

Loránd Eötvös University
SCHOOL OF EDUCATION

**BUILDING A SCHOOL MODEL TO EDUCATE CHILDREN WITH
AUTISM USING A COMPREHENSIVE SYSTEMS APPROACH:
Shema Kolainu-Hear Our Voices
A School & Center for Children with Autism**

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Starting a school and center for children with autism spectrum disorder in 1998 with just three children and through the years developing into a comprehensive home and center-based program requires acknowledgement to many for their help and assistance.

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Abstract

Shema Kolainu “Hear Our Voices” (SKHOV) is a school and center for families with children with an autism spectrum disorder. SKHOV is a private, nonprofit, nondenominational, multicultural school that was founded in 1998. Related services include speech therapy, occupational therapy, physical therapy, art therapy, music therapy, evaluation services, and parent training and support groups.

Description of Topic

There are many confusing terms being used to describe the numerous psychological conditions and behaviors which are now referred to as autism spectrum disorders. Autism is a severe developmental disorder that begins at birth or within the first two-and-a-half years of life. Most children with autism usually are perfectly normal in their physical appearance, but spend their free time occupied in confusing and upsetting behaviors which are noticeably different from those of typical children their age, and many include: hand-flapping, repetitive actions, head banging and other potentially injurious behaviors.

Our understanding of Autism Spectrum Disorders has advanced rapidly in recent years. Autism spectrum disorders (ASDs) are a family of neurodevelopmental conditions characterized by unusual patterns in social interaction, communication, and range of interests and activities. While this profile is generally applicable for the entire ASD population, much variation actually exists. No two individuals exhibit the exact same symptoms and as such ASD is a heterogeneous disorder.

When I founded the school and center in 1998, the official diagnosis of children with autism was 1 in 500. In 2007, the Centers for Disease Control reported that 1 in 150 children are diagnosed with autism. Boys outnumber girls four to one. This is the main group of conditions that typically goes by the name of "autism." Unfortunately, many people use the word autism to refer to both the entire autism spectrum and the specific disorder to which the term was originally applied.

Although autistic disorder is a diagnosis, it is a broad one. There are so many different disorders within that diagnosis that the label itself means little, from a treatment point of view. It is much more helpful to describe each child's distinctive pattern of developmental strengths and weaknesses.

While there is no known distinctive cause of autism, there is increasing evidence that autism most likely has a number of causes or etiological factors that contribute to its manifestations. There is some indication of a genetic influence in autism. There is a greater likelihood that identical twins will have autism than fraternal twins. In the case of identical twins, there is a 100% overlap in genes; whereas in fraternal twins, there is a 50% overlap in genes, the same overlap as in non-twin siblings.

Currently, a great deal of research has focused on locating the 'autism gene;' however, many researchers speculate that in the end, three or more genes will likely be associated with the heterogeneity of autism. There is also evidence that the genetic link to autism may be a weakened or compromised immune system. Other research has shown that depression and/or dyslexia are quite common in one or both sides of the family when autism is present.

There is also evidence that a virus can cause autism. There is an increased risk in having an autistic child after exposure to rubella during the first trimester of the pregnancy. Moreover, there is also an increasing fear by parents that viruses associated with vaccinations, such as the measles component of the MMR vaccine and the pertussis component of the DPT shot may cause autism. However, there is no known research that supports this assumption.

There is mounting concern that toxins and pollution in the environment can also lead to autism. There is a high prevalence of autism in some parts of California, various areas in Queens and Staten Island, as well as certain parts of New Jersey. Several agencies are now attempting to uncover the reasons for the high percentage of autism in this community, which may be related to environmental conditions.

Intervention has a direct impact on outcome--typically, the earlier a child is treated, the better the diagnosis will be. In recent years there has been a noticeable increase in the proportion of children on the autistic

spectrum who can attend school in a typical classroom and live semi-independently in community settings. However, the majority of individuals with autism remain impaired in their ability to communicate and socialize.

The number of autism cases has risen recently mostly because doctors now apply a broader definition of the disorder and have better diagnostic tools. Yet autism remains a mystery and there are still many unanswered questions. Hopefully this thesis will give the reader a better understanding of what we know about autism today.

Although there are many concerns about labeling a young child with ASD, the earlier a diagnosis of ASD is made, the earlier needed interventions can begin. Evidence over the last 15 years indicates that intensive early intervention in optimal educational settings for at least 2 years during the preschool years results in improved outcomes in most young children with ASD.

Education at SKHOV

Education, both directly of children, and of parents and teachers, is currently the primary form of treatment for autistic spectrum disorders. ABA is a discipline devoted to the understanding and improvement of human behavior, (Baer, Wolf, and Risley, 1968, Skinner, 1989). It focuses on objectively defined, observable behavior of social significance: it seeks to improve specific behaviors while demonstrating a reliable relationship between the procedures used and the change in that specific behavior. ABA uses the method of science; description, quantification and analysis. Applied behavior analysis (ABA) is the selected method of instruction for children with ASD at SKHOV.

Research-Based Model

The general objective of this project is to explore the specific method by which our teachers' assistants are instructed to teach children with autism and the results of our approach. It is important to note that the main approach is based on research that suggests that human behavior is learned. The principles of behavior and the procedures applied to learning are found in empirical studies conducted over the last sixty years.

The applied behavior analysis (ABA) method of instruction for children with learning disabilities is a teaching method used for children with a vast range of learning disabilities. Research on the subject began in the early 1960s with the studies of Charles Ferster, Ivar Lovaas, Montrose

Wolf and Todd Risley, to name a few. In the early 1980s, ABA was identified as the most effective known treatment for children with autism. According to the Lovaas Institute, ABA involves principles that are applied to socially significant behavior based on scientifically proved concepts and measured progress through modified interventions. In addition, the teaching method ought to provide immediate feedback to the teacher, be a valid prediction of long-term outcomes, and be an integral part of instruction.

This paper argues the effectiveness of the standard approach for teaching children using the ABA method at SKHOV and concludes that it is the combination of all components working together that produce the highest number of desired outcomes. Each stage of the complete procedural process is important but it is not until all of the stages are introduced that success is achieved. Curriculum is individualized for each child based on their needs and criterion-referenced assessment in order to identify individual learner goals. Because all intervention activities are data-based, teachers, therapists, and parents directly observe daily performance and collect data to provide objective feedback and ongoing evaluations of the effects of each intervention. On the basis of these data, individualized programs are revised or redesigned as needed to increase the likelihood of each student's continued progress. Scientifically designed, scripted lessons guide teachers to meet the learner's needs. Lessons are developed hierarchically to assure that each student's goals are functional and that generalization of skills will occur. Many applications are offered to provide the foundation for increasingly complex learning.

Consistent with the review of literature and the results of our method of performance feedback and ongoing data-based objective feedback on current performance of targeted behaviors in teaching children with ASD indicates that it is a promising method for increasing the implementation of evidence-based instructional practices.

Documenting both SKHOV's method and our results strengthens the hypothesis of a relatively uniform and common educational profile for children with ASD, all of which have practical implications within the classroom. This paper describes the models selected for review and a brief description of each program. The theoretical backgrounds of the various approaches are considered along with an examination of points of convergence and divergence across the program models and consideration of the empirical underpinnings of each approach.

Specific to the ABA approach, the success of specific intervention strategies for classroom instruction, including contingency shaped behavior, verbal mediated behavior, the learn unit, collateral praise, and the teacher performance rate and accuracy scale are systematically monitored and documented. All our models individualize programming around the needs of particular children, and intervention regimens are designed to be implemented in a flexible manner. Essential differences in program design pertain to whether the curriculum is aimed at addressing some or all of a child's needs and whether the program staff provide direct service or serve as consultants to external providers.

In planning appropriate educational intervention programs that meet the unique needs of students with ASD, it is vital to use information and assessment data from many reliable resources. The assessment will yield current levels of cognitive and adaptive functioning. Although all domains need to be considered, the unique profile of the individual with ASD calls for emphasis in the areas of communication skills, social-emotional, behavioral, and sensory regulation.

The Research Findings

Teacher performance rate and accuracy (TPRA) scale in relation to training procedures clearly indicates the effectiveness of SKHOV's teaching procedures. The teacher's performance is the number of correct delivery of 1:1 instruction following no formal training are improved across the board resulting in an increase in accurate delivery of instruction. The same results occur for teacher performance of collateral praise delivery following the training protocol.

The implementation of augmentative and alternative communication (AAC) devices with children on the autism spectrum has shown an increase in verbal operants. This study measures the increase of verbal operants following the implementation of the AAC devices and is designed with a multiple baseline across participants. Three Verbal Behavior operants were measured; generalized mands, generalized tacts, and generalized intraverbals with clear results. Increase across all verbal operants was evident.

Conditioning peers as reinforcers through peer tutoring training is an effective way to increase socialization. Reinforcement schedules are

monitored by the trainer and implemented by the tutor while trials of already mastered targets are presented to the tutee. Increased socialization in free play settings for both the tutor and the tutee were measurable outcomes.

SKHOV's method also proves effective in dealing with aggressive behaviors. Increase in learn unit delivery and accurate responding increases appropriate behavior and decreases maladaptive behaviors.

Conclusions and Implications

At SKHOV, all our models individualize programming around the needs of particular children, and intervention regimens are designed to be implemented in a flexible manner. Essential differences in program design pertain to whether the curriculum is aimed at addressing some or all of a child's needs and whether the program staff provide direct service or serve as consultants to external providers.

Our results are consistent with standard theoretical interpretation of traditional behavioral education of children with autism. Our findings expand the literature of this genre, namely ABA therapy for children with autism, and offers the most effective implementation of the surrounding literature in a school-based setting. Our results indicate an ascending trend of collateral reinforcement over time delivered by the teacher to her student and all the other students in the class. This increase in rate of performance and that it is the full training protocol—including observed verbal-mediated behavior and contingency-shaped behavior—that is most effective, and not specific components.

How our teacher's assistants are taught and the nature of the learn unit presentations is determined by their existing verbal repertoires. Instruction that results in changes in verbal behavior is critical to their progress and prognosis. Therefore, development of class wide consultations models that involve a comprehensive assessment of critical classroom variables in combination with teacher feedback and support are very effective at increasing appropriate teacher classroom management strategies, and in turn producing the highest number of post student outcomes.

BUILDING A SCHOOL MODEL TO EDUCATE CHILDREN WITH AUTISM USING A COMPREHENSIVE SYSTEMS APPROACH:

I. Introduction

Much of what we know about Autism Spectrum Disorders has been discovered in recent years. Autism spectrum disorders (ASDs) are a family of neurodevelopmental conditions characterized by atypicalities in social interaction, communication, and range of interests and activities. While this profile is general for the ASD population, much variation actually exists.

Shema Kolainu “Hear Our Voices” (SKHOV) is a school and center for families with children with an autism spectrum disorder. SKHOV is a private, nonprofit, nondenominational, multicultural school that was founded in 1998. Related services include speech therapy, occupational therapy, physical therapy, art therapy, music therapy, evaluation services, and parent training and support groups. We use technological devices to supplement our verbal behavior program, including augmentative communication devices and computer software and programs. Curriculum is individualized for each child based on their needs and criterion-referenced assessment in order to identify individual learner goals. Because all intervention activities are data-based, teachers, therapists, and parents directly observe daily performance and collect data to provide objective feedback and ongoing evaluations of the effects of each intervention. On the basis of these data, individualized programs are revised or redesigned as needed to ensure each student's continued progress. Scientifically designed, scripted lessons guide teachers to meet the learner's needs. Lessons are developed hierarchically to assure that each student's goals are functional and that generalization of skills will occur. We offer many applications that provide the foundation for increasingly complex learning.

SKHOV provides a learner-driven approach to education within a 6:1:3 ratio. Because all interventions are individualized and data-based, teachers, therapists, and parents observe daily performance, coordinate efforts, make data-based decisions about the ongoing effects of each intervention and create quality programs for each student. Based on the feedback, individualized programs are revised or redesigned to assure the

child's continued progress. We use a scientific approach to teaching to help students achieve goals.

Shema Kolainu—Hear Our Voices hears the voices of the children and families with autism. We serve our children so they can achieve their full potential for independence, productivity and inclusion in the community. The high standard and quality of care displayed by all of our staff is achieved through their expertise and ability to hear, and learn from, those who they serve. The children, siblings, parents and professionals at the Shema Kolainu school and center for children with autism form a dedicated team of people who have a strong commitment to serving those affected by autism and related disorders in a warm and effective manner.

We, at Shema Kolainu, acknowledge that we are all interdependent on one another and believe that the ethnic, religious and cultural diversity of our staff, and the people we serve, opens the door to learning and strengthens our ability to be collaborative. Our goal is to provide the finest quality service to children and the teachers are an important part of this process. Our teachers work directly influences the lives of our children and the agency's reputation.

The general objective of this project is to introduce the specific method for which our teacher's assistants are instructed to teach children with autism and the successful results of our approach. Based on a strong research foundation and preliminary studies by R. Douglas Greer, Ph.D and colleagues, it is evident that classroom behaviors depend on both the behaviors of the teacher (or teaching device) and the behaviors of the student. The teaching method ought to provide immediate feedback to the teacher, be a valid prediction of long-term outcomes, and be an integral part of instruction. The applied behavior analysis (ABA) method of instruction for children with learning disabilities is a teaching method used for children with a vast range of learning disabilities. Research on the subject began in the early 1960s with the studies of Charles Ferster, Ivar Lovaas, Montrose Wolf and Todd Risley, to name a few. In the early 1980s, ABA was identified as the most effective known treatment for children with autism. According to the Lovaas Institute, ABA involved principles that are applied to socially significant behavior based on scientifically proved concepts and measured progress through modified interventions.

This paper presents an argument to explore the effectiveness of specified applications of ABA being used at SKHOV to children with ASD—and concludes that it is the combination of all components working together that produce the highest number of desired outcomes. Each stage of the complete procedural process is important but it is not until all of the

stages are introduced that success is achieved. Curriculum is individualized for each child based on their needs and criterion-referenced assessment in order to identify individual learner goals. Because all intervention activities are data-based, teachers, therapists, and parents directly observe daily performance and collect data to provide objective feedback and ongoing evaluations of the effects of each intervention. On the basis of these data, individualized programs are revised or redesigned as needed to increase the likelihood of each student's continued progress. Scientifically designed, scripted lessons guide teachers to meet the learner's needs. Lessons are developed hierarchically to assure that each student's goals are functional and that generalization of skills will occur. We offer many applications that provide the foundation for increasingly complex learning.

SK-HOV provides a learner-driven approach to education within a 6:1:3 ratio. Because all interventions are individualized and data-based, teachers, therapists, and parents observe daily performance, coordinate efforts, make data-based decisions about the ongoing effects of each intervention and create quality programs for each student. Based on the feedback, individualized programs are revised or redesigned to increase the likelihood of the child's continued progress. We use a scientific approach to teaching to help students achieve goals.

This paper offers a unifying theoretical interpretation of known behavioral processes in children with autism spectrum disorders. The objective of the study will be pursued by the means of administering a series of measures to incoming teacher assistants. In order for novice teachers to learn the appropriate classroom behaviors they begin under the control of a qualified supervisor (Greer, 2002). Initially, they are assisted in learning basic assessments, setting objectives, and presenting learn units by the supervisor.

Consistent with both the review of literature, the results of our method of performance feedback and ongoing data-based objective (feedback on current performance of targeted behaviors in teaching children with ASD) indicates that it is a promising method for increasing the implementation of evidence-based instructional practices.

Documenting both SKHOV's method and our results strengthens the hypothesis of a relatively uniform and common educational profile for children with ASD, all of which have practical implications within the classroom.

2. WHAT IS AUTISM?

2.1 Autism: An Overview

Autistic spectrum disorders (ASD) refers to these five diagnostic categories: Autistic Disorder, Asperger's Disorder, Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), Childhood Disintegrative Disorder, and Rett's Disorder. The term "spectrum" explains this framework, which includes a range of interconnected traits or behaviors. The same term, used in reference to the Pervasive Developmental Disorders, signifies a shared uniqueness and some similarities.

An autistic spectrum disorder entails a set of interrelated developmental disorders that overlap but are clinically distinctive and individually analyzed. These disorders overlap because a portion of their clinical features are shared. The areas that divide the PDDs are in great contention and disagreement among clinicians and research investigators. However, it is generally agreed, that Autistic Disorder is the conventional and most severe form of ASD. In general, ASD refers to autism, PDD-NOS, or Asperger's Disorder.

Autistic individuals display social difficulties, impaired communication skills, and exhibit specific behavioral patterns. Individuals with autism frequently show little interest in others (e.g. do not notice when someone enters the room, do not seek comfort when hurt, prefer to play alone). Those children who display social interest generally have difficulty initiating interactions and developing friendships. Many autistic children also display poor eye contact. Approximately 50 percent of autistic individuals do not develop spoken language skills. Those that develop language skills, may have difficulty engaging in extended conversations. This is because autistic individuals often insist on talking about a very narrow range of topics. It should also be noted that echolalia (echoing words or phrases) and pitch/intonation difficulties are common in autistic individuals. Many autistic individuals find new situations and change to be distressing. They also develop unusual routines or rituals. Repetitive motor mannerisms (e.g., hand flapping, rocking and finger flicking) are common. About 30 percent of autism cases are accompanied by seizures. Infections, immune system problems and food allergies are also sometimes involved, along with gastrointestinal problems and sleep disturbances.

ASD is present from birth, or very early in development, and affects essential human behaviors. Early symptoms in autism occur within the first 3 years of life and include three categories of behavioral impairments in: social interaction, communication of ideas and feelings, and behavioral habits that may interfere with the establishment of relationships with others

(American Psychiatric Assoc., 1994). Autistic disorders are unique in their pattern of deficits and areas of relative strengths. They generally have lifelong effects on how children learn to be social beings, to take care of themselves, and to participate in the community. In many cases, autism spectrum disorders occur along with mental retardation and other co-morbid conditions. Thus, educational planning must address both the needs typically associated with ASD and needs associated with accompanying disabilities and/or medical conditions.

It was not until the middle of the twentieth century that this disorder was given a name and now appears to affect an estimated one of every 150 children, a disorder that disrupts families and creates discontented lives for many children. In his distinctive description of the autistic syndrome, Leo Kanner (1943) originally indicated that children with autism were born with the disorder. Ensuing study has modified this thought. We now know that most children with autism do show signs of problems in the first year or year and a half of life. However, a small number of children develop autism, after 1 or 2 years of normal development (Volkmar, Klein, Cohen, 1997). In some cases, a child who goes on to have higher-functioning autism may speak on time but as the child develops, more unusual social behaviors or environmental responsiveness are observed. The available data do, on balance, suggest that classical autism almost never develops after 3 years of age. However, some children who develop normally for a period of several years go on to develop a clinical syndrome very similar to autism.

The prevalence rates recently reported in numerous studies of autism spectrum disorders (ASDs) seem to be higher than they were in the 1970s and 1980s. The American Academy of Pediatrics and the Centers for Disease Control and Prevention estimates as many as 1 in 150 people have autism today whereas in the 1970s, autism was estimated to have affected about 1 in 2,500 to 5,000 children, and boys are affected three to four times as often as girls. From the time that Kanner first described the disorder in 1943 until the early 1990s, prevalence rates were reported across several nations as about 4 per 10 000. Over the last decade, reported prevalence rates for ASD have increased to almost 60 per 10,000, with considerable national variation, (Bertrand, 2001).

2.1 Identifying Autism for Treatment and Educational Placement

Although there are many concerns about labeling a young child with ASD, the earlier a diagnosis of ASD is made, the earlier needed interventions can begin. Evidence over the last 15 years indicates that

intensive early intervention (in optimal educational settings for at least 2 years during the preschool years) results in improved outcomes in most young children with ASD.

Currently, most children aren't diagnosed with ASD until they are 4 years of age or older, using conventional detection methods of observing behavior. Although specialists are able to identify the condition starting at about 20 months, most parents don't seek evaluations that early because they don't notice anything unusual about their children, or don't know what symptoms to look for. Now, scientists are using new techniques to study children as young as a few months old for signs of possible autism and to flag them for more extensive analysis.

In evaluating a child, clinicians rely on behavioral characteristics to make a diagnosis. Some of the characteristic behaviors of ASD may be apparent in the first few months of a child's life, or they may appear at any time during the early years. For a diagnosis of ASD, problems in at least one of the areas of communication, socialization, or restricted behavior must be present before the age of 3 years. The diagnosis requires a two-stage process. The first stage involves developmental screening during "well child" check-ups; the second stage entails a comprehensive evaluation by a multidisciplinary team.

Screening

A "well child" check-up should include a developmental screening test. If a child's pediatrician does not routinely check using such a test, it should be requested. Parental observations and concerns about a child's development are essential in helping screen a child. Reviewing family videotapes, photos, and baby albums can help parents remember when each behavior was first noticed and when the child reached certain developmental milestones.

Several screening instruments have been developed to quickly gather information about a child's social and communicative development within medical settings. Among them are the Checklist of Autism in Toddlers (CHAT), the modified Checklist for Autism in Toddlers (M-CHAT), the Screening Tool for Autism in Two-Year-Olds (STAT), and the Social Communication Questionnaire (SCQ) (for children 4 years of age and older). Some screening instruments rely solely on parent responses to a questionnaire, and some rely on a combination of parent report and observation. Two key items on these instruments are pointing and pretend play, which appear to differentiate children with autism from other groups before the age of 2. Screening instruments do not provide individual

diagnosis but serve to assess the need for referral for possible diagnosis of ASD. These screening methods may not identify children with mild ASD, such as those with high-functioning autism or Asperger syndrome.

During the last few years, screening instruments have been devised to screen for Asperger syndrome and higher functioning autism. The Autism Spectrum Screening Questionnaire (ASSQ), the Australian Scale for Asperger's Syndrome, and the most recent, the Childhood Asperger Syndrome Test (CAST), are some of the instruments that are reliable for identification of school-age children with Asperger syndrome or higher functioning autism. These tools concentrate on social and behavioral impairments in children without significant language delay.

Comprehensive Diagnostic Evaluation

If, following the screening process or during a routine "well child" check-up, a child's doctor sees any of the possible indicators of ASD, further evaluation is indicated. The second stage in the process of diagnosis must be comprehensive in order to accurately determine ASD or another developmental problem. The evaluation may be done by a multidisciplinary team that includes a psychologist, a neurologist, a psychiatrist, a pediatrician, or other professionals who diagnose children with ASD. Because ASD's are complex disorders and may involve other neurological or genetic problems, a comprehensive evaluation should entail neurological and genetic assessment, along with in-depth cognitive and language testing.

In the 1980s, Dr. Catherine Lord led the development of the Autism Diagnostic Observation Schedule, which has become the standard assessment tool used by researchers and sometimes clinicians. Measures developed specifically for diagnosing autism include the Autism Diagnosis Interview-Revised (ADI-R) and the Autism Diagnostic Observation Schedule (ADOS-G). The ADI-R is a structured interview that contains over 100 items and is conducted with a caregiver. It consists of four main factors—the child's communication, social interaction, repetitive behaviors, and age-of-onset symptoms. The ADOS-G is an observational measure used to "press" for socio-communicative behaviors that are often delayed, abnormal, or absent in children with ASD.

Still another instrument often used by professionals is the Childhood Autism Rating Scale (CARS). It aids in evaluating the child's body movements, adaptation to change, listening response, verbal communication, and relationship to people. It is suitable for use with children over 2 years of age. The examiner observes the child and also obtains relevant information

from the parents. The child's behavior is rated on a scale based on deviation from the typical behavior of children of the same age.

Two other tests that should be used to assess children with a developmental delay are a formal audiologic hearing evaluation and a lead screening. Although some hearing loss can co-occur with ASD, some children with ASD may be incorrectly thought to have such a loss. In addition, if the child has suffered from an ear infection, transient hearing loss can occur. Lead screening is essential for children who remain for a long period of time in the oral-motor stage in which they put any and everything into their mouths. Children with an autistic disorder usually have elevated blood lead levels.

Customarily, an expert diagnostic team has the responsibility of thoroughly evaluating the child, assessing the child's unique strengths and weaknesses, and determining a formal diagnosis. The team will then meet with the parents to explain the results of the evaluation. Although parents may have been aware that something was not "quite right" with their child, when the diagnosis is given, it is a devastating blow. At such a time, it is hard to stay focused on asking questions. But while members of the evaluation team are together is the best opportunity the parents will have to ask questions and get recommendations on what further steps they should take for their child. Learning as much as possible at this meeting is very important, but it is helpful to leave this meeting with the name or names of professionals who can be contacted if the parents have further questions.

Latest Information

Researchers at Canada's McMaster University recently announced that they had developed a computerized test using eye-movement sensors that aims to predict the risk of autism in children as young as 9 months. The system, which administers five eye-tracking tests over 10 minutes, measures the direction and fixation of a child's eyes when confronted with computerized images, including human faces. Yale University's Toddler Developmental Disabilities Clinic is using similar eye-tracking technology to study patterns in gaze behavior in children ages 3 months to 3 years. And researchers at the Massachusetts Institute of Technology's Media Lab are developing specialized software and an in-home recording device to analyze the habits of newborns in hopes of teasing out the most subtle signs of early autism.

But eye-tracking won't pick out all children with autism. That's because the disorder can manifest itself in a variety of ways at different ages, such as a child not responding when called or failing to exhibit normal body

gestures. Some children also won't cooperate with the eye-tracking equipment. Autism specialists say the new technologies can provide useful clues in assessing the disorder, but a proper diagnosis requires human observation to consider a range of possible symptoms.

3: EDUCATING A CHILD WITH AUTISM

Education, both directly of children, and of parents and teachers, is currently the primary form of treatment for autistic spectrum disorders. The education of children with autistic disorders was accepted as a public responsibility under the Education of All Handicapped Children Act in 1975. Despite the federal mandate, however, the goals, methods and resources available vary considerably from state to state and school system to school system. In the last few years, due to a confluence of factors, courts have become increasingly active in determining the methods and resources allocated by school systems for the education of young children with autistic spectrum disorders. There are a number of laws that give children with autism the right to an appropriate education. The Individuals with Disabilities Education Act (IDEA) is the law most commonly used to provide special education. Most children with an autism spectrum disorder are covered under IDEA. However, some children with Asperger's or other pervasive developmental disorders who are high-functioning receive services through section 504, (US Department of Education).

This section begins with a description of models selected for review and a brief description of each program. The theoretical backgrounds of the various approaches are then considered, followed by an examination of points of convergence and divergence across the program models and consideration of the empirical underpinnings of each approach

Most comprehensive early education programs for children with autistic spectrum disorders share similar goals across a range of areas (Handleman and Harris, 2000), though the emphasis placed on different possible programs may differ. These areas include social and cognitive development, verbal and nonverbal communication, adaptive skills, increased competence in motor activities, and amelioration of behavior difficulties. Specific issues within each of these areas are discussed in individual chapters of this report. However, often areas overlap. For example, communication involves both social and representational skills. In addition, priorities change as children develop. Yet challenges in making skills truly useful in terms of spontaneity and generalizability across environments are significant across all areas.

Self Monitoring and Self-Recruited Praise: This study showed how disruptive behavior went to near zero levels and on-task behavior was increased and improved. The teachers praise increased significantly providing for more positive reinforcement and better overall learning. It also had a more positive influence on the teacher and other students (Todd, A.W. et al, 1999).

Positive behavior support (PBS) is an applied science that uses educational and systems change methods (environmental redesign) to enhance quality of life and minimize problem behavior. PBS initially evolved within the field of developmental disabilities and emerged from three major sources: applied behavior analysis, the normalization/inclusion movement, and person-centered values. Although elements of PBS can be found in other approaches, its uniqueness lies in the fact that it integrates these nine critical features into a cohesive whole: comprehensive lifestyle change, a lifespan perspective, ecological validity, stakeholder participation, social validity, systems change/multicomponent intervention, emphasis on prevention, flexibility in scientific practices, and multiple theoretical perspectives. These characteristics are likely to produce future evolution of PBS with respect to assessment practices, intervention strategies, training, and extension to new populations. The approach reflects a more general trend in the social sciences and education away from pathology-based models to a new positive model that stresses personal competence and environmental integrity, (Carr, E. G. 2002).

The neuropsychological assessment is undertaken in the context of knowledge about different disorders that affect children at different ages, and knowledge about development. Findings that are framed within this context permit an evaluation of whether a child is at risk for a disorder or showing a developmental delay. In addition, tests are developmentally referenced and can tell us something about the child compared to peers of the same age (versus relying on subjective observations alone). These instruments further provide a measure of change over time, revealing whether there has been deterioration in performance or gains. Reassessment is especially important for children who are by their nature dynamic and naturally variable in their development. Changes in the child's cognitive and behavioral repertoire can be gauged over time. Tsatsanis, (2001)

Cognitive Development- In his original paper, Kanner (1943) commented on the intelligent appearance of children with autism and observed that they did well on some parts of tests of intelligence. This view led to the impression that children with autism did not suffer from cognitive delay. Observed difficulties in assessment and low test scores were

attributed to “negativism” or “untestability” (Brown and Pace, 1969; Clark and Rutter, 1977). As time went on, it became apparent that, although some areas of intellectual development were often relatively strong, many other areas were significantly delayed or deviant in their development and that probably a majority of children with autism functioned in the mentally retarded range. Various investigators (e.g., Rutter, 1983) began to emphasize the centrality of cognitive-communicative dysfunction. As noted by Sigman and colleagues (1997), studies of normal cognitive development have generally focused either on the process of acquisition of knowledge (emphasizing theories of learning and information processing) or on symbolic development, concept acquisition, and skill acquisition (a combined line of work often based on the theories of Piaget), as well as questions concerning the nature of intelligence. Various authors have summarized the large and growing literature on these topics in autism (e.g. DeMyer et al., 1981; Fein et al., 1984; Prior and Ozonoff, 1998). The interpretation of this literature is complicated by the association of autism with mental retardation in many individuals, by developmental changes in the expression of autism, and by the strong interdependence of various lines of development.

3.1 Applied Behavior Analysis

Applied behavior analysis (ABA) is the selected method of instruction for children with ASD at SKHOV. The implementation of behavior analysis to special instruction has become widely recognized as the most effective treatment known for students with a variety of learning abilities including those with an autism spectrum disorder. In 1913, John Watson identified observable behavior as the proper subject matter for psychology and stated that all behavior is controlled by environmental events. B.F. Skinner later clarified the distinction between Ivan Pavlov's respondent conditioning (involuntary) and operant conditioning (voluntary), of behavior. Skinner and others outlined basic principles of behavior, which include reinforcement, prompting, fading, shaping, and stimulus control. When the principles of behavior are used to teach (or when used in any applied setting), the practice is called applied behavior analysis. Thus, behavior is lawful, observable, measurable, and has an impact on the environment and can be adapted into teaching methods based on those principles.

An overview of well-known documented approaches to early autism intervention reveals a consensus across programs on the factors that result in program effectiveness. Similarities far outweigh differences in ten state-of-the-art programs that were selected for comparison. On the other hand,

program differences suggest that there are viable alternatives on many program dimensions. Both differences and similarities among the programs are fundamental. Despite limitations of the outcome research available, it is likely that children will vary in how they may (or may not) benefit from the programs being received. The national challenge is to close the gap between the quality of model programs and the reality of most publicly funded early educational programs. For the purposes of this paper, we will focus on ABA methods as they apply to children in three different stages: early childhood, preschool, and school-age.

3.2 The Characteristics of ABA

ABA is a discipline devoted to the understanding and improvement of human behavior. It focuses on objectively defined, observable behavior of social significance: it seeks to improve specific behaviors while demonstrating a reliable relationship between the procedures used and the change in that specific behavior. ABA uses the method of science; description, quantification and analysis. In 1968 Baer, Montrose and Risley published a paper that outlined seven defining characteristics of ABA, this paper has become the most widely cited publication in ABA and serves as the standard description of ABA, (Cooper, et. al,1987).

Applied is determined by the social significance of the target behavior (what we teach a student). The behavior must have immediate importance to the student/family. The behavior chosen has to be a behavior in need of changing (teaching a 2 year old to tie his shoes), and the behavior must be measured reliably and precisely. Analytic means that we can demonstrate that the change in behavior is due to our teaching procedures. There has to be a functional relationship between the manipulated events and the behavior of interest. Procedures are considered technological when all of the procedures used to teach are completely identified and precisely described, we often refer to this as “objectively defined”. Behavior change procedures should be described in terms of the behavioral principle from which it was derived. There are many tactics we use to change a behavior (i.e. teach) however they all come from just a few principles of behavior. Another important competent to consider is how effective the behavior of interest change is to a meaningful/practical degree. Did a physical prompt teach a student to touch her head? Also, does the behavior last over time? Once the teaching procedure is finished, does the student really “know” his/her colors? Generality also occurs when a behavior that was not the focus of teaching changes as well. This is a good thing but not always automatic. We have to program for generality aka generalization. Once generalized it must be maintained.

3.3 ABA Facts and Fables

ABA is a science of behavior devoted to investigating factors that influence behavior in a systematic way and using the results of those investigations to the betterment of human kind. It is performance based and seeks operational definitions for behavior that are measurable in quantifiable terms. Instead of describing someone as a procrastinator, for example ABA would measure the exact time behind or ahead of deadline the work is turned in, (Celiberti, 1997).

ABA is analytical and technological and uses methodologies consistent with principles of behavior to interpret data collected on a behavior and its environment from those interpretations produces hypothesis that, if correct must be repeatable. It is also contextual, it studies behavior in its relationship to the present and prior environmental conditions influencing it, as well as the conditions brought on by it. Behavior does not occur within a vacuum.

The emphasis of ABA is on quality of life issues. ABA takes place in real world settings such as businesses, schools and homes. It offers people effective methodologies to achieve healthy alternatives to problematic behavior. It's principles can be applied to a wide variety of populations and problems from such as teaching young children diagnosed with autism, to reducing gang violence in major cities, improving health care etc. ABA is closely tied to, though not limited to the field of working with the developmentally disabled.

ABA is a set of general principles which can be effectively applied to a wide variety of ages, populations and teaching situations. Much attention has been given to ABA's application in discrete trial teaching for young children with autism, but this represents only one point along the direct activity based incidental teaching continuum

ABA does NOT involve bribery. ABA uses contingencies and principles of reinforcement much as they are often used in the typical world (work two weeks-get a paycheck), the different being that it individualizes their content and schedule of delivery to be individually effective. It is also NOT a cold, mechanistic method that focuses on control and punishment. ABA is actually very humane. It is humane to individualize teaching programs to the extent that ABA does, to find the right motivators for someone, to consistently and effectively acknowledge someone's successes and achievements, to try a wide range of environmental changes controls before subjecting someone to drugs or mechanical restraints, to rely only on

procedures that have been empirically validated, to take consistent data on progress and hold off on pushing people into more complex environments than they are ready for.

3.4 Common Treatment Mistakes When Using ABA

- Overusing the child's name, which becomes a substitute for "get ready", "look here" or attending to the teacher or instructional materials.
- Demanding excessive eye contact when it is unimportant
- Not reinforcing eye contact when it is important
- Interpreting behaviors and speech
- Not varying reinforcement or not delivering reinforcement (are you following a reinforcement schedule)
- Not using differential reinforcement
- Not making therapy overall reinforcing (FUN)
- Not providing enough prompts on unknown items
- Giving child situation or unintentional prompts
- Making antecedents too complicated
- Repeating antecedents without a response or consequence
- Labeling correct response in place of meaningful reinforcement or when it might be taken as another antecedent
- Too much time between trials
- Not programming for generalization
- Trying to generalize too fast
- Teaching skills above the child's capability
- Using too many primary reinforcers (preference assessments are essential)
- Not using enough primary reinforcers
- Saying a reinforcer "doesn't work"
- Keeping the child in the chair too long when he/she is working well
- Letting the child go too soon when he/she is not working nicely
- Not maintaining acquired skills
- Not meeting regularly to insure consistency across team members
- Introducing new items before current items are mastered.
- Attributing behavior to things like "not feeling well", he/she is not themselves"..
- Creating prompt dependency. The goal is to least to most intrusive.

3.5 Utilizing the ABA Approach

The first large-scale outcome study of ABA as a treatment for autism was published by Ivar Lovaas (1987). Out of 19 children given 40 hours of one-on-one treatment for two years, almost half were able to complete a typical first grade class without special supports or accommodations. These nine children achieved IQ scores in the normal range (94-120).

Teaching Developmentally Disabled Children: The Me Book (1981) by Lovaas provides a solid foundation of ABA philosophy and related teaching strategies for developmentally disabled children. The book is designed for use with children age three and older who suffer from mental retardation, brain damage, autism, severe aphasia, emotional disorders, childhood schizophrenia, and autism. This was one of the first manuals used by both parents and professionals to help children acquire language and social skills.

The manual helps teach both basic and complex skills to children using a method of reward, and building upon previously learned skills. The first part of the book describes teaching techniques designed to increase and decrease specific aspects of a child's behavior. The second part outlines procedures developed to teach children how to sit, be attentive, and overcome disruptive behavior. Specific behavioral programs are grouped into the following categories: imitation, matching, and early language; basic self-help skills; immediate and advanced language; and preparation for community settings.

The first skills that should be taught are how to sit appropriately in a chair, how to establish eye contact, and to refrain from engaging in disruptive behavior. The instructor should then teach the child to imitate, match identical or similar items, and follow simple instructions. Thereafter, the child should be taught to imitate simple sounds and/or words and label items and actions. It is assumed that once a child can label a preferred item or activity, he or she will be able to say the name of that item or activity when they want it.

For Lovaas, punishment is not the goal. Instead, positive reinforcement is advocated and addressed as to why it is the most effective method. A good ABA therapist wants the child to be successful and to enjoy his/her success. Little by little, the success enjoyed in all of life's teachable moments leads to learning more complicated and relevant tasks and actions and gives the child a sense of purpose and self-esteem, ultimately communicating to them that interacting with the world around him/her is a

good and pleasurable thing, not something to avoid with withdrawal or self-stimulatory behaviors.

Sometimes, however, the child is still be unable to express himself when wanting something. According to Skinner's *Verbal Behavior* (1957), the same word can have very different meanings depending on the context in which it is taught. For example, the word "cookie" can function as a mand (request), a tact (labeling), an echoic (repeating someone else saying the word "cookie"), an intraverbal (saying "cookie" when someone asks the child what their favorite drink is), or as a receptive language (the child points to cookie when asked where cookie is).

In a follow-up study aimed at investigating the long-term outcomes of these same children, McEachin, Smith, & Lovaas (1993) found that IQ and behavioral gains were maintained over about a ten-year period. Using blind clinical assessment, eight of the nine children with the best outcomes were indistinguishable from normal controls based both on clinical evaluation as well as standard clinical assessment measures.

Sundberg and Partington (1998) suggest that the first type of language a child be taught is a mand. This link of thinking is in contrast to traditional ABA in which the first type of language is typically receptive language (identification of items and following simple instructions). After the child has mastered identifying various items they are then taught to label those items. Teaching a child to request preferred items does not usually occur for quite some time (if it occurs at all). It is assumed a child will request something because they learned the label. Sundberg and Partington (1998) propose that reaching the child to mand before anything else is most beneficial because it teaches the child how to get their needs and wants met without the use of tantrums. Children with autism who are nonverbal are trained in mands using sign language.

Like Lovaas (1987), Sallows & Graupner (2001) demonstrated that the children with the best outcome (45% of those receiving ABA treatment) achieved average levels of intellectual functioning. It is important to note that among these 'best outcome' cases, some children had minor deficits in expressive language, daily living skills, and social skills, and thus scored in the low average range on these measures. A study conducted by Anderson, Avery, DiPietro, Edwards, & Christian (1987) produced results similar to Lovaas', but did not include a control group. Three additional studies have partially replicated Lovaas' original findings (Birnbrauer and Leach, 1993; Sheinkopf & Siegel, 1998; Smith, Eikseth, Klevstrand, and Lovaas, 1997). All three of these studies demonstrated IQ improvements and other gains in children receiving ABA, although not necessarily the magnitude

demonstrated by Lovaas (1987). However, the treatment parameters in these three studies differed somewhat from the treatment parameters in the Lovaas study (e.g. fewer hours of ABA per week), so exact comparisons cannot be drawn.

The research data supports the premise that EIBI for preschool children with autism can result in achievement of normative functioning, defined by standard psychological methods and functional outcome. This is consistent with our own clinical experience at the Institute, with children achieving outcome such that they are indistinguishable from their typical peers. They are not 'perfect' children, much to the dismay of some parents. Rather, they display all the typical problems and difficulties of young children growing up, but without the problems associated with autism. However, the norm is that such dramatic results are not achieved, and there clearly remain many children that have significantly poorer outcome, influenced most likely by initial child and family characteristics (Romanczyk, Lockshin, & Matey, 2000). Thus in one sense the barrier has been broken – we have a treatment approach that under certain conditions can produce substantial and durable effects that encompass the construct of 'normal'. The greater challenge that remains is to identify predictor variables, and in that process, improve outcome for the substantial group that show poor to fair outcome.

3.6 The CABAS Model

CABAS® is: A behavioral model of schooling that draws on a) the other behavioral models of schooling, b) the tactics and strategies from the applied and experimental branches of behavior analysis, c) the epistemology of behavioral selectionism, d) research on the model and its components and, e) demonstration applications to several schools. These components are applied to all the individuals involved in the school community - a) students, b) parents, c) teachers, d) supervisors, e) the university training program - on a system wide basis. The system-wide analysis is used to determine or evoke cybernetic relationships between all of the parties such that the effects on the student's learning are the controlling variable for the relationships between roles. The research found in behavior analysis and the behavior models of instruction suggest a common set of effective teaching practices. Implementation of these practices could save our schools. They have implications for the students, the parents, teachers and supervisors.

The Student's School: The well being and the leaving of students are the central concerns of schooling. In the tradition of the science, the student

is always right! If the student does not learn, it is the responsibility of teachers and supervisors to see that he/she does learn within the known constraints of the science.

The Parent's School: Parents should expect frequent feedback on the progress of their children in the school; the measurement should be valid, accurate and based on counts of real behavior/products. Parents should be taught the pedagogical and measurement strategies to use with their children.

The Teacher's School: Teachers are to use best (research based) practices to induce behavior change and learning. They are to measure behavior continuously, directly and reliably. Teachers are to receive frequent supervision in the classroom in order to implement the best teaching practices. Teachers are to receive frequent and ongoing in service instruction by their supervisors that produce masterful and fluent teaching practices across three repertoires: verbal behavior about the science, contingency-shaped behaviors, and verbally mediated behavior.

The Supervisors School: Supervisors (principals, curriculum coordinators) are to produce environments that provide pedagogical practices by teachers. Supervisors are to conduct frequent data based teacher observations. These observations are to develop and maintain teacher effectiveness in a non - adversarial manner. Improving teacher effectiveness is a monitoring and instructional responsibility of the supervisor. Supervisors are to review the teacher's continuous measurement of each student in order to assist the teacher in changing each student's behavior. This should be done class by class at least weekly. Supervisors are master teachers; they are strategic scientists of behavior change.

Administrative chores are best accomplished by supervisors, using organizational behavior analysis and at times when students are not present. During school hours, supervisors are to spend the majority of their time in classrooms. Supervisors are to designate which teachers are to be retained, receive promotions, and salary increments based on student improvements resulting from teacher practices. Supervisors are to use hard measures of teacher practice (student improvement) only to make these decisions. Teacher improvement is also a supervisor responsibility. Supervisors are to post teacher performance data along with their own supervisor performance data. As in the case of students, data are real measures of real behavior in real time, not scale or ratings. Supervisors are to have their performance reviewed, monitored, and instructed by peer reviewers on a continual basis and in an instructional rather than adversarial manner.

3.7 Implementation Strategies for Classroom Instruction

R. Douglas Greer's book "Designing Teaching Strategies: An Applied Behavior Analysis Systems Approach" (2002) discusses how best to teach, design functional curricula, and how to support teachings using the ABA method. Dr. Greer has been awarded the Fred S. Keller Award for Distinguished Contributions to Education by ABA for the research and application of the material covered in this book. School programs incorporating the material used in this book have produced 4-7 times more learning outcomes for students than control and baseline educational programs.

Greer bases his practice on the idea that classroom behaviors depend on both the behaviors of the teacher or teaching device and the behaviors of the student. The teaching method, therefore, must provide immediate feedback to the teacher, be a valid prediction of long-term outcomes, and be an integral part of instruction.

According to Greer, the learn unit is the strongest known physical dimensions of effective teaching. The learn unit incorporates both student and teacher interaction and it predicts new stimulus control for the student. It is a measure of the mutual relationship between the behavior of a teacher and a student. Greer states,

The three-term contingency or operant (antecedent, behavior, and consequence) is what the student is to learn. The teacher organizes the student's environment such that the student's operant emerges. The teacher also has a series of operant behaviors that must interlock with the student's three-term contingency in order for the operant to emerge. The learn unit also needs to occur within the motivational conditions in which the student's operant will be needed (i.e., the operant is to become part of the student's repertoire). In order for this to happen the teacher must respond in certain ways to the presentation of the student and to the resulting behavior or its absence from the student. In effect, the teachers "learn" from the response of the student--that is, the teacher learns what to do next from the student's performance, (Greer, 2002).

Similar to traditional ABA philosophy, Greer points out that learn units change in frequency based on what the student has mastered to date. The process of learning involves building on skills previously acquired. In that sense, Greer notes "it is just as important to omit the presentation of learn

units when a student has mastered certain repertoires, as it is to insert a learn unit when it is needed by the student.”

Contingency Shaped behavior

Contingency shaped behaviors refer to teaching practices acquired in the classroom. These behaviors are either reinforced or punished directly as a result of the behavior, for example, when a teacher learns classroom-teaching practices as a result of the student’s behavior. According to Greer, in order for novice teachers to learn the appropriate classroom behaviors they should begin under the supervision of a qualified supervisor. They should be assisted initially in basic assessments, setting objectives, and presenting learn units by the supervisor. The teacher then teaches while being observed by a supervisor. Observations will record supervisor feedback detailing reinforcement and correction operations by the teacher. This will continue until the teacher produces actuation presentations and evokes successful student responses to learn units.

With increased supervision and instruction, novice teachers will begin to make less error and produce high rates of correct responding. Teachers will begin to manage classrooms that produce more and more learn units. If the accurate performance of the teacher with the student is automatic and does not require the teacher to make a conscious effort regarding instruction, the performance is referred to a contingency shaped. According to Greer, “fluent contingency-shaped repertoires result from (a) the design of the classroom and (b) the second nature (automaticity) with which the teacher responds to and predicts events in the classroom in a manner consistent with the science.”

Classroom practices can be designed more effectively to produce the contingency control desired. Ideally, programs for shaping contingency-shaped behavior would manipulate the responses of students such that the student Responses would shape teacher behavior without recourse to verbal mediation.

If one simply repeats an operation, the behavior learned is only intraverbal, and not yet a verbal governor of other behavior. To be verbally governed, the behavior has to control nonverbal behavior. According to Greer, “effective instruction of verbally mediated repertoires will result in verbal behavior which functions as a tool for individuals to manipulate the environment in ways that are not possible without the verbal mediation,” (Greer, 170).

Verbal Mediated Behavior

Verbal mediation is the term used to describe a teacher's repertoire reflected upon when encountering a problem. The problem is resolved using scientific terms and can be successfully replicated in the future by another professional who is knowledgeable about the science. Greer notes that it is important to characterize both the behavior of students in precise scientific terms and the behaviors of operations of instruction because the vocabulary prescribes strategies and tactics to analyze and solve the problem.

Unlike the standardized teaching methods of controlling instruction for students experiencing difficulties, verbal behavior strategies inform the tactics of both unsuccessful attempts as well as later successful attempts. According to Greer, "both the verbal labels for what has transpired and the data collection procedures are scientific tactics--that are part of the verbal community to the science." He is quick to note that what is actually recorded must be succinct, objective, valid, and detailed. The record must reflect the practices of the aforementioned behavioral science.

The vocabulary used to describe the classroom in turn suggests research-based solutions. The teacher learns to describe events and ask questions consistent with the science and can then effectively mediate the classroom, resulting in changes in teaching procedures. The teacher, in effect, edits or her instructions as a result of her own verbal identification of the problem. According to Greer, "The new procedures are initially under verbal control from the science rather than being directly controlled by the immediate contingencies; thus the new procedures are verbally mediated. They are the thinking behaviors of analytic instruction."

Tracking trends in verbally mediated repertoires is important, according to Greer, because "every instructional session in which the student is subjected to inappropriate pedagogy wastes educational time and may indeed act to compound the student's difficulty with the instruction in progress." If the description of the potential problem includes a reasonably viable reference to the learn unit, the three-term contingency, the instructional history, or the setting events, this strategic choice is counted as a correct decision. If the tactic is implemented correctly, the teacher receives a correct mark and if it is not the teacher is recorded with an error.

Learn Unit

Students must be able to engage in independent play, or individual seat work, in order for the teacher to carry out individualized instruction. The teacher presenting individualized learn units while simultaneously paying close attention to what is happening in the classroom. As the student

becomes increasingly independent, the teacher and the teaching assistant can both reinforce independent engagement from a distance. Independent play will eventually lead to independent learning skills. As Greer states, “the students learn to be engaged, when not receiving one-to-one instruction, their engagement created the necessary environment to provide more and more individualized instruction and sets the occasion to teach the student to ‘learn to learn’ independently.”

The learn unit is most effective when all of the components are in place: the right antecedent, the right response time, and the right consequences for each student. This of course is not conducive to group instruction; rather individualized instruction is the best method of application. Each student will receive many individualize learn units as they rotate in and out of individual play, one-on-one instruction, and grouped play. As the teacher improves, she can switch between students and gradually increase the number of learn units received by each individual child. Eventually students are taught to play and work without receiving learn units from teachers.

The purpose of individualized group instruction is to teach activities that acquire increased reinforcement value. Also, to have the students engage in independent activities while individualized instruction is occurring for other students.

Collateral Praise

Those students who are not receiving individual instruction at any given moment are engaged in activities as a function of the reinforcement of the stimuli associated with the activities, because of the structural history that the students received in which the activities were continuously paired with prosthetic reinforcers.

Classroom management is directly linked with levels of student involvement and achievement and is tied to both a decrease in undesirable behavior and an increase in engagement in academic texts. Targeting the classroom system to increase effective classroom management is more efficient than targeting individual students. This is because the teacher is able to focus on many students at once instead of just one. The positive collateral effects of praise are noteworthy.

The definition for praise included any verbal statement or gesture that indicated teacher approval of a desired student behavior. It is important to note that the statement or gesture needs to go beyond simple verification of correct academic performance; rather the feedback needs to be an

acknowledgement of the correct action *and* praise for the performed action. Praise with feedback is often more desirable.

TPRAs

When the teacher is involved with tutoring an individual student, two forms of data are collected: 1.) the rate (number per minute) and accuracy of teacher presentation of learn units per the scripted program and 2.) the rate and accuracy of student performance (number per minute correct and incorrect) for the learn units presented. The TPRA observations identify the teacher's rate of accuracy as well as their rate of errors. As errors decrease and accuracy increases, the students accurate rates should increase and the inaccurate rates decrease. Trends in these data will show if the teacher's contingency-shaped skills are changing--for the better or worse--or not changing at all.

The information obtained in the TPRA is used to instruct the teacher and to provide the supervisor and teacher with goals and objectives for the next meeting with the students. The mean scores of all the teachers become the composite average for the entire school for that particular week. This data can be used to identify areas of improvement and can be used to set school-wide goals.

It is the supervisor's job to record vocal antecedents and postcedents (or teacher consequences) and later summarize the written learn units that have all components (*antecedent, response, and postcedent*). Both the accurate and inaccurate responses are recorded. Learn unit rates are compared within categories. A learn unit consists of a written comment that specifies how the student is to correct the response. The supervisors model the TPRAs to include specific goals. For example, the teacher's reinforcement of students who follow (or do not follow) classroom rules as stipulated by the teacher. Once the teacher is fluent with individual instruction, the teacher is observed for implementation of entire classroom control as well as providing individual instruction. The teacher's accurate reinforcement of behavior by students who are appropriately engaged in individual task completion is recorded. These types of TPRAs are graphed separately. The TPRA should be directed at the specific repertoires such as the written responses to textual learn units or teacher-presented learn units across students, with or without classroom management data.

3.8 Developmental Programs

There are many different developmental programs; a common feature

of developmental approaches is that they are child-directed. The environment is arranged to provide opportunities for communication, the child initiates the interaction or teaching episode, and the teacher or communicative partner follows the child's lead by being responsive to the child's communicative intentions, and imitating or expanding the child's behavior. Although the empirical support for developmental approaches is more limited than for behavioral approaches, there are several treatment studies that provide empirical support for language outcomes using specific strategies built on a developmental approach (Lewy and Dawson, 1992; Hwang and Hughes, 2000; Rogers and DiLalla, 1991; Rogers and Lewis, 1989) and many case studies, with Greenspan and Wieder (1997) providing the largest case review. Developmental approaches share many common active ingredients with contemporary naturalistic behavioral approaches and are compatible along most dimensions (Prizant and Wetherby, 1998). Teaching Speech and Language Gains in speech and language outcomes for children with autism have been documented using a variety of behavioral and developmental intervention approaches. Numerous studies have investigated methods of teaching specific receptive and expressive language skills. Most of these studies have used a behavioral method ranging from discrete-trial to naturalistic. Studies have reported good outcomes for teaching specific language content, such as single-word vocabulary, describing objects and pictures, responding to questions, and increasing speech intelligibility (see Goldstein, 1999; Koegel et al., 1998; Krantz et al., 1981). Very positive outcomes have been reported by McGee and colleagues (1999) through natural reinforcers of vocalization, speech shaping, and incidental teaching. They reported that 36 percent of the toddlers studied used verbalizations at program entry with a mean age of 2 years 5 months, and 82 percent were verbalizing meaningful words 1 year later. Most other programs have reported about children entering at 3 years of age or later, and therefore, the impressive treatment outcomes may be related to the young age at entry of treatment. Teaching Communication Research that has documented changes in the communication skills of children with autism falls into three major categories organized by the goal of the intervention: functional communication training to replace challenging behavior increases in initiation of verbal and nonverbal communication, and increases in the core communication skills.

Problem Behaviors

Problem behaviors of children with autistic spectrum disorders—and

other children—are challenging and stressful issues faced by both schools and parents. Behaviors such as property destruction, physical aggression, self-injury, and tantrums are major barriers to effective social and educational development (Horner et al., 2000; Riechle, 1990). Such behaviors put young children at risk for exclusion and isolation from social, educational, family, and community activities (Sprague and Rian, 1993). In addition, problem behaviors may place an onerous burden on families, particularly as children grow from preschool into school age (Bristol et al., 1993). Concerns about school behavior problems led to new standards and procedures for discipline, student suspension, and expulsion in the 1997 amendments to the Individuals with Disabilities Education Act (IDEA, 1997; Department of Education IDEA regulations, March, 1999). Specifically, the regulations include provisions for the use of functional behavioral assessments and positive behavioral interventions and support.

From a child's perspective, problem behaviors include the inability to understand demands and to communicate his or her needs and wants. Also, a severe difficulty in initiating and maintaining social interactions and relationships, confusion about the effects and consequences of many of his or her behaviors, and engagement in restrictive and repetitive behaviors and interests that may limit the child's ability to learn and to fit in with peers. From a teacher's or parent's perspective, problem behaviors include lack of compliance with or disruption of classroom routines, tantrums, destruction of property, and aggression against self or others.

The research evidence reviewed suggests that educational interventions that do not address the development of positive and prosocial behaviors (the potential for problems from the child's perspective) will be unsuccessful in the long-term elimination of problem behaviors from others' perspectives. These basic elements (communication, social interaction, cognitive features, adaptive behaviors, and sensorimotor skills) are needed for effective, appropriate educational programs for children with autistic spectrum disorders to address core problem behaviors and are essential in any consideration of problem behaviors.

Different literature provide the empirical base for interventions for problem behaviors in young children with autistic spectrum disorders: data from comprehensive programs; single-subject design studies that address specific problem behaviors; psychopharmacological studies that assess the safety and efficacy of pharmacological interventions on both global and specific problem behaviors; the growing literature on the neurobiology of autism; and legal reviews of the 1997 IDEA provisions related to autism

(Turnbull et al., 1999) and findings in due process and court cases involving children with autism (Mandlawitz, 1999).

Children with autism have always been among the most difficult to include effectively in educational, recreational, and community settings. There are successful methods of placing effective instructional strategies into preschool routines and supporting children with autism.

3.9 Improvement

Improvement in Autistic Behavior Seen As Individuals Age

At the April 1995 Society for Research in Child Development Meeting, Dr. Piven and his research group presented the results of their behavioral studies. They reviewed data on the current autistic behaviors in 38 high-functioning adolescent and adult autistic individuals and compared it to their behaviors at age 5 years. These researchers found that there was clear improvement in all three domains of behavior that define autism.

However, the most substantial change occurred in the social and communication behaviors. Eighty percent of the males and one hundred percent of the females improved their social and communication skills. Both males and females had fifty percent improvement in ritualistic-repetitive behaviors. Dr. Piven and his colleagues are continuing their study of the course of behavioral change in autism. (Piven, 1993)

4: SHEMA KOLAINU-HEAR OUR VOICES: A COMPREHENSIVE SYSTEMS APPROACH

How should personnel who work with children with autistic spectrum disorders be prepared and trained to guarantee a sufficient number of well-qualified specialists and regular teachers and administrators? The nature of autism spectrum disorders and other disabilities that frequently occur with them has significant implications for approaches to education and intervention at schools, in homes, and in communities. Approaches that emphasize the use of specific one-size-fits-all packages of materials and methods may understate the multiple immediate and long-term needs of individual students for behavioral support and for instruction across areas. Teachers and other professionals and paraprofessionals who often provide the bulk of service to very young children need familiarity with the course of autistic spectrum disorders.

Schools for children with autism are indeed a rare commodity and are a sacred space that holds for parents, teachers, and the wider community almost infinite possibility in shaping children with autism children. How do we build schools from early childhood through high school that dynamically and innovatively invigorate the educational culture and experience?

4.1 Goals for Educational Services

There are many different goals for the education of young children with autism. At the root of these goals are societal desires and expectations about the benefits of education for all children, and assumptions about what is important and what is possible to teach children with autistic spectrum disorders. Education provides opportunities for the acquisition of knowledge and skills that support personal independence and social responsibility (Kavale and Forness, 1999). For a child with an autism spectrum disorder or any other developmental disability, how independence and responsible participation in a social world are manifested may include different behaviors from those targeted as goals for more typical children, though often the similarities are greater than the differences. For the purposes of this report, in which we are concerned with children 8 years of age and younger, independence and responsibility are defined in terms of age-appropriate participation in mainstream school and social activities to the extent possible, rather than as vocational or residential independence.

At SK our goal is to provide classroom activities that promote dynamic interactions between children and the environment, in a family-focused and developmental-behavioral approach to instruction and curriculum (Allen & Schwartz, 1996). We work collaboratively with families to identify priorities, develop educational objectives, and evaluate program outcome. To translate this philosophy into practice we plan classroom activities that promote high levels of engagement and provide multiple opportunities to apply systematic instruction to achieve educational goals (Bricker & Cripe, 1992). The classroom activities and instructional strategies are not only developmentally appropriate (Bredenkamp, 1987), which means they are individually and chronologically age appropriate; they also adhere to recommended practices for young children with disabilities, which means they are effective and systematic (Carta, et al 1991).

Our Mission

The mission of the Shema Kolainu – Hear Our Voices (SK-HOV),

Early Intervention Program is to offer a warm, stimulating environment for children aged 0 months to 3 years, and their families, which addresses the needs of the whole child within the context of his/her family. Shema Kolainu – Hear Our Voices is committed to providing optimal learning experiences for all children, without regard to the religious, ethnic, linguistic, cultural, or economic barriers that their families might face. The program firmly believes in the tenet that all children are learners, and should be viewed only as such, the SK-HOV staff dedicates itself to providing positive experiences that will have a boundless impact on the future academic, social, and civil achievement of its learners.

The educational philosophy of the Shema Kolainu – Hear Our Voices, Early Intervention (EI) Program embraces the belief that, when provided with a developmentally appropriate and nurturing environment to explore, each infant/toddler will grow physically, emotionally, cognitively, linguistically, culturally, and socially. This philosophy is implemented by providing each infant/toddler with the tools needed within the framework of a divergent, multi-sensory, individualized early intervention program, based on the desired outcomes identified in his/her IFSP. Each infant/toddler will participate in the daily discovery of new concepts, attainment of new skills, and the ongoing preparation for preschool readiness. SK-HOV is a community of learners, comprised of infants/toddlers, children and adults, parents and other family members, staff, and volunteers, who thrive on sharing rich experiences that foster growth and maximize each learner's potential.

SK-HOV is committed to providing the highest quality, most family-centered Early Intervention (EI) services to the residents of NYC. To this end, a model of early intervention service delivery has been developed to ensure that families have options about the service modalities, locales, and service delivery times that are most agreeable to them. Recognizing that the birth of a child with special needs is a life-altering event for a family, SK-HOV sees, as its mission the successful integration of the child with special needs into his/her own family. Partnering with families through parent education, training, respite, counseling, and providing support, both in group formats and on a one-to-one basis, is a basic tenet of SK-HOV's philosophy. Indeed, the noteworthy success of SK-HOV's student population is clearly a collaborative effort between staff and families.

SK-HOV was, in fact, founded due to a lack of availability of comprehensive, family-centered services for families of pre-school and school-aged children with autism in NYC. Adding an early intervention program to our existing continuum of services provides a more

comprehensive educational opportunity to children with autism. Currently, SK-HOV offers several programs to meet the needs of young children with autism and their families. SK-HOV has a preschool program, which serves young children with autism or autism-related disorders, has an ABA-based school serving school-aged children up to the age of 11 years, and has a summer day camp program.

Additionally, SK-HOV has been selected to participate in OMRDD's Medicaid Service Coordination program, which will serve to provide services to the Medicaid eligible children who will age out of SK-HOV's Early Intervention program. The provision of Medicaid Service Coordination will allow SK-HOV to offer continuity of service coordination that are in need after aging out of early intervention. Thus, Medicaid Service Coordination and Early Intervention are natural extensions of SK's mission and in full keeping with its goal of fully integrating children with special needs into their own communities.

4.2 SKHOV's Programs

All our models individualize programming around the needs of particular children, and intervention regimens are designed to be implemented in a flexible manner. Essential differences in program design pertain to whether the curriculum is aimed at addressing some or all of a child's needs and whether the program staff provide direct service or serve as consultants to external providers.

The Shema Kolainu (SK) center opened in 1998 to serve older children with autism; the preschool programs were added in 1999. The early Intervention program serving children 18 months to three years was opened in 2003. its home based programs were ongoing since 2000. SK now has a continuum of four programs that serve young children with autistic spectrum disorders, including an intensive home-based intervention, a small-group segregated preschool, and an integrated preschool. The curriculum is developmentally sequenced and uses applied behavior analysis techniques, beginning with discrete-trial formats and shifting across the continuum to more naturalistic procedures. Initial instruction is focused on teaching compliance, cognitive and communication skills, rudimentary social skills, and toilet training, as well as on the elimination of serious behavior problems. The small-group classroom emphasizes communication, cognitive skills, and self-help skills; social intervention begins in the form of interactive play with teachers. The emphasis in the integrated classroom is on communication, socialization, and pre-academic skills (Harris et al., 2000).

The average age of diagnosis for children with autism is reported to be over 4 years of age. Yet, 50% of parents of a child with autism report that they suspected a problem before their child was 1 year of age and most parents initially express concern to their pediatrician by the time their child is 18 months of age (Howlin, 1997). With the advent of early intervention and the findings that young children benefit greatly from intervention, especially when it is begun before 30 months. Rogers, S.J. (1998), there has been a thrust to identify autism in younger and younger children.

Early intervention

Research suggests that autistic individuals make more substantial gains when treatment is initiated early. Therefore, it is critical that individuals with autism be identified as early as possible. Unfortunately, there is no definitive medical test, such as a blood test, to identify autism. The situation is further complicated by the fact that individuals with autism tend to be diverse. However, all individuals with autism share common behavioral characteristics, and it is on this basis that a diagnosis.

Parents of autistic individuals often report that as an infant/toddler their child displayed the following:

- appeared as if he/she were deaf (e.g., did not react to noises in their environment);
- did not develop a social smile;
- did not play peek-a-boo or other baby games;
- did not follow people with their eyes or engage in eye contact;
- was either an extremely content or an extremely difficult infant;
- did not show any anticipation of being picked up;
- became rigid when picked up;
- did not "coo" back and forth with others (e.g., did not engage in vocal play with others);
- did not use words to communicate their wants and needs or suddenly stopped using words;
- engaged in unusual repetitive behaviors (e.g., hand flapping, toe walking);
- insisted on having or carrying around a specific object;
- tended to use toys in a rigid/repetitive fashion (e.g., insisted on playing with a toy in a certain way);
- engaged in self injurious behaviors; and
- did not display interest in the activities of others.

The increase in the last decade Early Intensive Behavioral Intervention of EIBI for autism is most probably due to multiple factors, such as continuing research, clinical guidelines (NYSDOH, 1999), popular books and press coverage, resulting in much more informed consumers. However, given the Internet and the plethora of ineffective treatment approaches, there is somewhat paradoxically also a large group of misinformed and misguided consumers (Romanczyk, Arnstein, Soorya, & Gillis, 2002). Within the context of EIBI for autism, the question of degree of improvement is strongly debated among researchers, clinicians, and consumers. One form of the question is "Can EIBI for preschool children with autism result in typical, or 'normal', functioning."

The EI Team of the Children's Evaluation Center at SK sees children birth through 3 years of age. Roughly 20% of the 300 children evaluated each year are given a diagnosis along the autistic spectrum. The diagnosis is made with a multidisciplinary approach involving a developmental pediatrician, psychologist, speech and language pathologist, audiologist and special educator. The diagnosis is a clinical one utilizing standardized instruments to aid in the diagnostic process: the Checklist for Autism in Toddlers (CHAT), Childhood Autism Rating Scale (CARS), and DSM-IV criteria. Later, the team's diagnostic impressions are shared with the family in a parent conference with one of the team members. In addition to sharing diagnostic impressions, the team makes a set of recommendations to the family. These recommendations often involve a referral to the Early Intervention program to make arrangements for a therapeutic preschool program, intensive speech and language therapy and occupational therapy, parent support and parent/child dyadic work for applied behavioral analysis (ABA) management. These children with autistic spectrum disorders are also recommended to receive intensive home-based services with an (ABA) approach. Children may be offered interim speech and language or parent-child dyadic therapy to address behavior management at SK while they await more intensive services at home or school.

Follow-up of children diagnosed early is vital to the care we offer, and provides many benefits to children and families. In particular, in this age group, it is imperative to re-evaluate the child every few months for diagnostic purposes. There are children who do very well with intervention and may no longer warrant the diagnosis of an autistic spectrum disorder by school age. It is unclear whether this population was "cured" by intervention or whether the original diagnosis made in the toddler was an unreliable one. Other children may require an increase or change in their program in order

to progress optimally. The follow-up visit presents an opportunity to advocate for the child's needs and provide feedback to the parent regarding the child's progress and current therapeutic needs.

At SKHOV's follow-up appointments, other treatment modalities can be put into place, such as making orthotics for the shoes to treat the common complaint of toe-walking in children with ASDs. Since children with ASDs often eat a highly restricted diet, due to their dislike of certain textures, they may be referred to a nutritionist to help them achieve a more typical diet. The use of medications for treatment of target symptoms can be discussed with the family over time. Parents may also be guided in how to approach the deluge of alternative treatment modalities offered through the media. Approximately 20% of children with ASDs have a history of language and/or social loss⁶ as seen in the description of Luis. It is recommended that such children be evaluated by a child neurologist with an assessment that includes a 24 to 48 hour EEG to look for the presence of sub clinical seizure activity in the language portions of the brain. Such abnormalities may be treated with anticonvulsant therapy, with subsequent improvement in language and social functioning.

Home-Based Programs

SKHOV's related services (center and home-based) include: speech therapy, occupational therapy, physical therapy, art therapy, music therapy, evaluation services, and parent training and support groups. Technological devices to supplement verbal behavior program include augmentative communication devices and computer software and programs.

Early intervention programs give toddlers a strong start. Our program serves children diagnosed with autism and developmental disabilities, 36 months of age or younger at the time of referral. This program is based on a strong parent-professional partnership. Individualized services focus on learning readiness; language; play; family participation; daily routines relevant to eating, sleeping, and bathing; and other areas jointly identified by SK-HOV professionals and parents. Through EI, children with developmental delays and autism receive education, therapeutic, service coordination and evaluation in the five boroughs of New York City. Programs are based on the child's Individualized Family Service Plan (IFSP) and are designed to involve the family in all aspects of the child's program. Intensive applied behavior analysis is the instructional method.

The special education itinerant teacher (SEIT) program is an individualized program for children ages three to five years of age, operating throughout the five boroughs of New York City that utilizes the child's

natural environment for learning. Certified special education teachers provide home and community-based, one-to-one individualized educational programming for preschool children, ages 3 to 5, with autism spectrum disorders and other developmental disabilities.

Home-based SEIT programming is often combined with the student's school, center-based or day program to encourage the generalization of skills. Some children with autism in SK-HOV's early intervention and preschool programs have made such dramatic progress that it is possible for them to attend their neighborhood nursery school with the assistance of a Special Education Itinerant Teacher. For students who can be mainstreamed, the SEIT provides behavioral interventions and support to the student at the nursery school while acting as a consultant to early childhood teachers.

Parent Training Program

SKHOV's parental training program includes a workshop series that is open to the community free of charge. Lectures are presented every other month to address different topics that are related to ASD. Each classroom is equipped with double-sided mirrors that allow for uninterrupted observations with sound. This equipment can be used for both parent and staff training. Parents are also offered a support group, which serves as an opportunity for parents to share their experiences and knowledge while developing relationships.

There are special needs for families of children with autistic spectrum disorders that include how they can effectively participate in education and intervention. Having a child with an autistic spectrum disorder is a challenge for any family. Involvement of families in the education of young children with autistic spectrum disorders can occur at multiple levels. Parents can learn to successfully apply skills to changing their children's behavior. Parents' use of effective teaching methods, support from within the family and the community, and access to balanced information about autistic spectrum disorders and the range of appropriate services can contribute to successful child and family functioning. It is crucially important to make information available to parents to ensure their active role in advocacy for their children's education. The committee recommends that families' participation should be supported in education through consistent presentation of information by local school systems, through ongoing consultation and individualized problem solving, and through the opportunity to learn techniques for teaching their children new skills and reducing behavioral problems. Although families should not be expected to provide the majority of educational programming for their child, the parents'

concerns and perspectives should actively help shape educational planning, (CBASSE 2001).

The Pre-School Program

The SK center's pre-school offers an intensive, full-day, center-based behavioral program. Instruction is individualized addressing each child's needs, and parent training and participation are mandatory. Certified special educators, speech/language pathologists and center-based behavior therapists staff the early childhood program which is overseen by BCBA approved supervisors and administrators, some with Ph.D's in behavior modification.

The SK Preschool serves as an early intervention program which provides developmentally appropriate learning experiences to address the fundamental needs of children with autism to acquire basic skills and social competence. Children in this program have specific, identified developmental delays. These needs may be in the domains of cognitive, language, motor and/or social-emotional functioning. The children in this program have opportunities to play and interact with age-appropriate peers.

The SK Preschool is taught by special education teachers who are supported by a transdisciplinary team. The team includes a supervisor who also serves as team leader and is the parent liaison. Other members of the team are the education coordinator, physical therapist, occupational therapist, speech/language pathologist, and school psychologist. Each preschool class is supported by teacher assistants who assist the team. The SK Preschool administrator oversees the program. Bus transportation is provided by the City of New York for special education students.

School Age Program

Individual programs will differ from child to child because of the uniqueness of the autistic disorder. Programs at SK are a structured and collaborative effort as determined by the IEP, IFSP, and/or IPP team process to meet the needs of the individual and family. A consensus has emerged among researchers, practitioners, and educators that appropriate intervention/education begin early, usually by thirty months. This has been outline previously in the early intervention section of this paper. Teaching objectives are comprehensive and the child is given opportunities to generalize learned behavior. Individual differences must be recognized in determining program intensity.

4.3 School Age Program: A Closer Look

Characteristics of Effective Programs

- Founded on the techniques of research-based methods and curricula
- Clearly defined (operationally defined) and have entrance and exit criteria (i.e., standards for mastery of goals and objectives)
- Supervised by staff trained to understand the implications of autism
- Inclusive of parents and address training issues, decision-making, and follow-up service provisions
- Conducted in a variety of settings
- Consistent across environments (i.e., home, school, community)
- Designed to allow the child to transition to settings or activities which promote more independent functioning
- Staffed (student/teacher/therapist/child ratio) to provide sufficient support to allow the individual to demonstrate progress in meeting IFSP/IPP/IEP goals, objectives, and outcomes

Curriculum, Instruction, and Plan Implementation

At SK, children with autism require disability- specific adaptations and modifications as we develop their core curriculum. Curriculum modifications, along with age-level expectations and IEP goals and objectives, form the basis for effective program planning. For young children, curriculum and interventions are defined by developmental stages and milestones and are outlined in the IFSP.

Curriculum design and emphasis need to reflect the unique learning styles and abilities of each child. Access to curriculum is dependent upon the following:

- Results of a comprehensive assessment
- Method of instruction
- Use of a specially-designed approach that considers learning style
- Careful selection of appropriate learning materials
- Development of an environment which supports maximum learning
- Appropriate objectives for child development
- Measured methods of criteria for evaluation
- Selection of modified, parallel, or formalized curricula
- Coordination of program across home, school, and community environments
- Staff background and experience

- IEP Goals
- New York State Alternative Assessment

Instruction (methods, tools, and materials) and environment must be selected, adapted, modified, and varied to allow the child to demonstrate progress according to the standard measures identified by the curriculum and the IFSP and/or the IEP. This will be accomplished through emphasis on the child's strengths and by addressing the areas that most interfere with learning (e.g., hyper/hypo-sensitivity to sensory processing, tactile, auditory, or visual).

Programs that appear to result in growth in areas such as social engagement, language, coping, and reduction of difficult behaviors have the following characteristics:

- Applied behavioral analysis is the program utilized to assist a child to gain skills and reduce negative or undesirable behaviors.
- A functional behavioral analysis approach is applied to challenging behavior, looking for the communicative intent of behavior.
- The intervention is planned to acknowledge the communicative intent.
- Positive behaviors are reinforced to reduce negative behaviors.
- Replacement behaviors are used (e.g., substitute a simple acceptable behavior when a child begins to tantrum).
- An individualized approach is used to select a developmentally appropriate method and level of program.
- Several intervention methods (such as discrete trial, environmental modifications, naturalistic teacher moments, or inclusion with typically developing peers) are considered in the selection.
- No single approach is likely to be right for every child.
- The child is watched to see what interventions work.
- The curriculum is organized around normal developmental expectations.
- The child's level of development is analyzed in cognitive skills, adaptive behavior, language skills, fine and gross motor skills, and socialization and play domains. Activities are planned at the child's level.
- The curriculum is language and communication-intensive.
- Socialization and play are actively stimulated.
- Only functional and meaningful tasks are used.

- Basic skills are taught before more complex skills. Task analysis techniques are used to be sure the precursors for a task have been mastered.
- A highly structured and neatly organized, controlled environment is used.
- A predictable routine with a schedule for each child is provided.
- Concrete clues, including meaningful visual stimuli to help the child figure out what is expected and to increase independence, are used.
- Data are recorded to monitor progress and to troubleshoot.
- A formalized assessment of skills (cognitive, language, socialization, adaptive behavior, fine and gross motor, and play) is conducted at regular intervals.
- Assessment results are used as a guide for planning what skills to teach next.
- Data are provided on the success of the interventions employed.
- Outcomes of children with differing profiles in language and cognition are considered.
- Generalization and maintenance of skills are built into the program.
- Mainstreaming opportunities with typically developing peers are built into the program.
- Parent training and family support are used.
- Education about options for intervention is provided.
- Training is culturally acceptable to individual families.
- Collaboration of all team members is used.
- Related services are included (i.e., speech, occupational therapy, adapted physical therapy, and/or augmentative communication).
- Ongoing teacher/therapist training is included. Consider what new and experienced personnel need to know.
- Transitional support is provided when the child leaves one program and moves to the next.
- The skills needed in the next school/program situation are taught and support needed is considered.
- Integration of research and practice is used.
- Follow-up of children with ASD as they grow older is conducted to note factors which have contributed to successful or less successful outcomes.

Plan Implementation- The medical and neurological consequences of ASD prevent these children from learning in the usual way. The difficulty with developing educational/intervention programs for children with ASD results from the multiple symptoms, varied severity, and pervasive nature of the disorder. The key characteristics that must be addressed include, but are not limited to, the following:

- Disturbance in socialization
- Inability to spontaneously model behaviors and deficits in observational learning
- Repetitive and self-stimulatory behaviors
- Other maladaptive behaviors, including aggression, self-abuse, excessive isolation, repetitive and ritualistic behaviors
- Disturbances of attention
- Deficits in all forms of communication Limited self-help skills
- Sensory hyper- and hypo-sensitivity

In planning appropriate educational and intervention programs that meet the unique needs of students with ASD, it is vital to use information and assessment data from many reliable resources. The assessment will yield current levels of functioning. Although all domains need to be considered, the unique profile of the individual with ASD calls for emphasis in the areas of communication skills, social-emotional, behavioral, and sensory regulation.

4.4 An Example of SKHOV's Programs: The Independent Learner

Independent Skills that Make a Difference

Independence occurs in calculated stages. Importance steps are needed to gradually work towards independence, for children of any age.

The use of prompts is important because it increases the likelihood that the desired behavior will occur. Prompts are used to assist in completing a task that is to be mastered independently. Common effective prompts to use include: echoics, or partial vocals; visual/ pictorial prompts, like activity schedules, photos and outlines; and physical prompts.

In order for specific prompts to be effective they need to be delivered immediately after the command, and should be provided based on least to most hierarchy. Prompt fading is important because the goal is independence, where independence is defined as being able to complete a task from start to finish without any interventions or prompts by an adult.

Activity Schedule

An activity schedule is a set of pictures or words that cues someone to engage in a sequence of activities. An activity Schedule can take many forms depending on the child, the activity schedule can be very detailed—breaking a task into all of its separate parts—or it can be very general, using one picture or symbol to cue a child to perform an entire task or activity. Activity schedules are important because children can perform activities independently and they frequently reduce the demands placed on other family members. Scheduled activities are kept by many people, which minimizes the stigmatism of autism, and they are an important method to teach new skills to children with autism. Some prerequisite skills, however, are needed. The child must be able to: identify a picture versus background, match identical objects, match picture to object, and accept physical guidance.

Selection of Materials and Defining the Environment

It is important to select activities that have been previously mastered and that have finite endings. The activity should be easy to pick up and put away and in order to initiate this activity, a specific signal phrase like “find something to do” or “go play” can be used. Pictures are always an effective means of communicating the activity. Simple photos that show only the target materials/activity and avoid patterned backgrounds are especially useful. Select an activity sequence that offers variety, and includes a reinforcer, and at least one activity should include a social interaction, mand, or exchange with PECS.

Identifying a setting for the schedule to take place and making the materials easily accessible is important for establishing independence. Some examples of activities include: puzzles, shape sorters, Mr. Potato Head, board games, computer, worksheets, using toilet, stringing beads, and looking at books.

Personalized System of Instruction

The Personalized System of Instruction, also known as the Keller Plan, is a learning model which is used to teach specific academic skills. Students work through a series self-paced worksheets or tasks. Students continue to learn how to complete basic tasks on their own without teacher prompts. This can be accomplished by increasing the number of pictures and or worksheets, increasing the length of time on the independent task, and/or including an answer key self-check system.

The goal is to create an independent child by creating opportunities for the child to demonstrate a behavior. Setting specific attainable goals in important for both the child and the parent or instructor is just as important as reinforcing the desired behavior with rewards.

Data Collection and Analysis

Data collection is the basis for any behavioral intervention program and is very much in use at SK. Data ensure objectivity and supply a basis of comparison between procedures and programs. Data also provide accountability in intervention, showing clearly whether or not progress is occurring. There are many procedures, the use of which cannot be justified, with- out clear data-based improvement in the child. Data are also a vital aspect of the educational progress for our children. It can determine the exact course of instruction as we see the progress or lack of it.

- Data should be used to evaluate the instructional procedures on a day-to-day basis.
- The teacher and assistant is expected to keep clear and careful records of all sessions.
- At SK the teacher assistant is trained to teach the child with the same capabilities as the teacher and be as careful and scientific in data collection as possible.

Training Components

At SK, our professional staff train the teachers and assistants in the ABA method and are prepared with the knowledge and skills necessary to deliver appropriate services. This is a necessary component in the overall design of our training program and is individualized for each staff member through our module system. This preparation includes initial and ongoing training and support for all levels of our staff.

The SK professionals who plan and provide training also disseminate information on training opportunities to parents, supervisors, and agencies in the spirit of collaboration.

It is understood that educational staff may have a wide variety of training needs, depending on each individual's knowledge level of autistic spectrum disorders, as well as each person's educational and instructional experience.

Part of the training program at SK includes modules which train the educational/intervention staff working with children who have ASD with the following knowledge and skills to best meet their students' needs:

- Are familiar with a variety of assessment methods.

- Use assessment information to design interventions.
- Apply positive behavioral management techniques during assessment and instruction.
- Have knowledge of strategies to improve communication skills.
- Have knowledge of techniques to improve social interaction.
- Have knowledge of accommodations and interventions related to sensory differences.
- Are aware of current legal issues affecting services to children with ASD.
- Understand differences in the learning profile of children with ASD.

4.5 Parental Involvement

A collective, collaborative process between professionals and parents requires each party to share their expertise and resources, respecting the other's efforts and contributions towards the development of a comprehensive intervention plan. While trust and mutual respect evolve over time and should not be seen as prerequisites for beginning to work together effectively, the willingness of both parents and professionals to begin their relationship with confidence in the other's abilities is the first step toward that process.

From the outset, parents are going to be interacting with a service delivery system that is complex and sometimes frustrating. Parents will be coping not only with the day-to-day stress of their child's behavior, and often nighttime sleep disorders, but also with the course of unpredictable outcomes associated with autistic spectrum disorders.

All parents should be expected to participate in the development and implementation of their child's program to the extent that they are able. Most parents are tremendously motivated to help their children but vary greatly in how the motivation manifests itself. Some have the time, money, temperament, and educational background to "specialize" in one variant of a disability to an extent that professionals usually cannot. Such parents will often have current knowledge about ASD treatments that can be shared with professional staff. Other parents, also as motivated, are temporarily or permanently in positions in which they must rely heavily on the expertise and resources of educational

Available Aids

When a child has been evaluated and diagnosed with an autism spectrum disorder, parents may feel inadequate to help their child develop to

the fullest extent of his or her ability. As they begin to look at treatment options and at the types of aid available for a child with a disability, they will find out that there is help awaiting them. It is going to be difficult to learn and remember everything they need to know about the resources that will be most helpful. If they keep a notebook, they will have a foolproof method of recalling information. Write down everything. Keep a record of the doctors' reports and the evaluation your child has been given so that his or her eligibility for special programs will be documented. Learn everything you can about special programs for your child; the more you know, the more effectively you can advocate.

Non-Drug Therapies for Autism—studies on early intervention programs such as ABA, virtual reality and computer programs for autism communication and education, occupational therapies and home-based behavioral treatments, techniques to reduce self-injury, and more.

4.6 Ethical Considerations

Ethical and Professional Considerations

Regional centers, school districts, and other public agencies are responsible for developing and coordinating treatment/educational services for individuals with ASD. Families that receive autism intervention services expect high-quality, professional consideration from the professionals and paraprofessionals serving their children. Parents need to be aware of the conduct and attitude of instructional staff as these could affect their child's welfare. The following practices, to be fused with the standing ethical requirements of districts and regional centers, promote professional and ethical conduct by persons providing services to the families of individuals with ASD.

Confidentiality

Confidentiality is a prime condition in enabling the establishment of an effective therapeutic relationship. Autism, like other medical specialties, requires so much private information for establishing an accurate diagnosis and treatment plan. The Individual Education Plan (IEP) of each child contains important information that contributes to establishing a diagnosis and treatment plan for patients suffering from autism spectrum disorders Kaplan HI, 1998. As a rule, records include not only historical information about the patient, but also his or her recollections, fantasies, feelings, fears, and preoccupations from the past as well as in the present. As such, psychiatric records differ from many other types of medical records. The

right to privacy is a fundamental value in all democratic societies. Declaration of Hawaii (1977) Article 12 of The Universal Declaration of Human Rights, adopted by the General Assembly of the United Nations. Universal Declaration of Human Rights (1948) recognize the importance of preserving privacy in a free society. Unfortunately, the basic principles set out in these documents, although generally accepted, do not always provide the degree of protection that one might expect. It has become increasingly aware of the potentially dangerous practices that threaten the confidentiality of psychiatric records. In recent years, serious incursions have been made by governments, powerful commercial interests, law enforcement agencies, and the courts on the rights of persons to their privacy. On a societal level, the relative importance of individual versus collective rights is once again being brought into question. US Department of Health and Human Services (1999).

With the arrival of the digital age and the relative ease with which huge databases can be created and exchanged, the risks to individual privacy have grown even more rapidly. Canadian Medical Association. (2000) Individual health care information, once entrusted only to one's physicians or close family members, has now become routinely available to a much broader audience. The Hippocratic Oath enjoins physicians to respect the privacy of patients under their care, but statutes now require medical professionals to report to regulatory agencies instances of a whole range of diseases, behaviors, and risks. Professional, ethical, and legal safeguards, such as the requirement of informed consent, offer individuals only limited protection as the pendulum swings in favor of complete disclosure.

5: SUCCESS AT SHEMA KOLAINU-HEAR OUR VOICES

Making the diagnosis of autistic spectrum disorders in toddlers represents a challenging but worthwhile clinical activity. There are data suggesting that a reliable and valid diagnosis can be made in infants and toddlers. There are data to suggest an improved outcome for children diagnosed early who receive an appropriate, intensive therapeutic program. SK works to hone the diagnostic skills and expertise in this dynamic diagnostic and treatment area.

Young students with autism constantly show us their strengths and skills. At SK our staff has learned to work with them and their families to develop individual programs that address the children's needs and to build upon their strengths.

We have also learned to view the outcomes of inclusion and effective instruction broadly. Although developing, implementing, and evaluating

discrete IEP objectives is important, we encourage our staff to look beyond children's learning and generalizing of discrete skills to understand how these skills affect the children across settings throughout the day. We want to know how the skills that we are addressing impact the child's and family's life style. We use the outcome framework described by Billingsley and colleagues (1996) as a guide for this process. Is the child participating as a member in class and in other settings where she spends time? Is he developing successful relationships with peers? Is she acquiring and using those skills that will help her be more independent? Mindful of these two lessons, and the strategies described earlier, we have developed a preschool program that effectively supports children with autism in integrated classrooms.

5.1 Supervision Model

SKHOV strives for professionalism in its highest form. Our model includes a multilayer supervision team that is well qualified and experienced. Every child's portfolio is reviewed daily during the one and a half hour time interval that is set for portfolio planning and review. Weekly portfolio review is done by a supervisor who is BCBA qualified. A monthly review is completed by the educational director of all portfolios. The ABLLS assessment is completed every three months to ensure progress.

SKHOV's approach is based on the following ABLLS-R (Assessment of Basic Language and Learning Skills Revised) by James Partington; research and evidence based practices; individualized instruction; group and peer instruction; PSI (Personalized System of Instruction); related services, including speech, OT, PT, art and music; parent training; TPRA (Teacher Performance Rate/Accuracy); collateral behaviors (reinforcement for other behaviors); and the supervision model.

Contingency shaped behavior is behavior that is under the control of the direct events in the environment. It is teaching behavior that is controlled directly by the events in the teaching environment, especially the behavior of the students themselves. Verbally mediated (or verbally governed) behavior is behavior in which "verbalization mediates between the behavior of the teacher and the events in the classroom," where the teachers classroom instruction is mediated by the verbal behavior from the science and not the behavior of the students directly. Verbal mediated behavior, as used by Greer, is influenced slightly by Skinner's (1957) term "rule-governed behavior." Teachers who are experts in verbally mediated repertoires can solve instructional problems as they are presented.

5.2 Staff Training Protocol

In the first two weeks of training, the staff is given a manual that includes basic literature, tactical decision list, and decision protocol outline. This information is reviewed with a BCBA qualified personnel. Observations are conducted using a detailed form called the Teacher Performance Rate and Accuracy (TPRA) form. These observations are analyzed and graphed by the supervisor and analyzed for mastery level criterion. Public posting is an accepted behavioral tactic to ensure consistency of performance across time.

Ongoing training is provided through staff and classroom meetings. Staff meetings include weekly workshops, Rapid Data presentation, and Personalized System of Instruction (PSI) and Principles of behavior for teaching programs. Classroom meetings include tactical decisions, student performance, and Quality Assurance (QA) meetings.

The Personalized System of Instruction requires students to work independently on course modules, (Keller, 1968, Greer, 2002). PSI was proposed by Keller (1965) as a method of instruction that reduced the role of the teacher and focused on the student's mastery of materials through independent work and frequent testing. At PSI usually has the following six characteristics: individually paced, content mastery (criterion learning), student tutors, use of study guides (behavioral objects), minimal use of lectures, and division of course content into chunks.

The PSI include three types of modules (Keller, 1968, Greer, 2002). The first is verbal behavior about the science which is the vocabulary of the science of behavior, such as positive reinforcement. The second module is contingency-shaped behavior. Contingency-shaped behavior is operant behavior shaped directly by consequence, such as providing positive reinforcement. The last module with PSI is verbally-mediated behavior, or the behavior that is mediated or controlled by verbal behavior rather than contingencies. An example of this is a teacher explaining positive reinforcement to the student.

TPRA: Teacher Performance Rate and Accuracy Scale

The Teacher Performance Rate and Accuracy Scale (TPRA) is a method of direct observation used for teacher evaluation within CABAS (the Comprehensive Application of Behavior Analysis to Schooling) model of schooling. The TPRA builds on the concept of academic engaged time by counting the presence or absence of learning during instruction, (Ross et.al,

2005).The TPRA builds on the concept of academic engaged time (a measure frequently employed during ecobehavioral assessment) by counting the presence of absence of learn units (interlocking three-term contingencies for both students and teachers) during instruction.

Components of a TPRA include: the learn unit; discrete trail (Lovaas); mands and reinforcement schedules; rate of delivery; and collateral praise, (Albers & Greer, 1991). Teacher assistant rank is based on the three PSI modules. There verbal behavior about the science including reading “Behavioral Interventions for Young Children with Autism” Maurice, Green, Luce (1996) focusing particularly to Chapter 5 titled “Selecting Teaching Programs.” Teacher assistants must also read “How to Use Prompts to Initiate Behavior” by R. Van Houten and attend workshops on prompting hierarchies. For the teacher assistant’s contingency-shaped behavior module, 5 TPRA observations with no teacher errors across 5 STO’s that have been scripted. The teacher assistant will also present 350 learn-units daily for ten consecutive school days.

Verbal Behavior About the Science

SKHOV strives for professionalism in its highest form. The model includes a multilayered supervision team that is well qualified and experienced. Every child’s portfolio is reviewed daily during the one hour and thirty minutes interval that is set for portfolio planning and review. In addition, a weekly portfolio review is done by a supervisor who is BCBA qualified and a monthly review is completed by the educational director of all portfolios. The ABLLS assessment is completed every three months to ensure progress.

Verbally-mediated behavior includes scripting ten different student programs, with a minimum of one domain with their supervisor and/or lead teacher. Also, present five “bad” graphs at staff meetings tacting key points with 90% accuracy for each presentation. They will have also completed all corresponding quizzes to mastery and uses questions in readings.

Components of the TPRA (Ingram & Greer, 1992) include: the learn unit (Albers & Greer, 1991); mands and reinforcement schedules (mands are requests made for reinforcement and reinforcement schedules indicate the frequency to access those reinforcers); rate of delivery, or how quickly the teacher delivers instruction; collateral praise, which is a general reinforcement for the classroom; and immediate feedback.

6: THE CENTER-BASED TRAINING MANUAL: AN ABA GUIDE

6.1 Modules

Throughout the school year, daily and weekly training opportunities are built into our school calendar. Trainings include various topics from special education and applied behavior analysis. Attendance is expected at these trainings. In addition, personalized module systems are set up for each employee to help fulfill training needs and professional development goals. Completion of five rows of modules within the probationary period is mandatory. All of Shema Kolainu - Hear Our Voices employees are expected to work on their modules throughout the year. We encourage, support and reinforce the completion of modules as we recognize the better trained our teachers are the more our students learn.

6.2 An Introduction to Discrete Trial Training

The discrete trial is the primary teaching method for a number of the behaviorally-based interventions used in teaching children with autism. In fact, Discrete Trial Training (DTT) is often synonymous with Applied Behavior Analysis (ABA), though that is a practice that should probably be discouraged, as they are two very different things.

Children with autism often face many deficits and difficulties in learning (Romanczyk in Maurice, 1996). Discrete-trial training can help to compensate for these difficulties.

Attention

Many children with autism begin a program with rather short attention spans. In DTT, tasks are broken down into short, simple trials. At the start of a program, interactions may only be a few seconds in length. As the child's attention span increases, the length of the interactions increases accordingly.

Motivation

Children with autism may not be as motivated to work as other children might be. DTT attempts to build this motivation by rewarding performance of desired behaviors and completion of tasks with tangible or external reinforcement (food, toys, time to play, etc.). That external reinforcement is paired with social praise which as a result conditions praise as a reinforcer with in order to condition praise as a reinforcer etc.

Stimulus Control

Discriminating between stimuli which we would like to think of as important -- teacher/parent requests, invitations from peers, important environmental cues (school bells, alarms, weather, etc.) -- and all the other "background" stimuli is often difficult for children with autism. In DTT the presented stimuli (typically instructions from a teacher or parent) are clear and relatively consistent. The child is given rewards only for behaviors in response to those stimuli so that eventually he comes to understand that certain stimuli are probably more deserving of his attention than others.

Generalization

Generalization, the application of a behavior or skill across a number of environments or to a number of related behaviors, is typically quite difficult for children with autism. Consequently, the instructions in good DTT programs are designed to change over time, in content (antecedents, multiple exemplars) and context (teachers, setting, materials). Long term objectives should take this in to consideration; can the child perform this activity in a variety of settings, across teachers, materials, etc.

Cause-effect learning and observational learning--Children with autism typically have a great deal of difficulty in "picking things up" from their environments. To compensate then, DTT teaches skills and behaviors explicitly, without relying on these areas of difficulty.

Communication

Often in children with autism, both expressive and receptive language are deficient. Teaching that relies on a great deal of verbiage from the teacher, then, is often too difficult for these children. The instructions given in discrete trials are simple, concrete, and clearly provide only the most salient information, especially at first. As the child progresses and his receptive language become stronger, these instructions can become more complex.

Perspective Taking and Understanding of Social and Behavioral Expectations

While there is little built into the DTT structure to directly address deficits in social cognition and perspective taking, they are designed to avoid reliance on these deficient skills. Discrete trials can be designed to teach those deficient skills explicitly, however.


A discrete trial is a single cycle of a behaviorally-based instruction routine. A particular trial may be repeated several times in succession,

several times a day, over several days (or even longer) until the skill is mastered. There are four parts, and an optional fifth, to a discrete trial.

- Antecedent or (AKA) discriminative stimulus (SD) -- the instruction or environmental cue to which the teacher would like the child to respond. This is the antecedent.
- The prompting stimulus (SP)-- a prompt or cue from the teacher to help the child respond correctly (optional and as needed only)
- The response (R)-- the skill or behavior that is the target of the instruction
- The reinforcing stimulus (SR) -- a reward designed to motivate the child to respond and respond correctly. This is the consequence.
- The inter-trial interval (ITI) -- a brief pause between consecutive trials, in our case is 3 seconds.

This illustrates the order of a discrete trial. First is the teacher's instruction (S^D). If the teacher thinks the child may need some help responding correctly, she will give him a little prompt, cue, or model to help him out (S^P). Then, either with help or without, the child gives some response to the instruction (R). If the child responds incorrectly she might correct him, and then give him another chance. If he responds correctly, or close to correctly, the teacher might give him some reward or praise to encourage him (S^R). After that is completed, the teacher might want to pause for a bit before continuing, to let the child know that they have completed one set and have moved on to the next (ITI).

For example:

<p>S^D /Antecedent: "pick up your toys" Response/Behavior: student picks up toys (S^R)/Consequence: "thank you"</p> <p>Or</p> <p>S^D /Antecedent: Point to yellow Response/Behavior: Student points to blue (S^R)/Consequence: Teacher demonstrates correct answer by pointing to yellow (there is no praise here)</p> <p> Stop for Training activity</p>
--

6.3 Establishing Attention

Knowing how to present a correct, intact discrete trial is essential for student learning however before you begin instruction you have to be sure your student is ready to receive instruction. Establishing attention ensures this and allows you to use student's time and your time wisely. It is important to reinforce attending when it occurs. Deliver behavior specific praise when you see the behaviors you are looking for. (i.e. "thanks for looking at me", "good looking at me...", "wow you are in your chair"). These are trials as well, they are important for student learning.

In order to reinforce these attending behavior be sure you have identified things your student may work for. What does your student like? These are preferred items and may function as reinforcers (they increase behavior). Deliver them to your student for attending. Many students may need programs that teach attending skills. Be sure to assess this before you begin more difficult programs such as matching, following directions and identifying body parts etc. We refer to these as Instructional Control programs and they are considered to be a prerequisite for learning. It is necessary to avoid assuming that a student is ready to learn because the teacher is ready to teach. Some examples of Instructional control programs are: attend to name, eye contact (look at me), sit still, hands down, etc.

6.4 The Antecedent/Discriminative Stimulus

The antecedent/discriminative stimulus (SD) is a specific environmental event or condition (a stimulus) in response to which the teacher would like the child to exhibit a particular behavior. The desire is to have the child begin to discriminate certain stimuli (teacher/parent/peer requests, important environmental events, etc.) from the background noise of everyday life, and ideally to recognize that stimuli as something more important than the background noise. In the context of instructional programs, the discriminative stimuli to which we desire the child to respond are typically an instruction or request from the teacher or parent. However, it is possible to design discrete trial programs around other stimuli. This is often a slightly more difficult, and may require a bit more creativity on the part of the instructor, but responses to many environmental events other than requests are often very important. For example, a child might need to be taught what to do when he hears a particular school bell. Should he line up? Leave for the bus? Get his lunch out? Or he may need to be taught what to do when he sees his classmates lining up, or when he hears a knock on the

door, or when he completes a task, or when he walks into a room. Each of these are various stimuli that one might wish to teach a child to respond to.

6.5 Guidelines for Designing and Delivering Discriminative Stimuli

The child's attention should be obtained before making any type of presentation. This may seem obvious, but is often overlooked, especially in the "heat of the moment" in a busy classroom or at home. Often something as simple as preceding a request or instruction with the child's name is enough to gain his attention. But if the child is engaged in some other task, event, or some self-stimulatory behavior the instructor may either wait until that task or event is completed (or, ideally, in my opinion, the teacher could jump into that activity with the child, following his lead, while maybe working in some practice of appropriate target behaviors; the teacher could then return to the targeted lesson later), or may try to disengage the child from that activity if it is not appropriate or desirable at the time, before an attempt to begin a teaching session.

Early on in a program, especially, instructions should be simple and clear and should concisely communicate only the most salient information. Of course, as the child progresses, the instructor can make use of more natural and more complex instructions. The discriminative stimulus used for a particular lesson should be consistent in the beginning stages (as in the example presented earlier, where Joey was asked consistently, "Show me blue."). As soon as possible, however, a variety of instructions in a variety of settings should be used to encourage flexibility and the generalization of the targeted skill or behavior. Repetition of the instruction should be avoided. There will be some discussion on steps to take to avoid this (primarily setting time limits on responses) later in this guide, but essentially, we want to avoid nagging kids as much as possible.

6.6 The Response

The response (R) is the behavior that the child exhibits after and as a result of the antecedent or a discriminative stimulus. The response that we are interested in is only the one in which we presented an antecedent for (target behavior). If the child is reacting to stimuli other than those that the teacher has targeted, the instruction may need to be rethought. Is the environment too distracting? Does the child have difficulty with stimulus control that may need to be addressed?

To ensure that everyone working with a child, and the child himself, is aware of what is to be considered a correct response, the criteria for the

expected response should be described in detail before that trial is begun. Consider the following target response:

"Joe will identify a letter when requested."

At first glance this might appear to be an accurately described behavior, but I'd argue that it needs further refinement. How exactly is Joe supposed to identify the behavior? Is gesturing towards it accurate enough? Does he need to pick it up and hand it to someone? What if Joe, after he were asked to identify the letter T, were to play with his shirt for 20 seconds before pointing to that card? This ambiguity can be avoided if the target is rewritten a bit more specifically:

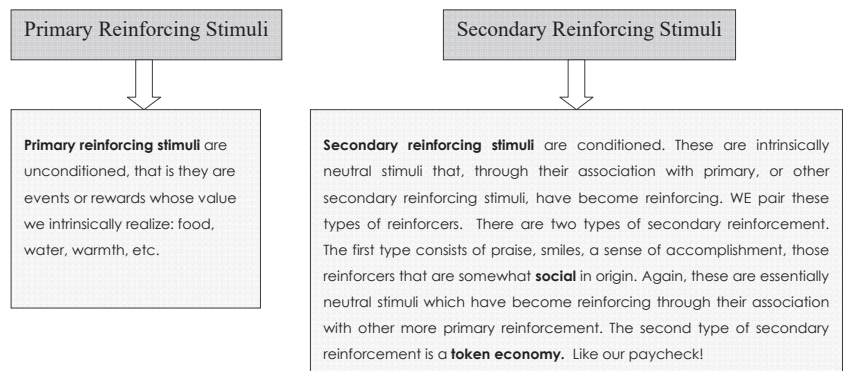
"Joe will pick up the card and hand it to his teacher within 3- 5 seconds of the request."

This is an operationally defined behavior is and is clear and easily measurable.

Reinforcement

Reinforcing stimuli are environmental events that occur after a behavior that increase the likelihood of that behavior occurring in the future. Treats, praise, special privileges, music, toys, virtually anything can be used as reinforcement, if it serves to increase the occurrences of a particular behavior. Reinforcers do not have have degrees of "reinforcerness", an item either is or is not a reinforcer, we don't use terms such as "powerful reinforcers". Items can have a degree of preference but preference is not the same as reinforcement. Reinforcers must increase a behavior, preferences are just that.

There are two varieties of reinforcing stimuli:



The use of primary reinforcement has a few advantages. Primary reinforcement is intrinsic; it does not have to be taught. While some children may not yet find much value in hugs or praise, and consequently are not yet willing to work too strenuously to gain them, most children have a favorite snack or treat that they might be willing to do a little something for. Also, primary reinforcement will not extinguish, it will always remain reinforcing. Primary reinforcers are subject to satiation after a relatively short period of time. Believe it or not, there are only so many M&Ms that one can eat. Do we use primary reinforcers? Absolutely but it is not our long term objective because primary reinforcement is not especially representative of the natural environment.

Secondary reinforcement has a number of advantages. First, conditioned reinforcers are typically more convenient to use than primary reinforcers.

Secondary reinforcement lessens the need for proximity to a child and can be used to broaden the interests of the child. By pairing new or less reinforcing activities, foods, or objects with those that are more reinforcing, they can themselves become more desirable to the child. Finally, using a token economy system can increase the length of time between presentation of reinforcers, allowing for longer periods of instruction, with fewer interruptions, and a lessened likelihood of satiation. If secondary reinforcement has a disadvantage, it is that they must be taught, and occasionally maintained by pairing it once again with a primary reinforcer to reestablish interest.

When teaching kids with autism, any delivery of primary reinforcement should be paired with secondary reinforcement, especially social reinforcers: praise, eye contact, high fives, hugs, brief games. Some kids with autism do not yet find many of these things terribly reinforcing. It is our job to teach them to enjoy these things as much as possible. Remember the idea of preference; we would like to take preferred items and condition them as reinforcers.

Schedules of Reinforcement

Fixed/Continuous: Every occurrence of correct responses is reinforced. This is a strong technique when working on a new or difficult skill. FR 2 means that every 2nd correct response results in the delivery of a preferred item. Basic instructional control/attending programs are often on FR1 (eye contact; attend to name, hands down, sit still etc.)

Intermittent/Variable

Not every occurrence of correct responding is reinforced. It is important for reinforcement to be random therefore the child is unable to anticipate when reinforcement will occur. This strengthens behavior and can prolong deprivation/decrease satiation. Intermittent reinforcement for inappropriate behaviors (behaviors you want to decrease) can actually strengthen them and make them harder to get rid of. This is very tricky, be sure to discuss how and what to reinforce when trying to decrease a target behavior. Our goal is to move to an intermittent schedule as soon as possible to avoid satiation. Additionally, skills that are reinforced intermittently are more resistant to extinction. Always pair primary reinforcers with secondary reinforcers (i.e. a skittle with “that’s good looking”). Behavior specific praise is most desirable. It is necessary to update the reinforcer inventory on a regular basis. Part of your responsibility is to continuously cultivate new reinforcers.

Reinforcement is individually determined by the child. A reinforcer is NOT reinforcing if it does not increase the behavior. DO NOT assume an item continues to be reinforcing if it was in the past. Varying reinforcers as much as possible will help avoid losing potency. The last response emitted by the child prior to reinforcement is the response that is reinforced. When an appropriate response follows an inappropriate response DO NOT reinforce. For example, if a child claps his hands then screams and reinforcement is delivered, you have just reinforced screaming. If the child ends a program with an incorrect give him/her the opportunity to respond to something correctly in order to earn reinforcement A low probability response will increase if paired with a high probability response. For example, if a child does not like cleaning his room, cleaning his room will probably increase if having computer time follows.

6.7 Prompting

Prompting is presenting a stimulus to assist the child in producing the targeted response after a given discriminative stimulus. As part of your training you will participate in a workshop that goes into greater detail about prompting. Some children become quickly dependent on prompts, unfortunately, and wait for the adult to provide that prompt before they make any type of response. Consequently, prompting should be faded as soon as possible. That is, the prompting should be gradually diminished until the child is performing the behavior on his/her own. AT SK-HOV we provide prompts as they are needed based on our knowledge of our student’s learning style. Whether your student learns from a between session prompt

hierarchy, across session prompt hierarchy, echoic or textual prompts it does not matter. We provide individualized instruction; prompts are designed to meet our students' needs. Prompts can be useful teaching tools, as long as they are faded in a systematic and efficient manner.

Prompts: There are six basic varieties of prompts:

1. Verbal prompting (AKA Echoic) is the providing of a verbal instruction, cue, or model, or overemphasizing the correct word in an array of choices. This is in addition to an antecedent. A full verbal prompt might involve the adult saying the entire word or phrase that he is trying to illicit from the child, whereas a partial verbal prompt might be providing only the first sound or syllable to cue the child to proceed.
2. Modeling is the acting out of the target behavior by the adult or another child with the hope that the child will imitate.
3. Physical prompting involves actually touching the child. A full physical prompt might involve moving the child through the entirety of the behavior (for example, guiding his hand to select the right card from an array, and then guiding it further to hand the card to the adult). A partial physical prompt might be just touching a hand or shoulder to get the child started on the behavior.
4. Gestural prompting includes pointing to, looking at, moving, or touching an item or area to indicate a correct response.
5. Textual prompt includes using printed material to assist the child in providing a correct response. Can be written words, letter, numbers or sentences. For example if teaching a child to recite their phone number it would be presented in conjunction with the antecedent "what is your phone number". Upon criterion the text will be faded.
6. Positional prompting involves arranging the materials of the trial so that the correct item is in a position advantageous to the child. For example, if a trial consists of picking a picture of a named object from a group of three pictures, one might initially arrange the trial so that the correct choice is directly in front of the child, while the two incorrect choices are on the other side of the table. As the child progresses, the other cards can be gradually moved closer until they are even with the correct choice.
7. Inadvertent prompts Be careful: these are prompts that you do not want to give.

Nonverbal	Patterns	Feedback	Other
Glances Posturing positional	Presenting stimuli in same order Not varying array/exemplars	Facial expressions Mouthing answer Giving hints Self correction	What do you think?

6.8 The Portfolio

Contents of the Portfolio

- Student Information: provides student name, address, ID # & parent information
- ABLLS scoring protocol/Behavior Language Scale
- Reinforcement Inventory: provides a running list of items that the student finds reinforcing to use throughout therapy sessions. This should be updated as new reinforcers are observed for the student. Reinforcers are broken down into primary & secondary. Primary includes food or drink, things we need to survive and secondary things are toys, songs, and any other conditioned reinforcers.
- Program Mastery Sheet is a list of all the programs within the ABA Program book. Dates of introduction and mastery are recorded. An entire program is mastered when all steps that are age appropriate or appropriate for the student's individual ability are taught. A program can be mastered with as little as 3-4 steps for example.
- Verbal Behavior Sample: A book may or may not have this section, depending on the verbal abilities of the child. A verbal behavior sample is the documentation of any words, utterances & sounds that the child produces. Verbal approximations are recorded. To the best of your ability try to phonetically spell what your child said. This helps other team members in looking for and accepting the same responses. A verbal behavior sample provides a way of tracking development of spoken language for a child whose language is emerging.
- Current Programs: This section is the bulk of the book. In this section you will find the students formal programs, current step sheets, data sheets & graphs. Here is a list of what accompanies each program in the Current Programs section:
 - Program Sheet: provides the therapist w/ the procedure for presenting the program, prompting procedures, criteria for mastery, & steps (which should be created by the therapist because they are student specific).
 - Current Step Sheet: found directly in back of the program sheet. Clarify with your supervisor if you will be using this. This is

documentation of all the current steps being run with the student, start and mastery dates. Therapists should make sure to document modifications made on specific steps, as well as steps placed on hold.

- Data Sheets: This sheet is where your discrete trials will be recorded. Information for the top portion of the data sheet is found on the Program sheet. Complete the data sheets like this: write students name, fill in program title; fill in the antecedent—or the verbal/textual etc. command delivered to the student; fill in the reinforcement schedule--this will be either fixed (reinforcing the student for every ___ correct trial) or variable (reinforcing the student randomly, about every _____ number of correct response, etc.); each trial is recorded downwards (1-10/20); initial the bottom of each row; data on the sheet must be recorded on corresponding graph; target and mastered responses.
- Graphs: Graphs are a representation of the student’s progress which allows us to see patterns of skills acquisition, progress & difficulties. When a new program is started, a probe session should be conducted to determine where to begin a program. Probes are not always graphed; see your supervisor for clarification. Each STO is run until the student meets mastery criteria. Mastery criteria may differ for each child but is typically 90% correct across either two teachers or two days. When the student masters a particular step, a phase break in the graph must be drawn on the graph. Graphing is based on number correct not percentages (i.e. 19/20). However there may be exceptions, discuss with your supervisor. Number of trials correct are graphed with a CLOSED CIRCLE and connected by a solid line.
- Ratio/ Learn unit to criterion graph: each student must have this graph at the end of their portfolio. This graph is completed once at week, at the end of the week or before the first session of the week. This graph allows the lead teacher/team to measure instructional efficiency as it represents on average how much instruction the student needed to master one objective. To calculate: add the total of all instructional units over the week/total number of objectives met for the week.

For example: Sam received 700 (total trials for week)/6(objectives met)=117.
117 is what is graphed for the week.

- Data collection: Responses will be recorded on the data sheet as a (+) or (-). Record a (+) on the data sheet if the child emits a correct response as indicated on the program sheet (note: this may include a prompt). Record a (-) on the data sheet if the child does not respond within 3 seconds or emits an incorrect response and provide a correction, unless otherwise specified in the STO. If a student responds independently when a prompt is scripted in the STO, circle the +.
 - Mastery Criteria- Most students will have a criterion of 90% or better across two therapists for two consecutive days. Some students have individual criteria such as 8/10 or better across two therapists for 3/5 days, as long as data does not fall under 5/10 within that time span. There also cannot always be two therapists assigned to each case. Therefore, mastery of steps can be checked by a supervisor or lead teacher.
 - Phase Break- is a dashed vertical lines made to represent the mastery of one step and the beginning of another.
 - Graphing Legend- The number of correct responses is graphed by a solid circle. If you are using two symbols the second symbol is graphed as an open circle. These points are connected by a dashed line and the solid points are connected by a solid line.
- Fluency- Each child's program book includes a section for fluency. Data for these programs will be collected and graphed on a standard celebration chart. Each of these programs is timed and can be run up to 3 times a day. Running fluency drills is used to address retention and endurance. Mastered targets are placed in fluency drills (see supervisor for training, length of timings). In order to run a timing you should have no less than 2 mastered targets unless you are running 5+4 fluency timings.

How to Write a Short Term Objectives (STO's)

Short term objective are observable measurable goals related to a student's IEP and or assessment. These are small steps that would lead to mastery of a terminal or long term goal. Specific components are required for a short term objective to be complete, they are: who (the student, never the teacher), behavior (defined in observable and measurable terms), conditions (may include setting, materials and prompt levels), mastery criterion.

It is possible to identify short term objectives by reviewing the IEP, conducting an assessment (the ABLLS unless otherwise approved) and use probes to determine prompt levels. Beginning at a level that will challenge the student, but still allow success, is most important. The STO should not be too easy, but it should not be too hard either. Including prompts and following a developmental order (ABLLS) ensures assessment whether the student has the prerequisites for the program or not. The end STO should be a little more challenging, as STO's are building blocks to achieve a long term goal. Graphing the student's results makes it easier to analyze and review progress.

Data collection is essential for monitoring student performance and portfolio maintenance is an important tool. It is important to be organized and prepared and to keep extra copies of paperwork, like graphs and data sheets.

When a teacher is becoming familiar with a variety of programs, it helps to remember the following things:

- Listener programs are nonverbal antecedents such as “Touch” “Show me”, “Where is?” etc. Listener programs measure the students’ ability to identify, not label. Play programs & One Step Action Commands are examples of this as well. These programs focus on the students’ ability to follow language. You will not provide a model for the student to follow in these programs, but will tell them a command in which they will follow.
- Listener/Speaker programs call for verbalization from the student. Antecedents will be “What is this”, “Tell me”, or the presence of the item without a vocal antecedent.
- Imitation programs simply mean: “Do what I do”. You will provide the student with a physical model & the student will imitate exactly what you have demonstrated. The antecedent is “Do this”

Other Considerations

Programs are typically run in 10 and 20 trials blocks. Depending on your students learning ability and team discussion programs, however, programs may be run interspersed. In this case you may use a clipboard or different data collection form. Data are graphed on their respective graphs. When a teacher chooses to modify a program, the modifications must be discussed with their supervisor to ensure appropriateness and effectiveness.

Steps must progress as the student does, so it is important to review graphs for progress and/or lack of progress. The data analysis protocol is important here. If there is inconsistent data between teachers, a meeting needs to

take place in order to determine what responses are being accepted for a particular step. This ensures communication. In a program which is not center based, it is so important to have support, and collaboration between teachers and supervisors.

See also "General Guidelines for Portfolio Maintenance," Appendix C.

Graphing

Y axis (vertical line) identifies what is being measured

X axis (bottom of the graph) usually represents time, to see how frequently a behavior is being measured

Data point represents the raw data collected; each data point is graphed independently

Data path is the line that connects data points

Phase line is a dashed line drawn to indicate there was a change.

STO's are written on the top of the graph and should correspond to the child's current step.

6.9 Changing Behaviors

Behavior Decrease Policy

SKHOV's philosophy on inappropriate behaviors is that they are best eliminated by teaching children to gain attention for appropriate social behavior, academic competence, and enjoyment of schooling. Research has shown that frequent opportunities to respond and high rates of positive reinforcement are empirically sound and ethically acceptable methods for the reduction of student maladaptive behavior, (Greer & Kelly, 1996. In addition, we may conduct a functional assessment or analysis of inappropriate behavior to determine the purpose the behavior serves for the child. This will be done under the supervision of a board certified behavior analyst. With this information, more socially acceptable behaviors may be taught to replace the inappropriate behavior. In some situations medical intervention may be deemed necessary.

At times the service provider may use physical prompting to guide the student through the performance of directions given; our goal is to teach the child to comply with directions and to respond appropriately when placed in demanding settings. Instruction is arranged to prevent the student from escaping or avoiding the instructional setting and the demands presented.

SK-HOV has an established set of guidelines for the interventions concerning inappropriate or maladaptive behaviors. The goal of these

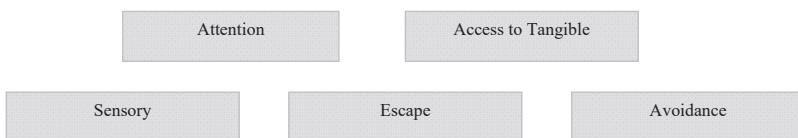
guidelines is to implement the least intrusive (yet effective) procedures in the home, community, or classroom setting. The service providers and the Behavior Analyst will together analyze the function of the student's behavior and outline the procedure(s) to be implemented to decrease the maladaptive behavior(s) and increase more appropriate socially acceptable behaviors.

Behaviors targeted for decrease must be defined, measured continuously, and graphed daily. All service providers will be trained to run programs before they implement a program independently. Prior to implementing any decrease plan each service provider must participate in an in-service conducted by a board certified behavior analyst.

See also Appendix B for full "Behavior Decrease Policy."

Functional Assessment

At times, inappropriate behaviors serve as an indication for the need to change a student's environment. Identifying these behaviors is important for a student as they learn to manage their own behaviors in order to participate in a less restrictive environment. Functional assessments are conducted to focus on the purpose of that target behavior, as defined by the environmental events that occasion and maintain the target behavior. At SK-HOV functional assessment are conducted in collaboration between teachers and their supervisors, team members, and with family members. The purpose is to identify the function of the behavior in order to teach alternative strategies. Only through accurate assessment can appropriate replacement behaviors be taught. The five functions of behavior that are most commonly cited in the literature are:



All functional assessments conducted on students will include data that are gathered from three sources: interview with individuals significant to the student's environment; a review of progress reports, evaluations, and other pertinent records; and direct observation of the target behaviors. *See example in Appendix B.*

The interview evaluates whether a student emits target behaviors. These behaviors are seen throughout the day and across a variety of settings

and people. This will be the first intervention for these behaviors. Prior research has demonstrated the effectiveness of conducting functional analyses in determining stimuli that produce automatic reinforcement (Piazza, Hanley & Fisher, 1996).

Baseline and treatment data on the targeted behavior must be operationally defined and observable by all parties. Data are collected in the following conditions: social attention, demand, ignore, play, and tangible. Assessments also need to include, information on the immediate antecedent events associated with the targeted inappropriate behavior; information on the consequences to the targeted behavior to determine its function, including previously used interventions; ecological factors; and any possible health and medical factors which may influence the student's behavior.

Questions to ask include:

- What are the differing circumstances under which problem and replacement behaviors occur?
- What are the circumstances under which the problem behavior does NOT occur?
- Does the behavior (problem and/or replacement) occur at certain times of the day (e.g., individual transitions poorly, has difficulty in non-structured activities)?
- Does this behavior occur only in the presence of certain people?
- Does the behavior occur prior to or collateral with any other behavior (e.g. doing an assignment)?
- Could the problem behavior be related to a social or an academic skill deficit?

Data Analysis Review

Identifying a student's learning pattern is one of the most important components of behavior analysis. Data is collected and graphed on all programs whether they are attending behaviors (eye contact, look here...) or play school, toilet training or handwriting. Data is collected in order analyze trends in learning, which in turn aides in adapting teaching procedures. In order to analyze data systematically, certain rules need to be followed.

The path from one data point to another is called a data path; this is what is counted to determine trends. A count of three data paths is the earliest opportunity for a decision to be made about teaching efficacy. If there are three ascending data paths, the program should be continued. Conversely, if there are three descending data paths, the program should be changed (after discussion with the supervisor). If there are three flat paths,

the program should also be changed. If 3/5 paths are ascending, the program should be continued, just as 3/5 descending paths should result in a change of program.

Teacher Quizzes

After reviewing The Center-Based ABA Manual, teachers are given a set of quizzes to complete, including 1.) discrete trial teaching quiz; 2.) prompting quiz 3.) reinforcement quiz; and 4.) writing STOs.

See Appendix B for examples of each quiz.

Staff Training Task Analysis

See Appendix B for checklist

7 RESULTS

7.1 Teacher Performance Rate and Accuracy in Relation to Training Procedures

10 TA Training Data

Phase 1: Observation

Phase 2: Manual

Phase 3: TPRA

Procedures/methods

DV: Teacher Performance on Accurate delivery of instruction in a 1:1 setting

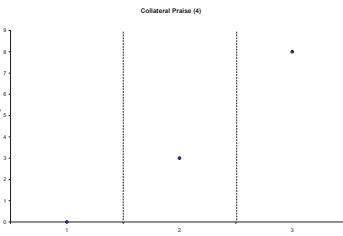
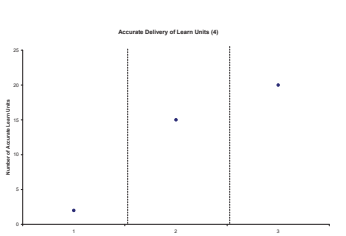
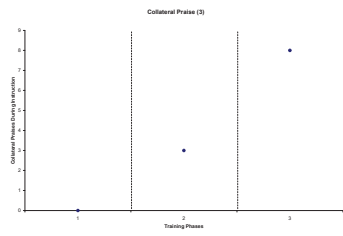
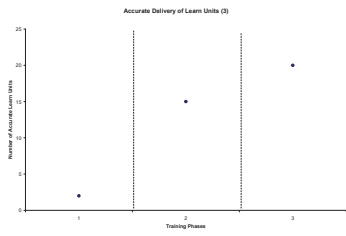
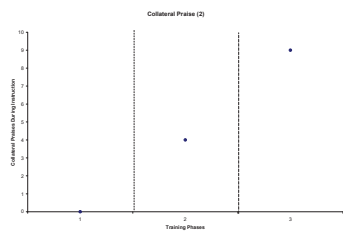
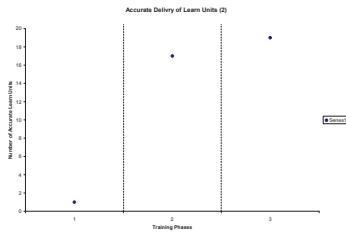
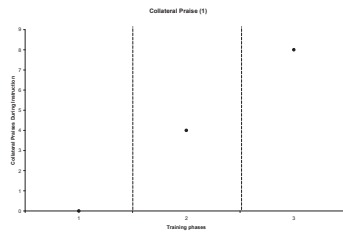
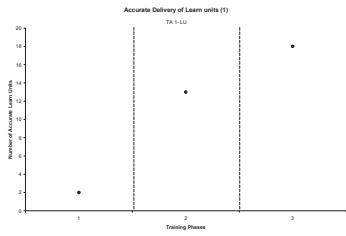
Teacher Performance in delivering Collateral Praise while delivering instruction in a 1:1 setting

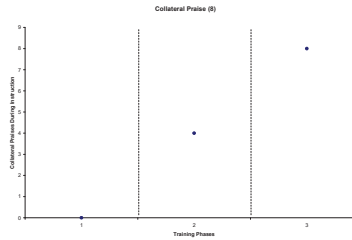
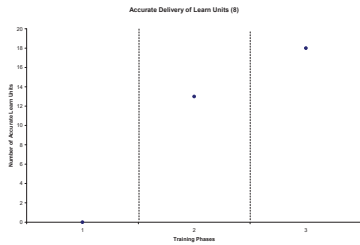
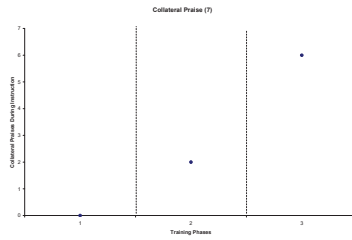
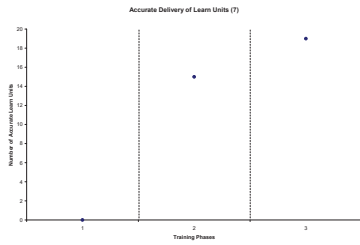
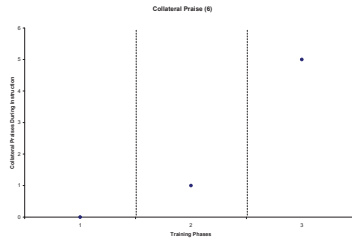
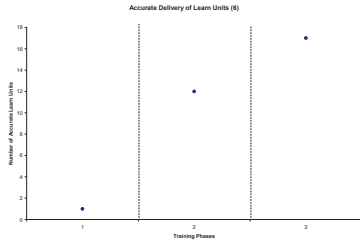
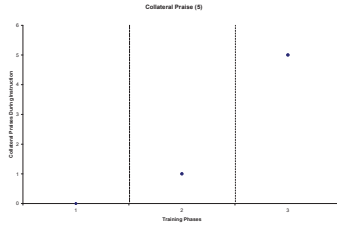
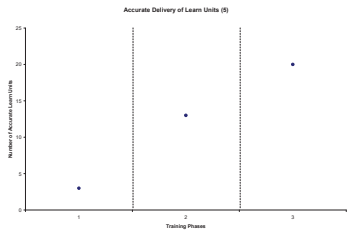
IV: Training Procedures

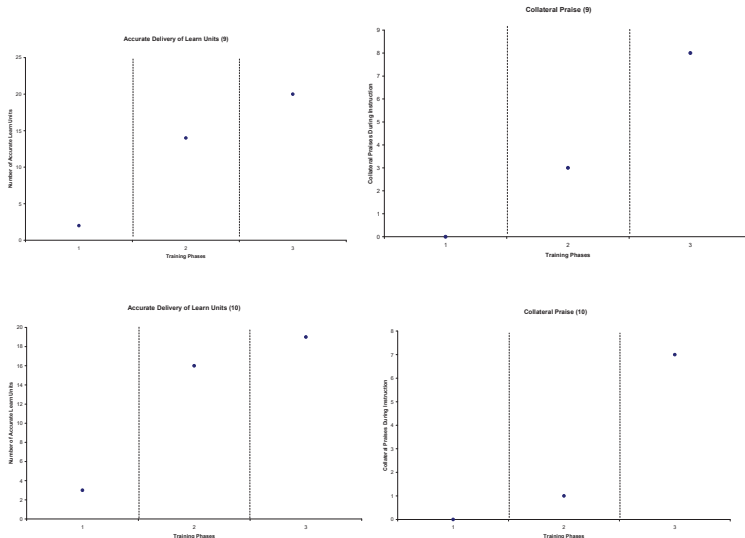
Faze I: Teacher Performance following a 3 hour observation of a 1:1 discrete trail teaching.

Phase II: Teacher Performance following a 3 hour observation and a review of the Shema Kolainu ABA manual.

Phase III: Teacher Performance following a 3 hour observation and a review of the Shema Kolainu ABA manual, and 10 Teacher performance rate and accuracy observations.







Results

Graph 1-10: Graphs 1-10 display the teacher performance on the number of correct delivery of 1:1 instruction following no formal training in phase I. Data in all 10 graphs show low level of accuracy ranging between 0-3 accurate trails presentations out of 20 total trails presented under this phase of the training procedures, resulting in less than 15% accuracy across all 10 teachers. In Phase II of training procedure, all ten teachers had an increase in accurate delivery of instruction data ranged between 13-17 accurate deliveries of trails, resulting in 65% to 85% accuracy of instruction across all 10 participants. In the third phase of training data for all ten participants were at mastery level, ranging from 85% to 100%.

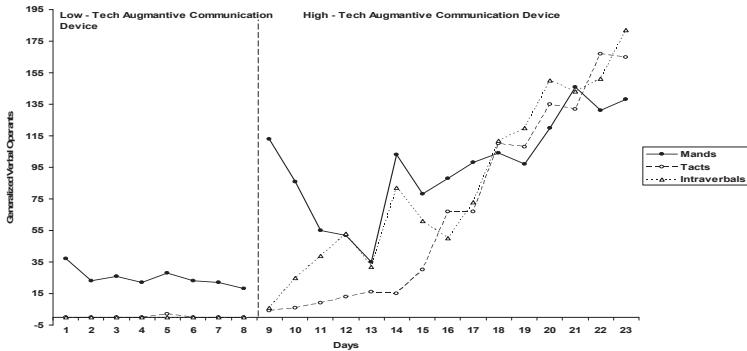
Graph 11-20: Graphs 1-10 display the teacher performance on collateral praise delivery during 1:1 instruction following no formal training in phase I. Data in all 10 graphs show no collateral praise during phase one of the training procedures. In Phase II of training procedure, all ten teachers had an increase in collateral praise delivery during instruction data ranged between 1-4 deliveries per 20 trail program, resulting in 5% to 20% rate of delivery across all 10 participants. In the third phase of training data for all ten participants increased to the appropriate range of collateral praise

delivery ranging between 5-9 times during a 20 trail program, ranging from 25% to 45%.

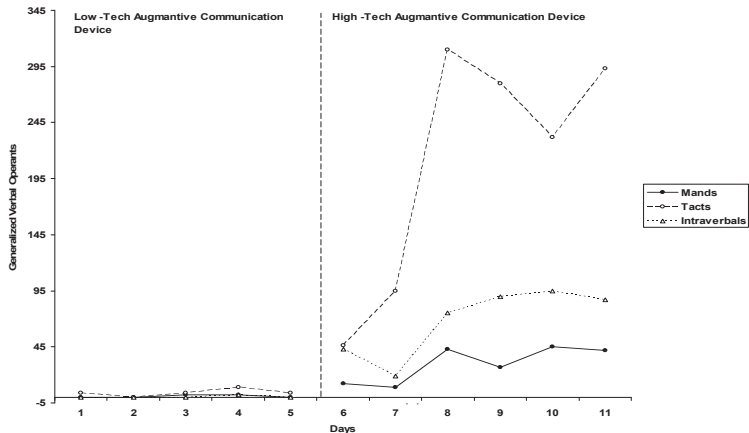
7.2 Augmentive Communication

The implementation of augmentative and alternative communication (AAC) devices with children on the autism spectrum increase in verbal operants. The current investigation focuses on the evaluation and implementation of AAC devices with school age children presenting with ASD. This study explores prerequisite skills needed for successful implementation of an AAC device by examining the children's performance on the ABLLS assessment, as well as direct observation of functional communication in the classroom. This study measures the increase of verbal operants following the implementation of the AAC devices and is designed with a multiple baseline across participants. Three Verbal Behavior operants were measured; generalized mands, generalized tacts, and generalized intraverbals.

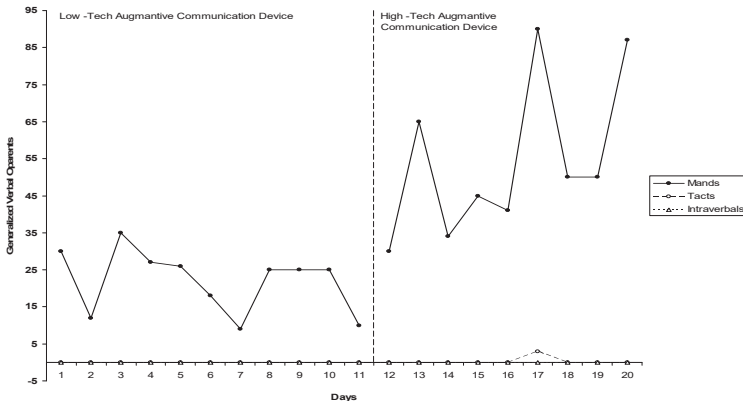
Graph for Student A



Graph for Student B



Graph for Student C



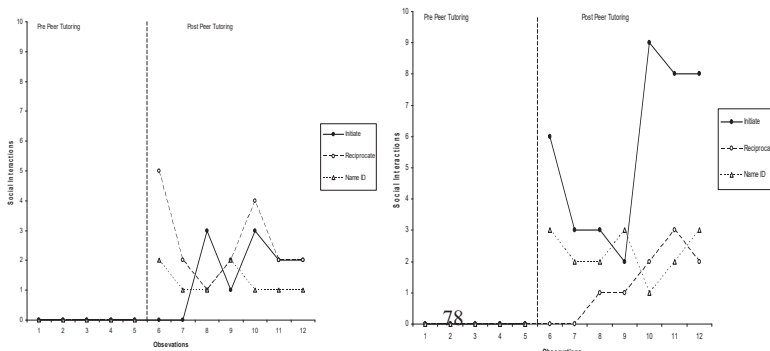
It is clear from the above three graphs that different trends for each learner based on their verbal behavior are evident. However, all students' communication increased following the implementation of a high tech AAC device. It is important to note that Student C requires additional interventions to strengthen his listener and listener/speaker domains.

7.3 Verbal Behavior

The data focuses on confectioning peers as reinforcers through peer tutoring training. Four preschool students and two school age students with ASD participated in the study. Reinforcement schedules were monitored by the trainer and implemented by the tutor while trials of already mastered targets were presented to the tutee. The effects of peer tutoring on increased socialization in free play settings for both the tutor and the tutee were measured once criteria was met on reinforcement delivery in peer tutoring sessions.

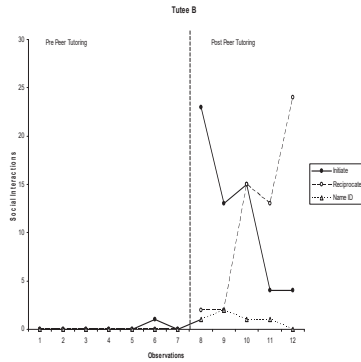
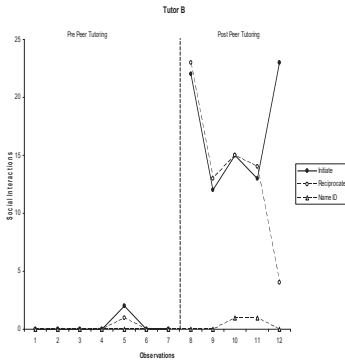
The below graphs demonstrate the results of this method.

Tutor A and Tutee A

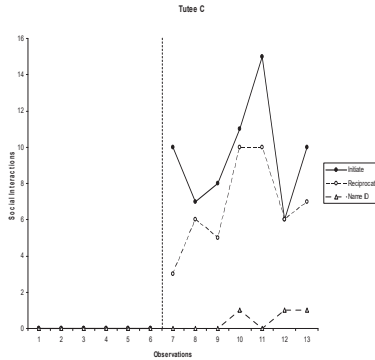
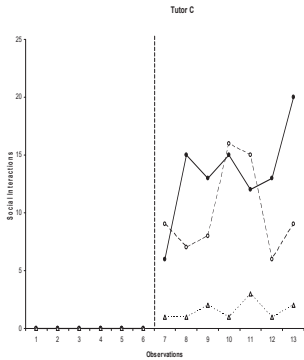


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Tutor B and Tutee B



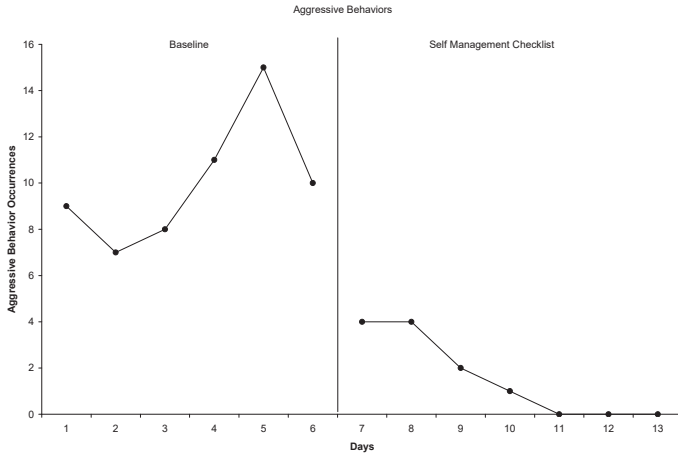
Tutor C and Tutee C



It is evident from the teacher observations that the tutor and the tutee engaged in appropriate social communication through the day. The tutee tacted the tutors behavior repeatedly throughout the day. Increased eye contact during group activities and Gym time was noted. Future Interventions should include peer programs with social board games, turn taking activities, peer modeling, and observational learning. Nonetheless, it is clear that the graphs are proof of effective instruction.

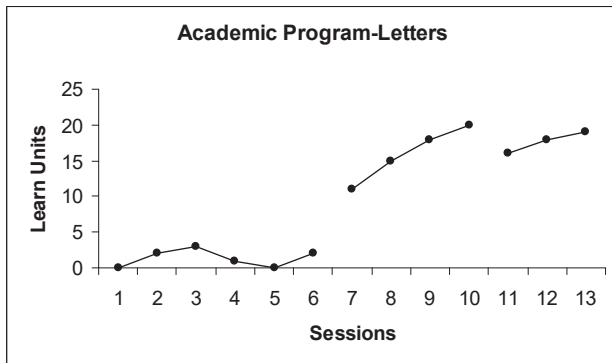
Aggressive Behaviors

The below chart shows observed aggressive behaviors occurrences averaged for 12 days. Following implementation of the self management checklist, aggressive behaviors decreased to zero levels.



7.4 The Learn Unit

The below chart indicates the progression with 20 learn units, where student s average one to 2 correct learn units respectively over 6 consecutive days. Once the visual prompt is implemented, the child meets the criteria within 4 sessions. Once criteria is met, the visual prompt is discontinued and the child is able to respond at high levels.



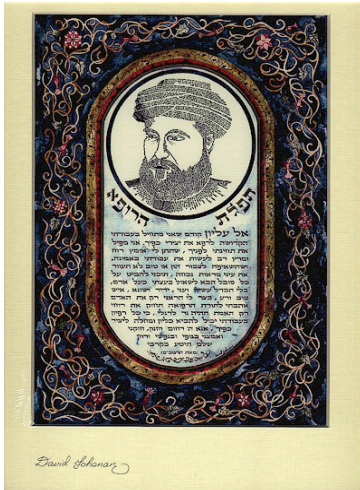
8: CONCLUSIONS AND IMPLICATIONS

The diagnosis of autism and related autistic spectrum disorders in young children is often relatively straightforward but can, at times, be challenging (Lord, 1997). Complexities in diagnosis and evaluation relate to the range of syndrome expression in these conditions along various dimensions such as language abilities and associated mental handicap (Volkmar et al., 1997) differential diagnosis, particularly in children younger than 3 years (Lord and Schopler, 1989) concerns regarding labeling (Hobbs, 1975) and diagnostic terminology within school systems; and lack of expertise in assessment and diagnosis among some educational professionals (Siegel et al., 1988). In general, the perspectives of various professionals are required as part of the diagnostic process. This may involve the efforts of special educators, general educators, psychologists, speech pathologists, occupational and physical therapists, and physicians. The need for a multi-disciplinary or transdisciplinary perspective can create challenges for local educational authorities. Although the mandate of the local education authority (LEA) and state-funded developmental disability programs is to provide appropriate education, the services of non-LEA specialists are required for initial identification, diagnosis, and clinical services related to the presence of additional handicapping conditions. A LEA and state services may need to form relationships with individuals and centers with such expertise. Although various rating scales and checklists have been developed to aid in the process of assessment, these do not replace skilled professionals who can administer appropriate treatment for children on varying levels of the autism spectrum.

At SKHOV, all our models individualize programming around the needs of particular children, and intervention regimens are designed to be implemented in a flexible manner. Essential differences in program design pertain to whether the curriculum is aimed at addressing some or all of a child's needs and whether the program staff provide direct service or serve as consultants to external providers. As stated in the introduction and discussed throughout the paper, our results are consistent with standard theoretical interpretation of traditional behavioral education of children with autism, notable Greer's seminal book *Designing Teaching Strategies* (2002). Our findings reported expand the literature of this genre, namely ABA therapy for children with autism, and offers the most effective implementation of the surrounding literature in a school-based setting. Our results indicate an ascending trend of collateral reinforcement over time delivered by the teacher to her student and all the other students in the class.

This increase in rate of performance and that it is the full training protocol—including observed verbal-mediated behavior and contingency-shaped behavior—that is most effective and not specific components. How our teacher's assistants are taught and the nature of the learn unit presentations is determined by their existing verbal repertoires. Instruction that results in changes in verbal behavior is critical to their progress and prognosis. Locating factors that impede learning involve three things: where to look, what questions to ask, and how to characterize the situation in scientific terms. Therefore, development of class wide consultations models that involve a comprehensive assessment of critical classroom variables in combination with teacher feedback and support are very effective at increasing appropriate teacher classroom management strategies, and in turn producing the highest number of post student outcomes.

APPENDIX A: Prayer of Moses Maimonides



This is the Physician's prayer written by the famous Medieval Jewish physician Moses Maimonides (the Rambam, 1137-1204). Below is a translation:

G-d above, before I begin my holy work, healing Your creation [human beings], I lay my plea before You, that You will grant me the strength of spirit and the vast energy to do my work with faith, and that the aspiration to accumulate wealth will not blind my eyes from seeing one who is suffering, one who comes for my [professional] advice, as a human being, [whether] rich or poor, friend or foe, the good and the evil person, in his sorrowful moment reveal to me only the human being in him. My love for the learning of medicine should only strengthen my spirit, only the truth shall be the light before my feet, for any weakness in my work might bring about death and illness to Your creation.

I beg you, please, compassionate and gracious G-d, strengthen and focus my body and my soul and plant within me a spirit that is whole.

APPENDIX B: SKHOV's Center-based Training Manual

1) Behavior Decrease Policy

SKHOV's philosophy on inappropriate behaviors is that they are best eliminated by teaching children to gain attention for appropriate social behavior, academic competence, and enjoyment of schooling. Research has shown that frequent opportunities to respond and high rates of positive reinforcement are empirically sound and ethically acceptable methods for the reduction of student maladaptive behavior (Greer & Kelly, 1996). In addition, we may conduct a functional assessment or analysis of inappropriate behavior to determine the purpose the behavior serves for the child. This will be done under the supervision of a board certified behavior analyst. With this information, more socially acceptable behaviors may be taught to replace the inappropriate behavior. In some situations medical intervention may be deemed necessary.

At times the service provider may use physical prompting to guide the student through the performance of directions given; our goal is to teach the child to comply with directions and to respond appropriately when placed in demanding settings. Instruction is arranged to prevent the student from escaping or avoiding the instructional setting and the demands presented.

SK-HOV has an established set of guidelines for the interventions concerning inappropriate or maladaptive behaviors. The goal of these guidelines is to implement the least intrusive (yet effective) procedures in the home, community, or classroom setting. The service providers and the Behavior Analyst will together analyze the function of the student's behavior and outline the procedure(s) to be implemented to decrease the maladaptive behavior(s) and increase more appropriate socially acceptable behaviors.

Behaviors targeted for decrease must be defined, measured continuously, and graphed daily. All service providers will be trained to run programs before they implement a program independently. Prior to implementing any decrease plan each service provider must participant in an in-service conducted by a board certified behavior analyst.

2) Functional Assessment Sample 1

Student Name:

Date of Functional Assessment:

Assessment Conducted by:

All functional assessments conducted on students will include data that are gathered from three sources:

1. Interview with individuals significant to the student's environment
2. A review of progress reports, evaluations, and other pertinent records
3. Direct observation of the target behaviors

The Interview

STUDENT emits (target behavior) behaviors. These behaviors are seen throughout the day and across a variety of settings and people. This will be the first intervention for these behaviors. _____ reported that behaviors such as the aforementioned had occurred at home (specify time frame and conditions).

HERE provide the background on research on these specific behaviors and some of the common treatments for such behaviors.

Prior research has demonstrated the effectiveness of conducting functional analyses in determining stimuli that produce automatic reinforcement (Piazza, Hanley, & Fisher, 1996). The following study sought to assess and attempt to treat the behaviors.

Review of Reports

Records only indicate

Direct Observation

- (a) Baseline and treatment data on the targeted behavior, behaviors must be operationally defined and observable by all parties

Operational Definitions:

Data were collected in the following conditions:

- ***Social Attention:***
- ***Demand:***
- ***Ignore:***
- ***Play:***
- ***Tangible:***

- (b) Information on the immediate antecedent events associated with the targeted inappropriate behavior,
 -
- (c) Information on the consequences to the targeted behavior to determine its function, previously used interventions,
 - 1.
- (d) Ecological factors, and
 -
- (e) Any possible health and medical factors which may influence the student's behavior
 -

Questions:

What are the differing circumstances under which problem and replacement behaviors occur?



What are the circumstances under which the problem behavior does NOT occur?



Does the behavior (problem and/or replacement) occur at certain times of the day (e.g., individual transitions poorly, has difficulty in non-structured activities)?



Does the behavior occur only in the presence of certain people?



Does the behavior occur prior to or collateral with any other behavior (e.g., doing an assignment)?



Could the problem behavior be related to a social or an academic skill

deficit?



Data Collection

Data are attached in graph form. Data were collected.

Intervention Plan

- Results of the functional assessment on

3) Functional Assessment- Sample 2

Student Name: _____ ID: _____
_____ DOB: _____ Case Manager:

Data Sources: Observation | Student Interview | Teacher Interview |
 Parent Interview | Rating Scales | Normative Testing

Description of Behavior (No. _____)

Setting(s) in which behavior occurs:

Frequency:

Intensity (Consequences of problem behavior on student, peers,
instructional environment):

Duration:

Educational impact:

Function of Behavior (No. _____): Specify hypothesized function
for each area checked below.

Affective Regulation/Emotional Reactivity (Identify emotional
factors; anxiety, depression, anger, poor self-concept; that play a role in
organizing or directing problem behavior):

Cognitive Distortion (Identify distorted thoughts; inaccurate attributions, negative self-statements, erroneous interpretations of events; that play a role in organizing or directing problem behavior):

Reinforcement (Identify environmental triggers and payoffs that play a role in organizing and directing problem behavior):

Antecedents:

Consequences:

Modeling (Identify the degree to which the behavior is copied, who they are copying the behavior from, and why they are copying the behavior):

Family Issues (Identify family issues that play a part in organizing and directing problem behavior):

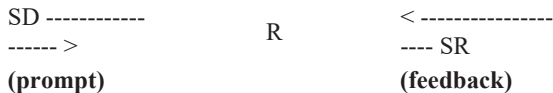
Physiological/Constitutional (Identify physiological and/or personality characteristics; developmental disabilities, temperament; that play a part in organizing and directing problem behavior):

Communicate need (Identify what the student is trying to say through the problem behavior):

Curriculum/Instruction (Identify how instruction, curriculum, or educational environment play a part in organizing and directing problem behavior):

APPENDIX C: AUTISM HANDBOOK

Discrete Trial Teaching



Discriminative Stimulus (SD)

Let's the student know that there is a positive reinforcer available if the student responds correctly. An instruction or a question.

Response

Any behavior that occurs contingent upon the SD.

Reinforcing Stimulus (SR)

Any stimulus event that immediately follows the student's response and increases the likelihood that the behavior will reoccur. Must be delivered immediately following the desired behavior. Behavior happens in a continuous stream, and you don't want to inadvertently reinforce the wrong behavior.

Examples:

Positive Reinforcement (when you add something pleasant to a situation)

Primary reinforcer; food or drink

Secondary reinforcer; toys, praise, tickles

Negative Reinforcement (when you take away something unpleasant from a situation)

Feedback

Always paired with SR. Let's the student know if his/her response was correct or incorrect. When a student is reinforced by praise the feedback can also be used as the positive reinforcer.

You must give feedback after every response; including a nonresponse
Make sure that your "good jobs" sound different from you 11nolsit
Examples:

The teacher says, "Touch your nose." (SD)

The student touches his/her nose (Response)

The teacher gives the student praise and a piece of a cookie (positive reinforcement)

The teacher says, "What's your name?" (SD)

The student says, "My name is Johnny." (response)

The teacher gives the student praise and 5 seconds to play with a toy (positive reinforcement)

Examples:

For a correct (desired) response..... *"good job" "you're right" "that's correct"*

For an incorrect (undesired) response....*"nope" "no" "try again" "oops"*

Prompt

Anything the teacher "adds" to facilitate a correct response. MUST BE
FADED OVER TIME TO AVOID PROMPT DEPENDENCE.

Other Reference Terms

- Mastered-once the student has demonstrated a targeted behavior consistently with 90% accuracy the behavior is considered mastered.
- Receptive-when a student "receives" intonations.
- Expressive-when a student expresses information
- Acquisition-when a student is still learning a particular response
- Shaping-when successive approximations of the desired response are reinforced.
- Chaining-the creation of a complex behavior by combing simple behaviors that are already in the student's repertoire.
- Generalization-2 different people, 3 different settings, 3 different stimuli
- Maintenance-practicing/using a behavior that has been mastered in the natural environment.
- Sabatoge-contriving situations in the environment so that the student must use a behavior
- Self-stimulatory behavior

Behavior Management

- Extinction-NO consequences (positive or negative) are given to a particular response. This procedure is used to reduce undesired behaviors.
- Over correction
- Punishment
- Time-out procedure
- Differential Reinforcement of Other Behaviors (DRO), Differential Reinforcement of Alternative Behavior (DRA)
- Differential Reinforcement of Incompatible behavior (DRI)
- Positive Practice

Schedules of Reinforcement

- Continuous-when a correct response is reinforced every time it is elicited.
- Intermittent-when a correct response is reinforced every 3-4 times it is elicited
- Delayed-token economy

Description of Prompts

Type of Prompt	Description	Example
Full Physical Assistance (Full)	Student requires physical assistance to complete a task. The teacher will "hand-over-hand" the student to ensure a correct response.	When teaching the student to imitate the movement of tapping on the table the teacher takes the child's hand and taps the table with it.
Partial Physical Assistance (Part)	Student requires partial physical assistance to	When teaching the student to imitate the

	complete a task.	movement of tapping on the table the teacher takes the students hand and lets go of it right above the table. Or the teacher taps the students hand to prompt the student to do something with it.
Full Model (FM)	Teacher models what the desired response of the student is.	When teaching the receptive instruction "clap" the teacher claps while he/she is telling the student to clap.
Partial Model (PM)	Teacher models only part of the response that is desired from the student.	When teaching the receptive instruction "clap" the teacher puts his/her hands in front of her/himself, but does not actually clap.
Full Verbal Model (FVM)	Teacher verbally models what the desired response of the student is.	When teaching the expressive label "cup" the teacher asks, "What is it? Say cup."
Partial Verbal Model (PVM)	Teacher verbally models only part of the desired response of the	When teaching the expressive label "cup" the teacher asks,

	student.	"What is it? Say c....".
Gesture (G)	Teacher makes some kind of gesture to prompt the desired response of the student.	When teaching the function of an object the teacher says, "What do you drink with?" while holding his/her hand to his/her mouth shaping it like a cup.
Proximity (PR)	Teacher places a stimulus in a particular location.	When teaching the receptive label "shoe" the teacher places the shoe closest to the student.
Point (P)	Teacher points	When teaching the receptive label "shoe" the teacher points to the shoe.

Discrimination Training

- **Mass Trial (MT)**

A series of successive teaching trials that ensure success on the part of the student. The mass trial phase begins with prompted trials, and then the teacher systematically fades the prompt until the student can complete the request independently. If a teacher is requesting a stimulus (i.e., "cup") the teacher will request the "cup" several times in a row with nothing else on the table.

Distracter Phase-the teacher places the targeted item on the table with known or unknown distracters, but still only requests the targeted item. Still considered a mass trial.

- **Expanded Trial (Exp. T)**

A series of teaching trials with distracters. The amount of distracters presented to the student is increased systematically. The distracter(s) can be a known or an unknown stimulus to the student. The expanded trial phase is important to build memory retention.

Exp. T with 1 distracter

Exp. T with 2 distracters

Exp. T with 3 distracters

Distracters used in expanded trials can range from Nonverbal imitation gestures, Verbal Imitation targets, mastered receptive action targets, to known targets in the specific program you are teaching.

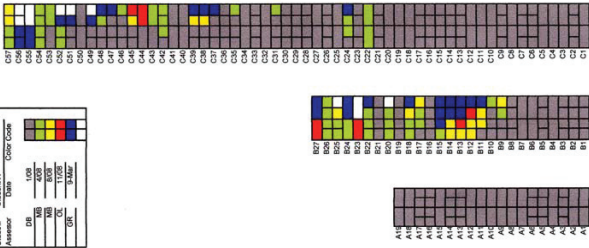
- **Random Rotation (RR)**

The target response is randomly rotated with other target responses (i.e., cup vs. book)

APPENDIX D: Abbls-R Assessment

Assessment of Basic Language and Learning Skills-Revised Skills Tracking System

Student's Assessor	Student's Date	Color Code
DB	1/03	■ ■ ■ ■ ■
MB	0/02	■ ■ ■ ■ ■
CB	1/02	■ ■ ■ ■ ■
GB	1/02	■ ■ ■ ■ ■
GB	3/02	■ ■ ■ ■ ■



Assessment of Basic Language and Learning Skills Skills Tracking System

Student:	Level:	Date:	Color Code:

S10	S9	S8	S7	S6	S5	S4	S3	S2	S1

S Writing

T1	T2	T3	T4	T5	T6	T7

T Spelling

U15	U14	U13	U12	U11	U10	U9	U8	U7	U6	U5	U4	U3	U2	U1

U Dressing

V10	V9	V8	V7	V6	V5	V4	V3	V2	V1

V Eating

W1	W2	W3	W4	W5	W6	W7	W8	W9

W Grooming

X10	X9	X8	X7	X6	X5	X4	X3	X2	X1

X Tolerating

Y30	Y29	Y28	Y27	Y26	Y25	Y24	Y23	Y22	Y21	Y20	Y19	Y18	Y17	Y16	Y15	Y14	Y13	Y12	Y11	Y10	Y9	Y8	Y7	Y6	Y5	Y4	Y3	Y2	Y1	

Y Gross Motor

Z28	Z27	Z26	Z25	Z24	Z23	Z22	Z21	Z20	Z19	Z18	Z17	Z16	Z15	Z14	Z13	Z12	Z11	Z10	Z9	Z8	Z7	Z6	Z5	Z4	Z3	Z2	Z1	

Z Fine Motor

APPENDIX F: SKHOV PROGRAM LIST

Students _____ Onset: _____

Programs	Onset	Mastery	Onset	Mastery
Looks to a location				
Tracks objects visually				
Responds to name				
Responds to "Look at me"				
Imitates action with an object				
Imitates motor actions				
Copies block configurations				
Copies bead pattern				
Demonstrates actions				
Demonstrates actions with toys				
Follow one-step commands				
Gives one, both, all				
Replicates sequence of items with delay				
Makes eye contact while responding				
Matches identical objects				
Matches objects to picture				
Matches picture to picture				
Matches by association (hammer/nail)				
Matches colors				
Matches shapes				
Matches stimulus class (plastic cup/paper cup)				
Matches colors to words				
Imitates speed of action				
Points to community workers				
Points to rooms of the house				
Places items by location				
Points (non-discrimination)				
Points to objects				
Points to pictures of animals				
Points to pictures of self/family/teachers/classmates				
Points to pictures of food				
Points to pictures of household items				
Points to shapes				
Points to colors				
Points to environmental; sounds				
Points to actions				
Points to body parts				

Listener Repertoire

R. Douglas Greer

Points to pictures of plurals				
Points to Gender				
Points to comparative adjectives				
Points to items based on categories				
Points to items by description				
Points to name				
Points to same and different				
Points to Clothing				
Points to Prepositions				
Selects by Feature/Function/Class				
Points to left/right				
Points to stimuli on page				
Sorting categories				
Retrieves a list of objects				
Shares toys, edibles				
Sits still				
Stoops to pick up items from the floor				
Walks in line				
Stand still				
Wait here				

Speaker Repertoire

Programs	Onset	Mastery	Onset	Mastery
VB emersion				
Emits greetings				
Emits good-byes				
Mands				
Emits partial vocal response to mand				
Uses gesture to mand				
Tacts (BTS)				

Tacts body parts				
Tacts colors				
Tacts shapes				
Tacts objects				
Tacts household objects				
Tacts Prepositions				
Tacts Pronouns				
Tacts Names				
Tacts pictures animals				
Tacts pictures of food				
Tacts pictures of family/self				
Tacts pictures of teacher/classmates				
Tacts Categories				
Tacts environmental sounds				
Tacts Gender				
Tacts Transportation				
Tacts Seasons				
Tacts Emotions				
Tacts Community Helpers				
Tacts Clothing				
Tacts Actions				
Tacts Carrier phrases				

Listener/Speaker Repertoire

Imitates vocalizations				
Responds to name with vocalization				
States identifying information				
Counts to a specified number				
Says how many by correspondence counting				
Says next/before numbers/letters				
Makes a choice given 2 choices (Mand)				
Distar language				
Answer functional noun questions				
Answer questions with unrelated vocal antecedents				
Answer story questions				
Answer survival questions				
Answer why/because questions with				

pictures				
Rhymes				
Multiple controlled tacts				
Mands using yes/no				
Responds to name with vocalization				
Says positive statements about school				
Tacts using yes/no				
Uses mine/your appropriately				
MC tacts actions				
MC Tacts Actions using past tense				
MC Tacts Body parts				
MC Tacts coins				
MC Tacts Color words				
MC Tacts colors				
MC Tacts Comparative adjectives				
MC Tacts gender				
MC Tacts Environmental sounds				
MC Tacts household items				
MC Tacts left/right				
MC Tacts location				
MC Tacts upper case letters				
MC Tacts lower case letters				
MC tacts shapes				
MC tacts time				
MC tacts missing items				
MC tacts multiple stimuli (red triangle)				
MC tacts name				
MC tacts number words				
MC tacts numbers 1-10				
MC tacts objects				
MC tacts pictures based on category				
MC tacts pictures of animals				
MC tacts pictures of emotions				
MCtacts pictures of family/self				
MC tacts food				
MCtacts pictures of holidays				
MC tacts pictures of teachers/classmates				
MC tacts pictures of plurals				
MC tacts possession				
MC tacts pronouns				
MC tacts weather				
MC tacts same and different				
MC tacts stimuli on a page				

Tacts words in a book				
Uses mine/your appropriately				
Expressively Sequences events				
Names features/functions/class of objects				
Tacts function of body parts				
Conversational Exchanges				
MC Tacts Prepositions				
Before/After				
Opposites				
Fill in word to complete statement				
Fill in word to complete song				
Uses autoclitics/qualifiers				

Speaker as Own Listener Repertoire

Program	Onset	Mastery	Onset	Mastery
Counts with 1:1 correspondence				
Rote counts 1-10				
Rote counts by five				
Rote counts by ten				
Says alphabet				
Says how many				
correspondence counting				
Says days of the week				
Says months of the year				
Says next/before letters				
Says next/before numbers				
Activity Schedule				
Expressive				

Reader/Writer Repertoire

Program	Onset	Mastery	Onset	Mastery
Textual. response dolch sight words				
Textual response number words				
Circles, underlines, and X's pictures on worksheet				
Copies symbols				
Imitates symbols with a pencil				
Completes worksheet (selection based reasoning)				
Completes worksheet (topography based responding)				
Distar math				
Distar reading and reasoning				
Draws a face with 5 features				
Draws number of symbols				
Draws line from to				
Draws shapes				
Completes connect the dots worksheets				
Edmark				
Reads classroom rules				
Reads words in book				
SRA reading				
Sequence letter cards				
Sequence letters of name				
Sequence number cards				
Sequence picture cards				
Writes upper case letters				
Writes lower case letters				
Writes name				
Writes numbers				
Tacts Numbers				
Points to Numbers				
Matches Numbers				
Match Number to quantity				
Learn to Type				
Match numbers to words				
Give number of objects				
Give one, both, all				
Says next/before				

numbers/letters				
Tacts number words				
Points to some, any, many				
Phonetics				
Points to word				
Match text to picture				
Match text to object				
Tacts words in book				
Tells time				
Spelling				
P.S.I.				
Points to upper case letters				
Hebrew Alphabet				
Fill in missing letters				
Addition				
Tracing Shapes, Numbers, Letters				
Subtraction				
Points to lower case letters				
Match letters				

Expanded Community of Reinforces Repertoire

Program	Onset	Mastery	Onset	Mastery
Sits still and attends to group lesson				
Participates in attendance				
Participates in calendar activity				
Present show and tell				
Does not cry/ tantrum when requested to perform an activity				
Goes to classroom without protest				
Raises hand quietly				
Looks at book – group				
Looks at story during story time				
Plays cooperatively				
Takes turns				
Plays a game				
Plays follow the leader				
Plays musical chairs				
Plays side by side with peers				
Follows peer actions				
Follows peer direction				
Plays with beads				
Plays with blocks/legos/pegs				
Colors with crayons				
Uses paints				
Plays with clay/play dough				
Plays with puzzles				
Plays with toys				
Sings and performs actions with songs				
Balances on one foot				
Bounces ball with peer				
Carries cup without spilling				
Catches a thrown ball				
Cuts paper				
Holds pencil with appropriate grip				
Hops				
Jumps				
Kicks a ball				
Stands still				
Maintain attention to topic				
Toilets independently				

Throws ball underhand				
Throws ball overhand				
Obstacle Course				
Walks backward				
Premack Principle				
Basket-Ball turn-taking				
Pretend Play				
Toileting				
Color in Borders				
Getting dressed				
Board Games				
Washing hands				
Arts N Crafts				
Walks forward				
Walks up stairs alternating feet				
Walks with appropriate gait				

APPENDIX F: EARLY SYMPTOMS OF AUTISM (*NEWBORN TO 5 YEARS*)

Newborn to 6 Months

- May be “too good”
- May be irritable, easily distressed
- Does not reach to be picked up
- Does not babble
- Lack of social smile
- Lack of eye contact
- Motor development may appear normal

6 Months to 12 Months

- Does not cuddle, may be limp or rigid when held
- Relative indifference toward parents
- Does not play simple social games (“Peek-a-boo,” “Bye-bye”)
- Does not begin to use words
- Does not seem interested with own hands
- Uneven or delayed motor development
- May not chew or accept solid foods

2 Years to 3 Years

- Interpersonal interest still limited; may show some improvement
- Uses other people as “tools”
- Limited eye contact
- May sniff or lick objects
- Does not cuddle, may be limp or rigid when held
- Relative indifference toward parents

4 Years to 5 Years

- If speech develops, there may be echolalia (Repeats in rote fashion what others say, either immediately or later)
- Odd voice quality (high-pitched or monotone, for example)
- Very upset by changes in routine
- Eye contact still limited; may show some improvement
- Gradual increase in affection, but still limited
- Tantrums and aggression continue, but may gradually improve
- Self-injury
- Self-stimulation

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