org>

American Music Therapy Association, Inc.
8455 Colesville Road, Suit 1000
Silver Springs, MD 20910
(301) 589-3300
<http://www.musictherapy.org>

American Speech-Language-Hearing Association
10801 Rockville Pike
Rockville, MD 20852
1-800-638-8255
<http://www.asha.org>

TREATMENT TOOLS

- **Earobics** Developed by the company Cognitive Concepts, the Earobics program is designed to teach literacy skills through the use of systematic individualized instruction and practice in phonemic (the sounds that make up words) awareness and other early literacy skills. It is based on the premise that students who are struggling with learning how to read have deficits in phonological awareness and the ability to notice and manipulate individual sounds in words. It is geared toward children and adults who have a speech and language delay, auditory processing or attention deficit disorders, language-based learning disorders, dyslexia, or hearing impairments. There are two levels for children, Step 1 is for ages 4-7 and Step 2 is for ages 7-10. There is also an Earobics 1 for adolescents and adults.

For Further Information

Cognitive Concepts
900 Grove Street
Evanston, IL 60201
1-888-328-8199
<http://www.cogcon.com>

- **Fast ForWord** Published by the Scientific Learning Corporation, the Fast ForWord Program is designed to retrain the brain to improve auditory systems so that the brain processes language more efficiently. The Fast ForWord Program acoustically alters speech sounds by presenting the sounds at a slow rate and amplifies key frequencies. As individuals learn to recognize the sounds while playing computer games, the program automatically adapts to the child's performance by continually speeding up the sounds. Compliance and consistency are critical to success with this therapy. The creators of Fast ForWord state that the program only works when a child performs the exercises on a daily intensive schedule, one hour and 40 minutes a day, five days a week, for six weeks. The exercises are designed to be fun and animated to sustain the child's interest.

Current research has yet to determine the efficacy and utility of Fast ForWord and similar programs.

For Further Information

Scientific Learning
300 Frank H. Ogawa Plaza Suite 500
Oakland, CA 94612-2040
1-888-665-9707
<http://www.fastforword.com>

• **Floor Time** Floor time (sometimes called DIR, Developmental Individual Relationships) is a developmental-social-pragmatic intervention that expands traditional play therapy and focuses on skills such as joint attention, initiation, and reciprocal interaction. Its best-known proponents are Stanley Greenspan and Serena Wieder. During floor time, the therapist or parent engages with the child in play activities that are determined by the child. As the child becomes more comfortable with the adult's participation, the adult is able to draw the child into extended and complex interaction. Over time, the child finds the interaction pleasurable and seeks to initiate and continue the two-way communication of play. By following the child's lead and then helping the child to expand play/interaction skills, the adult fosters social/emotional understanding and problem solving. A basic principle of floor time/DIR is that all of us learn more easily when we are emotionally engaged in an activity. A second principle is that all behavior represents social communication. (See the treatment summary for Developmental Social-Pragmatic Treatment Interventions.)

For Further Information

Greenspan, S. & Wieder, S. (2001). Training Videotape Series--Floor Time Techniques and the DIR Model for Children and Families with Special Needs. Bethesda, MD: Interdisciplinary Council on Developmental and Learning Disorders.

<http://www.icdl.com>

Floor Time: Tuning in to Each Child.
(videotape published by Scholastic 1-800-325-6149)

• **Joint Action Routines** The purpose of joint action routines is to create situations that increase the probability that an individual with severe communication challenges will initiate communication. Joint action routines encourage communication by interrupting the usual chain of events so that the person with autism spectrum disorder is highly motivated to interact. Examples of joint action routines include:

- Interruption of routine events (e.g., only putting one shoe on).
- Withholding pieces or giving the wrong pieces for an activity or purposefully forgetting a person's turn (e.g., passing out cups at snack time, but no juice; giving small pieces of a highly desirable item so repeated requesting is needed; giving a spoon that is too large to get into an jar of food).
- Purposefully misusing an object (e.g., trying to pour from a closed bottle).
- Hiding objects or making objects inaccessible (e.g., placing a desired item in view, but out of reach, or in a container that is difficult to open).
- Presenting a toy or object of interest that requires help from another individual to activate it (e.g., wind-up toy, bubbles).

For Further Information

Snyder-McClean, L., Solomonson, B., McClean, J., & Sack, S. (1984). Structuring joint action routines: A strategy for facilitating communication and language development in the classroom. *Seminars in Speech and Language*, 5, 212-228.

Quill, K. (1995). *Teaching Children with Autism Strategies to Enhance Communication and Socialization*. New York: Delmar Publishers Inc.

Sussman, F. (1999). *More Than Words*. Toronto, Ontario: The Hanen Center.

- **Social Stories/ Comic Strip Conversations** Carol Gray has pioneered the social story as a tool that uses words and often pictures to teach children about an event that is new (e.g., a visit to a cousin's house) or causes some anxiety (e.g., a visit to the doctor). The Social Story is written in the first person and describes the event/situation as well as expected outcomes, possible feelings, or anticipated behavior. Comic Strip Conversations utilize comic strip characters engaged in conversation to process a situation or event and work out the details to reduce anxiety or confusion.

Both provide a guide to help individuals understand more clearly and anticipate events in their lives. Social Stories can be written for very young children (2 year olds) and adapted to any age, whereas Comic Strip Conversations may appeal more to an older audience.

For Further Information

The Gray Center
2020 Raybrook SE Suite 101
Grand Rapids, MI 49546
616-667-2396
thegraycenter@triton.net

- **Visually Cued Instruction Techniques** Visually cued instruction is a general term, which refers to the use of visual representations of language and concepts. These may take the form of written words, pictographs, pictures, photographs, or actual objects. Visually cued instruction differs from models that rely heavily on oral language based instruction, in that visual cues are presented along with oral and gestural prompts or instruction. The combination of visual information and spoken language enhances learning and understanding. The visual cue is available for review even after the physical, gestural, and spoken prompts have faded.

The following are some examples of specific visually cued instruction approaches:

- Visual schedules that allow individuals to anticipate routine or changes in routine.
- Activity sequence schedules or task cards to break down complex activities into clear steps.
- Picture or object exchange systems that allow the person to express needs or preferences.

- Written phrase and sentence strips to support expansion of oral language (e.g, I want _____, I feel _____).
- Visual supports that indicate where and when a certain activity will occur (e.g., an area rug illustrates the boundaries of the block play area).
- Social Stories, which are used to help individuals understand the rules and expectations of various social situations.

For Further Information

Quill, K. (2000). Do watch listen say: Social and communication interventions for children with autism. Baltimore, MD: Paul H. Brookes.

Hodgdon, L. (1995). Visual strategies for improving communication. Troy, MI: Quirk Roberts Publishing.