

ASD Video Glossary

Treatment Section



This document contains text that goes with the *ASD Video Glossary Treatment Section*, including the following: 1) Table of Contents—click on a treatment name to quickly find each treatment in this file; 2) Overview of the Treatment Section with the definitions above the video players; and 3) Information about each treatment—an overview, the complete caption below each side-by-side video player, a description of features about each treatment, where to find more information, and a list of top research studies supporting the treatment.

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Overview of the Treatment Section

Treatments are interventions or approaches designed to address core deficits associated with autism spectrum disorder (ASD) and improve the quality of life and functional independence. The treatments represented here are used commonly with children on the autism spectrum but may not be appropriate for all children. While there are no conclusive studies showing that one approach is better than another, some approaches have been researched more than others and many approaches incorporate similar strategies. Parents and professionals are encouraged to look at all approaches and choose treatment strategies that best fit the needs of the child and family.

Research has demonstrated significant progress in response to intervention with a substantial proportion of children with ASD using a range of techniques, from behavioral to developmental. However, outcomes of children are variable, with some making substantial progress and others showing slow gains. It is not yet known whether particular treatment approaches are more effective than others and which children respond best to which treatments. Research does indicate the need for sufficient intervention with planned teaching opportunities to provide the intensity necessary to promote active engagement, learning, and generalization, all essential for children with ASD. It is important that parents and professionals collaborate to make decisions about which treatment approaches and strategies are effective for a particular child at a particular point in time.

Behavioral Interventions

Behavioral interventions or approaches for treating autism spectrum disorder (ASD) fit within the framework or are derived from applied behavior analysis (ABA). ABA was developed in the late 1960s and is now used to help children with ASD change their behavior to more adaptive ways of responding to situations. ABA uses behavioral methods to measure behavior, teach functional skills, and evaluate progress. In ABA approaches, an adult will systematically encourage certain responses from a child and then respond in planned ways designed to either increase or decrease certain behaviors. Behavioral approaches measure progress and modify strategies based on the data collected. Some of the behavioral treatments have incorporated developmental principles, so you will see some overlap between treatments. Because the division between behavioral and developmental may be unclear, there is some commonality between strategies.

Developmental Interventions

Developmental interventions or approaches for treating ASD are generally spontaneous and natural in the way adults respond to a child or the child's behavior. For children at early stages of development, emphasis is put on encouraging the child to develop his or her own ideas and to engage in reciprocal social interactions. The developmental interventions or approaches represented here look at the whole child (i.e., social/emotional skills, language and communication, cognitive skills, behavior, gross and fine motor skills, regulatory and sensory systems, and self-help skills) and take into consideration typical and atypical development, family strengths and dynamics, cultural diversity, and appropriate practices. All approaches work in partnership with parents to enhance the parent/child relationship while building confidence in supporting the child's development throughout daily, naturally occurring activities. Some of the developmental treatments have incorporated behavioral principles, so you will see some overlap between treatments. Because the division between developmental and behavioral may be unclear, there is some commonality between strategies.

Structured Teaching and Supports

Structured Teaching and Supports are approaches or techniques used to address the neuropsychological challenges of a child with ASD while using their strengths (e.g., preference for routine, desire for predictability, strong visual memory, detail-focused processing, etc.). The structured teaching and supports represented here include (1) physical organization of the learning environment, (2) schedules that show the sequence of daily activities, (3) work or activity systems to promote the development of independence in various areas of the individual's life and/or (4) visually-based presentation of instructional materials and learning activities.



Clinical Therapies

Clinical Therapies refer to therapeutic treatments that are aimed at reducing symptoms or improving the social/emotional, communication, or physical wellbeing of a child with ASD. The clinical therapies represented here are the most common—art and music therapies, occupational therapy / sensory integration, and speech-language therapy. These therapies incorporate behavioral and developmental strategies, and therefore, share common features that are illustrated in the behavioral and developmental treatments.

Toddler Treatment Models

Toddler Treatment Models have been developed to address the special needs of toddlers with autism spectrum disorder (ASD) and their families. With the priority for early detection and early intervention, the demand for toddler treatments is increasing. The Toddler Treatment Network is a consortium of university-based research sites funded by grants from Autism Speaks and other sources to determine the efficacy of interventions for toddlers. These treatment models incorporate behavioral and developmental strategies, and therefore, share common features that are illustrated in behavioral and developmental treatments. Some of these treatments focus on parent-implemented intervention.

DISCRETE TRIAL TRAINING

Overview

Discrete Trial Training (DTT) is a technique or treatment approach within the framework of applied behavior analysis (ABA). ABA focuses on changing behaviors. Because we cannot directly see internal events, like how other people feel, ABA focuses on what people do and say. ABA uses direct observation to determine why behavior occurs and tracks treatment progress through the collection of data in a variety of forms (frequency counts, anecdotal reports, interviews, videotape, etc.). DTT uses intensive, structured teaching methods to instill basic skills to children who have not yet learned the skills in more natural environments. DTT targets learning skills (sitting, attending, looking at trainer, imitating), language skills (following instructions, labeling objects), social skills (looking at people, appropriate behavior during interactions, interacting with peers), and other cognitive skills. In DTT the trainer begins a trial (an attempt at demonstrating a skill) with a discriminative stimulus S^D (an antecedent condition, instruction, or question to elicit a behavior), reinforces or prompts the behavior, and uses shaping to reward a response class of behavior that is closer to the targeted action that produces the desired outcome or consequence. The child's preferences are assessed, and a variety of preferred items (e.g., food, drinks, toys, activities, praise) are presented after successful demonstrations of the target behavior. Although primary reinforcers may be used early in teaching, the child learns to respond to social reinforcers over time through shaping.

Pair 1

Left Video Clip: This 2-year-old child with ASD practices imitation drills using the strategies and principles of DTT. Generally, children on the autism spectrum don't imitate the actions of others spontaneously. Imitation is vital when learning new tasks and play skills. Imitation drills are designed to teach children to attend to specific stimuli and mimic another's actions. Children are then reinforced for their accomplishments. This video clip depicts imitation drills with which the child is familiar (raising arms up in the air and waving) and she is reinforced by and working toward playing with a preferred object (beads).

Right Video Clip: The same 2-year-old child is now working on a drill with which she is not familiar (banging blocks). The therapist gives her the S^D (command), "do this" and shows her how to bang blocks, and then waits for a response. When the child does not immediately imitate the therapist's actions, the therapist uses a full physical prompt (hand over hand) to help pair the command "do this" with the appropriate action "bang blocks". For correction trials to be effective there needs to be little time between the S^D and action/correction. Paring and reinforcing the two events will lead to generalization of the request.

Pair 2

Left Video Clip: This 2½-year-old child with ASD is working with her therapist on Receptive Number Identification. Components of discrete trial, including clear Discriminative Stimulus (S^D , a verbal direction), prompting, and reinforcement are utilized to increase skills. The therapist uses the least intrusive prompt (gestural) to ensure correct responses. Verbal reinforcement is utilized during trials. The student is shown two cards and given the S^D , "Touch ____". Praise is provided for correct trials, both independent and prompted.

Right Video Clip: This 6-year-old student with ASD is working with his speech therapist. He is using his voice output system to label action/object pictures expressively. This child has significant apraxia (impairment in motor skills and coordination), and the voice output system allows him to communicate and complete a variety of expressive language skills. The speech therapist is using the components of DTT and errorless learning to ensure his accuracy. If the student begins to move toward a cell that is incorrect, the therapist quickly moves his finger or points to the right cell to ensure accuracy.

Pair 3

Left Video Clip: This 6-year-old child with ASD is at the beginning of a teaching session. The therapist presents the student with the opportunity to choose the reinforcement he will work for, and then directs him to retrieve materials. As seen, the student walks to a set of bins, opens the drawer, pulls out the materials, and



goes back to his table ready to work. The teaching program that is being taught is Expressive Number Identification. This student is using a voice output system to label numbers expressively. It should be noted that, in one sense, the voice output system allows the student to match the number he is shown to the number on each cell; therefore, matching skills can be a built-in prompt for this particular program. This therapist utilizes the components of DTT well; that is, the S^D , which is the direction; prompting, which in this case is physical or gestural; when the student responds correctly the therapist enthusiastically reinforces the student; followed by an inter-trial interval or pause before the next trial is begun.

Right Video Clip: This 6-year old child with ASD is working with his teacher on identifying sight words receptively. The therapist is using the components of DTT and errorless learning to ensure accuracy. The therapist gives the S^D (command), “Touch __,” uses prompting to ensure a correct response, and reinforces for correct responses. The student is presented with three cards and asked to identify a specific word. He is working on identifying sight words randomly. The therapist utilizes gestural prompts to ensure errorless learning. Secondary reinforcement is provided after each correct trial.

Pair 4

Left Video Clip: This 6-year-old child with ASD is working with his teacher on matching shapes. Cards with outlines of the target shape are used to increase accuracy. The student is given the S^D (command), “Match,” and is given a three dimensional shape to match. Components of DTT are utilized including the S^D , prompting, which in this case is primarily gestural, and enthusiastic reinforcement for correct trials. Errorless learning is noted, as the therapist uses prompting to ensure correct responses.

Right Video Clip: This 6-year-old child with ASD is working on more complex language goals. The first program shown is teaching him to compare items. The therapist gives the S^D (command), “Tell me two ways __ and __ are the same.” She uses verbal prompting to assist him, and then repeats the question until he gives the answer correctly without prompts. The second teaching program presented is to teach him irregular verbs. Again, the therapist uses verbal prompting to assist him. It should be noted that the therapist appropriately allows the student to interrupt the session to talk to her. This reinforces his emergent spontaneous language.

How goals and objectives are prioritized and selected for treatment

Goals and objectives are selected from a set of skills and prioritized and selected based on a child’s current age, strengths and needs, and parental input. Long-term goals are broken down into smaller steps that a child will be able to master quickly. These steps become the objectives to reach the goal.

Measures for determining if treatment is working

Data are usually collected daily to assess progress. A high percentage of correct responding (e.g., 90%) indicates that the child is ready for the next more difficult step. Data indicating insufficient progress, inconsistent responses, or a failure to generalize skills across settings indicate the need to modify materials, reinforcers, and/or prompt procedures.

Who can implement this treatment?

Trained clinician Trained educator Trained parent Other

What is the role of the family?

Parental involvement is critical. Parents are empowered through training and collaboration to generalize skills learned in therapy to other everyday environments. Additionally, family members that become effective and confident with their ability to shape new behaviors report many benefits along with decreased feelings of anxiety and depression.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required



Trained personnel model treatment with a child. Those who are receiving training will practice the treatment and are given feedback by those who are already trained. Koegel, Russo, & Rincover (1977) detailed an effective and efficient training procedure for teachers at time in history when autistic children were being excluded from schools on the grounds teachers were unable to provide instruction for children with autism.

Authors of Discrete Trial Training

The development of Discrete Trial Training is a cumulative effort combining the rich history of learning theory (discrimination learning) with the analysis of language (verbal behavior) into the complex stimulus and response relationships of a speaker and listener most closely associated with the writings of B.F. Skinner (1957). Pioneering behavior analysts that refined Discrete Trial Training have credited Skinner for the development of a framework for analyzing the complex chains of behavior characteristic of spoken language and Lovaas for his foundational application of DTT to teaching speech to children with ASD.

Additional information describing Discrete Trial Training

Website: <http://www.lovaas.com/>

Lovaas, O. I. (2003). *Teaching individuals with developmental delays: Basic intervention techniques*. Austin, TX: Pro-Ed.,

Ferraioli, S., Hughes, C., Smith T. (2005) A Model for Problem Solving in Discrete Trial Training for Children with Autism. *Journal of Early and Intensive Behavioral Intervention*, 2, 224-246.

Leaf, R., McEachin, J., & Harsh, J. (1999). *A work in progress: Behavior management strategies & a curriculum for intensive behavioral treatment of autism*. New York, NY: DRL Books Inc.

Smith, T. (2001). Discrete trial training in the treatment of autism. *Focus on Autism and Other Developmental Disabilities*, 16(2), 86-92

Top 5 research references supporting Discrete Trial Training

1. Jones, E.A, Feeley, K.M. & Takacs, J. (2007). Teaching spontaneous responses to young children with autism. *Journal of Applied Behavior Analysis*, 40, 565-570.
2. Grindle, C. F., & Remington, B. (2002). Discrete-trial training for autistic children when reward is delayed: A comparison of conditioned cue value and response marking. *Journal of Applied Behavior Analysis*, 35, 187-190.
3. Lafasaki, M.S. & Sturmey, P. (2007) Training parent implementation of discrete-trial teaching: Effects on generalization of parent teaching and child correct responding. *Journal of Applied Behavior Analysis*, 40, 685-689.
4. Dib, N. and Sturmey, P. (2007). Reducing student stereotypy by improving teachers' implementation of discrete-trial teaching. *Journal of Applied Behavior Analysis*, 40, 339-343.
5. Sarokoff, R.A. & Sturmey, P. (2004). The effects of behavioral skills training on staff implementation of discrete-trial teaching. *Journal of Applied Behavior Analysis*, 37, 535-538.

LOVAAS MODEL OF APPLIED BEHAVIOR ANALYSIS

Overview

The Lovaas Model of Applied Behavior Analysis (ABA), like all behavioral treatment, is based on the principles of applied behavior analysis (ABA). Skills are taught using positive reinforcement. Specific techniques include discrete trial teaching, incidental teaching, shaping, chaining, and programming for generalization. Treatment starts with one-to-one interactions and later includes learning in school and playing with peers. Quality control measures are emphasized to ensure that specific treatment procedures and basic skill progression remain consistent with the research.

Pair 1

Left Video Clip: The Lovaas Model of ABA includes discrete trial teaching and often teaches a new skill while also systematically interspersing acquired skills. In this clip, a 5-year-old child with ASD is learning how to show different actions with play materials. The child initially learns how to make an animal “run” through massed trials (continually repeating the same S^D). Other directions the child has already learned are then intermixed in expansion trials. The number of acquired directions given before returning to the new direction “run” is gradually increased. Typically a new action (such as “run”) would be considered mastered in this program when a child can respond correctly 80-100% of the time, across two sessions, with at least four other acquired instructions randomly intermixed before returning to the new instruction.

Right Video Clip: The Lovaas Model of ABA keeps a child successful by helping him respond correctly. This help, called prompting, may include physical guidance, modeling, pointing, or even the inclusion of additional sounds. In this clip, the therapist prompts a 3-year-old child with ASD to draw a vertical line and then systematically fades those prompts until the child is responding independently. In some cases, prompt fading may take days rather than minutes.

Pair 2

Left Video Clip: The Lovaas Model of ABA emphasizes the importance of facilitating generalization of skills to the natural environment. In this clip, a 3-year-old child with ASD who has already learned to answer a variety of different questions is learning to answer those questions while looking at pictures in books. The child has already demonstrated an ability to answer specific types of questions (identifying actions, colors, objects, etc.). His ability to answer those questions when novel stimuli are used, as well as his ability to quickly learn new information, is now being practiced.

Right Video Clip: The Lovaas Model of ABA teaches skills in a wide variety of areas, including both language and play. In this clip, a 5-year-old child with ASD is learning one kind of play interaction – when someone makes a comment about what you are doing, you can make a comment about what they are doing. While the therapist contrives the situation, the skill is taught in a more natural play format, using materials in which the child already demonstrates interest.

Pair 3

Left Video Clip: The Lovaas Model of ABA uses a variety of teaching strategies, including script fading. One format to teach new play skills is to initially teach a short script. In this clip, a 3-year-old child with ASD is learning a short firefighter script. Note that he demonstrates difficulty discriminating which lines he says and which lines the therapist says. Once he is able to follow the script correctly, the therapist will include novel situations (e.g., a cat is stuck in a tree) in the play. If the child is not able to respond to the novel situation, the therapist will give choices for what he can do. The therapist will also return to portions of the initial script to keep the child successful.

Right Video Clip: The Lovaas Model of ABA progresses to include play with siblings, play dates with peers, and time in school. In this clip, skills taught in a 1:1 environment with a therapist are being practiced with siblings. A 5-year-old child with ASD initially learned how to play red light/green light in a basic format with the therapist. Using that basic skill to keep the play focused, the therapist now facilitates teaching the child a variety of behaviors needed to play appropriately with his siblings.



How goals and objectives are prioritized and selected for treatment

The primary goal of the intervention is for children to learn to learn in the natural environment. Goals and objectives are prioritized and selected based on the child's current age and experiences, parental input, and the systematic progression toward the child's goals.

Measures for determining if treatment is working

The Lovaas Model relies on norm-referenced tests, parent interviews, and ongoing evaluation of data that is collected daily. Norm-referenced tests allow for unbiased, independent evaluation of a child's progress. Daily data collection allows for frequent changes in treatment when needed. Parent interviews ensure that progress is meaningful.

Who can implement this treatment?

Trained clinician Trained educator Trained parent Other

What is the role of the family?

Parental involvement is critical. Parents are empowered through training and collaboration to create an environment in which treatment is supported throughout the day.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other

In most cases treatment initially begins in the home, a young child's primary place for learning.

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

Trained personnel model treatment with a child. Those who are receiving training will then practice the treatment and are given feedback by those who are already trained.

Author of Lovaas Model of Applied Behavior Analysis

O. Ivar Lovaas, Ph.D. UCLA Department of Psychology

Additional information describing Lovaas Model of Applied Behavior Analysis

Website: www.lovaas.com

Lovaas, O. I. (2003). *Teaching individuals with developmental delays: Basic intervention techniques*. Austin, TX: Pro-Ed.

Top 5 research references supporting Lovaas Model of Applied Behavior Analysis

1. Cohen, Howard, Amerine-Dickens, Mila, Smith, Tristram. (2006). Early Intensive Behavioral Treatment: Replication of the UCLA Model in a Community Setting. *Journal of Developmental & Behavioral Pediatrics*, 27 (2), 145-155.
2. Lovaas, O. I. (1987). Behavioral treatment and normal educational and intellectual functioning in young autistic children. *Journal of Consulting and Clinical Psychology*, 55, 3-9.
3. McEachin, J. J., Smith, T., & Lovaas, O. I. (1993). Long-term outcome for children with autism who received early intensive behavioral treatment. *American Journal on Mental Retardation*, 97 (4), 359-372.
4. Sallows, Glen O. & Graupner, Tamlynn D. (2005). Intensive Behavioral Treatment for Children with Autism: Four-Year Outcome and Predictors. *American Journal on Mental Retardation*, 110 (6), 417-438.
5. Smith, T., Groen, A., and Wynn, J. (2000). Randomized trial of intensive early intervention for children with pervasive developmental disorder. *American Journal on Mental Retardation*, 105, 269-285.

PICTURE EXCHANGE COMMUNICATION SYSTEM

Overview

Picture Exchange Communication System (PECS) is a functional communication system that is appropriate for any child having difficulties with communication skills. The child is taught to exchange pictures with a listener to make requests and comments. PECS combines elements of broad-spectrum applied behavior analysis (ABA) with information relevant to typical speech and language development. It is also based upon principles of Verbal Behavior, as described by B.F. Skinner.

PECS targets primarily the communication domain. Co-occurring decreases in challenging behaviors following PECS implementation is also common.

Pair 1

Left Video Clip: In this video clip a 2-year-old boy is traveling and exchanging a picture within Phase II and III of the PECS protocol. The child starts in close proximity to his mom (the primary communicative partner) exchanging a picture for bubbles. Mom moves away from her child so he has to travel to deliver the picture. As he is traveling to his mom, he gets distracted by another desired item. Since all PECS students have the “first one free,” the communicative partner allows the child to play with the item. At this point, she would need to put another picture on the child’s PECS communication book. Later on in this video clip the child is discriminating among three pictures as well as traveling across a room to deliver his message, “cheese,” to the communicative partner. The child receives the desired item, “cheese.”

Right Video Clip: This video clip begins with a 3-year-old boy highlighting a very advanced Phase VI of PECS, commenting on the lesson just completed with the clinician and family members. The clip begins with the child vocally requesting a reinforcer, the number 10 puzzle piece. The clinician asks the child a commenting question for which he responds using a sophisticated sentence. The video clip continues with the clinician fading out the commenting question, by saying “look” in order to call attention to an item. At this point the child is learning to discriminate between two verbs, is and are, and between two prepositions, on and under. A color-coded board is used to assist the child in placing the pictures in the correct grammatical order. The child receives social praise for the comment he just delivered.

How goals and objectives are prioritized and selected for treatment

The learner is initially taught to exchange a single picture to request a highly desirable item or activity. Over time, the complexity of the exchange increases from a single picture to a full sentence with attributes. Once the learner demonstrates proficiency with requesting abilities, the focus shifts to teaching commenting skills.

Measures for determining if treatment is working

Specific mastery criteria are described for each phase within the PECS protocol. As the learner demonstrates competency with basic skills (i.e., exchange of a single picture), increasingly complex language skills are taught in a systematic manner. Through mastery of each phase, the learner’s communicative competence increases.

Who can implement this treatment?

Trained clinician Trained educator Trained parent Other

What is the role of the family?

Parents may either initiate training or generalize PECS skills. The child will communicate with all members of the family.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other
(Communication via PECS should occur in all settings).



Is special training recommended or required to conduct or implement treatment?

No Yes, *highly* recommended Yes, required

PECS Basic Training is an intensive two-day workshop that is appropriate for all parents and professionals. Implementer and supervisory certification is available, but not required.

Authors of Picture Exchange Communication System

Andy Bondy, PhD, Pyramid Educational Consultants

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Additional information describing Picture Exchange Communication System

Website: www.pecs.com

Publications:

Charlop-Christy, M. H., Carpenter, M., Le, L., LeBlanc, L. & Kelley, K. (2002). Using the Picture Exchange Communication System (PECS) with children with autism: Assessment of PECS acquisition, speech, social-communicative behavior, and problem behaviors. *Journal of Applied Behavior Analysis*, 35, 213-231.

Frost, L. & Bondy, A. (2002). *Picture Exchange Communication System training manual 2nd Edition*. Newark: Pyramid Educational Consultants, Inc.

Ganz, J. & Simpson, R. (2004). Effects on communicative requesting and speech development of the Picture Exchange Communication System in children with characteristics of autism. *Journal of Autism and Developmental Disabilities*, 34, 395-409.

Tincani, M. (2004). Comparing the Picture Exchange Communication System and sign language training for children with autism. *Focus on Autism and Other Developmental Studies*, 19, 152-163.

Top 5 research references supporting Picture Exchange Communication System

1. Bock, S. J., Stoner, J. B., Beck, A. R., Hanley, L. & Prochnow, J. (2005). Increasing functional communication in non-speaking preschool children: Comparison of PECS and VOCA. *Education and Training in Developmental Disabilities*, 40(3), 264-278.
2. Carr, D. & Felce, J. (2007a). The effects PECS teaching to phase III on the communicative interactions between children with autism and their teachers. *Journal of Autism and Developmental Disorders*, 37(4), 724-737.
3. Howlin, P, Gordon, R. K., Pasco, G., Wade, A., & Charman, T. (2007). The effectiveness of Picture Exchange Communication System (PECS) training for teachers of children with autism: a pragmatic, group randomized controlled trial. *Journal of Child Psychology & Psychiatry*, 48 (5), 473-481.
4. Sulzer-Azaroff, B., Hoffman, A., Horton, C., Bondy, A., & Frost, L. (2009). The Picture Exchange Communication System (PECS): What Do the Data Say? *Focus on Autism*, 24, 89-103.
5. Yoder, P. & Stone, W. (2006 a). Randomized comparison of the effect of two prelinguistic communication interventions on the acquisition of spoken communication in preschoolers with ASD. *Journal of Speech, Language, and Hearing Research*, 49, 698-711.

PIVOTAL RESPONSE TRAINING

Overview

Pivotal Response Training (PRT) is a behavioral treatment approach, derived from applied behavior analysis (ABA), that is play-based, child initiated for developing communication, language, play, and social behaviors. PRT focuses on enhancing four pivotal learning areas: motivation, responsiveness to simultaneous multiple cues, self-management, and social initiations. These skills are considered “pivotal” in that change in these behaviors is associated with widespread improvements in other behaviors.

Pair 1

Left Video Clip: This video clip shows a preschool teacher using PRT with a 2-year-old girl with ASD. Notice how the teacher follows the child’s lead in choosing an activity and determining how to play with a baby doll and pretend food. The child knows many of the food names (maintenance tasks), but she is still learning some food names (acquisition tasks). The teacher is also encouraging the child to share, and throughout the segment the teacher is able to fade prompts in this area. The teacher models several play behaviors that the child imitates spontaneously or with direction from the teacher. The child is able to complete one-step play actions (maintenance tasks), and is now learning two-step actions and turn taking (acquisition tasks). Notice the natural back-and-forth play between the teacher and child. The teacher maintains control of the materials and reinforces the child’s behavior by providing access to the toys. However, these learning trials are presented in a naturalistic, fun manner.

Right Video Clip: This video clip shows a therapist using PRT with a 2-year old boy to address language and play goals. The therapist utilizes child choice by following his lead to toys and activities, as well as offering choices within the activity. The therapist takes turns with the child, letting him choose how to play with the toy on his turns, and modeling appropriate play on her turns. The therapist has the child’s attention before providing cues, and uses cues that are appropriate to the child’s language level (2-4 words). The child is able to use word approximations, particularly in imitation (maintenance tasks). The therapist promotes spontaneity through the use of expectant waiting and also models more complex language, such as whole words, rather than single sounds (acquisition tasks). Notice how the reinforcement provided to the child is directly related to the activity and the child’s behavior. The therapist also reinforces reasonable attempts made by the child. For example, the child requested “open” by saying “ō”, which was followed by the therapist opening the package and providing access to the item.

Pair 2

Left Video Clip: In this video clip, a therapist and 2-year old girl are playing on the floor with a selection of toys based on the child’s interests and developmental level. The therapist offers choices to the child throughout the segment. The child is learning to tolerate turns and share toys, as well as use three-word phrases such as “I want baby” (acquisition tasks). The child is able to readily use single words for requesting and commenting, such as “purse”, “brush”, “kiss” and occasional two-word phrases such as “put on” (maintenance tasks). Notice in the video that the therapist models different words for requesting when the child uses “open” and “let’s trade”, as the child tends to overuse these words. The child and the therapist are playing together through naturalistic interactions and in the child’s home while the therapist is still controlling the materials and providing cues to increase the child’s language and play skills.

Right Video Clip: This video clip shows a teacher using PRT with a 7-year-old boy with autism. Notice how the teacher incorporates the child’s interests into an academic lesson. The lesson includes letter identification and reading sight words (maintenance tasks) and spelling (acquisition task). The teacher provides a choice of activities to the child to ensure she has his attention and that he is motivated. Then, after the child chooses an activity he enjoys (ice cream and cupcake set), the teacher incorporates these materials into the lesson. After the child completes each academic task, the teacher allows him to play with the ice cream. Notice how she is targeting his academic goals in a fun, naturalistic way.



How goals and objectives are prioritized and selected for treatment

PRT goals are determined based upon a systematic analysis of the developmental level of the individual and the appropriate targets for intervention. Priority is given to early social skills, communication, language, and play behaviors as these are building blocks for the achieving more sophisticated behavior.

Measures for determining if treatment is working

Outcome measures can be varied and may include standardized assessments (e.g., language and cognitive assessments), direct assessment of targeted skill areas (usually via observational measurement), and the presence of generalized responding in novel environments, around new people, and across a range of behaviors.

Who can implement this treatment?

Trained clinician Trained educator Trained parent Other (trained peers, siblings, and others in child's environment)

What is the role of the family?

Parents typically are taught to implement PRT during ongoing daily activities with their child in the natural environment.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

In training/certification includes: 1) Reading of PRT training manual. 2) Discussion of PRT components. 3) Observation of trained therapist working with child. 4) Working with child and receiving feedback until trainee meets implementation criteria.

Authors of Pivotal Response Training

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Additional information describing Pivotal Response Training

Website: <http://education.ucsb.edu/autism/>

Publications:

Koegel, L. K., Carter, C. M., & Koegel, R. L. (2003). Teaching children with autism self-initiations as a pivotal response. *Topics in Language Disorders*, 23, 134-145.

Koegel, R. L., & Koegel, L. K. (2006). Pivotal response treatments for autism: communication, social, and academic development. Baltimore: Brookes.

Koegel, R. L., Schreibman, L., Good, A., Cerniglia, L., Murphy, C., & Koegel, L. K. (1989). How to teach pivotal behaviors to children with autism: A training manual. Santa Barbara, CA: University of California.

Top 5 research references supporting Pivotal Response Training

1. Baker-Ericzen, M.J., Stahmer, A., & Burns, A. (2007). Child Demographics Associated with Outcomes in a Community-Based Pivotal Response Training Program. *Journal of Positive Behavior Interventions*, 9, 52-60.
2. Bryson, S.E., Koegel L.K., Koegel, R.L., Openden, D., Smith, J.M., & Nefdt, N. (2007). Large scale dissemination and community implementation of Pivotal Response Treatment: Program description and preliminary data. *Research & Practice for Persons with Severe Disabilities*, 32 (2), 142–153.



3. Humphries, T. L. (2003). Effectiveness of pivotal response training as a behavioral intervention for young children with autism spectrum disorders. *Bridges: Practice-Based Research Syntheses*, 1, 1-10.
4. Schreibman, L., & Koegel, R. L. (2005). Training for parents of children with autism: Pivotal responses, generalization, and individualization of intervention. In E. D. Hibbs & P. S. Jensen (Eds.) *Psychological treatments for child and adolescent disorders: Empirically based strategies for clinical practice* (2nd edition), (pp. 603-631). Washington, DC: American Psychological Association.
5. Stahmer, A. C., & Schreibman, L. (1992). Teaching children with autism appropriate play in unsupervised environments using a self-management treatment package. *Journal of Applied Behavior Analysis*, 25, 447-459.

POSITIVE BEHAVIOR SUPPORT

Overview

Positive Behavior Support (PBS) is a behavioral treatment approach derived from applied behavior analysis (ABA) and social learning theory (Cooper, Heron, & Heward, 2007) for teaching a child new skills to replace challenging behaviors. PBS can be used to address a wide range of challenging behaviors including aggression, tantrums, repetitive behaviors, and self-injurious behavior (SIB). PBS provides a process for identifying the challenging behaviors, developing an understanding of their purpose or function through a functional assessment, and developing a behavior support plan that will result in reducing challenging behavior and developing new skills.

PBS targets multiple domains, including:

- Behavior (e.g., self-control, self-regulation, self-management)
- Functional communication (e.g., use of formal language such as speech, sign language, and/or augmented communication to communicate basic wants and needs)
- Developmental/life skills (e.g., toileting, self-care, eating, sleeping)
- Pre-academic and academic skills (e.g., basic concept recognition, categorization, language arts, math)
- Social skills (e.g., independent and cooperative play, social interaction, social conversation)
- Community skills (e.g., safely riding in a car or school bus, safely walking in community and crossing streets with adults, participating in shopping activity with family, eating at a restaurant with family)

Pair 1

Left Video Clip: This video clip of a 3½-year-old boy with ASD contains two brief segments that are part of a functional assessment to determine the meaning of his challenging behavior. His challenging behavior is a collection of behaviors that form a tantrum consisting of whining, crying, walking away, or falling to the ground, which can escalate to screaming, head thrusting, or aggression toward people and objects. In the first segment the child is at home and approaches the computer, which is being used by his brother. He tantrums, in spite of mom's attempts to explain that it is his brother's turn and to encourage him to wait his turn. Asking to share and having to wait to take his turn appeared to trigger this tantrum; attention from his mother and brother was the consequence. The second segment is outside the public library and begins when he has already dropped to the ground and his mom is trying to get him up so she can go into the library to return library books and check out new books. He tantrums in situations like this when he needs to transition from one place to another and he is given a demand. He does receive attention from his mother who needs to pick him up and go into the library so she can return the books.

Right Video Clip: This video clip of the same 3½-year-old boy with ASD illustrates the implementation of positive behavior support in the same contexts that the functional assessment was conducted in the video clip on the left. In the first segment, the child is prepared for his turn using the computer to end with a timer beeping and transitioning to a preferred activity (story time) when his turn with the computer ends. In the second segment his mom is able to walk with him into the library with his full cooperation by providing him with a visual support that she directs his attention to before entering the library. This helps him know exactly what he will be doing in the library and what is expected of him. In this case, he gets to look at and touch a fun toy and select books to check out.

Pair 2

Left Video Clip: This video clip of a 2-year-old boy with ASD shows his mom during an everyday activity (hand washing) at baseline that is part of a functional assessment to determine the meaning of his challenging behavior. His challenging behavior is a collection of behaviors that form a tantrum consisting of whining and crying. In this baseline video clip, mom scoops up the child and takes him to the bathroom and washes his hands. The child is distressed over this. He does enjoy having his hands in the water during hand washing but does not initiate communication. When mom dries his hands, he again becomes upset and screams. Mom tries to get this done as fast as possible. Most of her language is used to direct or prohibit his actions.



Right Video Clip: This video clip of the same 2-year-old boy with ASD illustrates how mom has learned how to use positive behavior support to help this child initiate communication. Mom is positioning herself at the child's level and modeling language, which supports his cooperation, active participation, and spontaneous communication. Mom demonstrates synchronous language (following the child's attentional focus and action) most of the time and when she does she often gets a payoff of the child using better communication. Hand washing, which is an activity that needs to be done several times a day, is now a productive learning opportunity, rather than a frustrating event for both mom and child.

How goals and objectives are prioritized and selected for treatment

Goals and objectives are prioritized and selected in collaboration with the child's parents and other team members (e.g., early interventionist, classroom teacher, speech-language pathologist). One team member, skilled in PBS and teambuilding, facilitates the process of generating goals and objectives and reaching consensus among team members.

Measures for determining if treatment is working

Measures are designed to be objective and easy to use and may include frequency of problem behavior, frequency of functional communication, percentage of trials correct, and percentage of task steps completed. Measures of social validity are gathered to evaluate treatment acceptability. Quality of life measures also may be gathered.

Who can implement this treatment?

Trained clinician Trained educator Trained parent Other (Educational assistant at school with appropriate training and supervision)

What is the role of the family?

Families serve as collaborative partners, key decision-makers, and, depending on the setting (i.e., home, school or community), co-interventionist or primary interventionist. Families also participate in treatment evaluation.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

Currently, there is no formal professional certification program for professional practitioners of PBS. Many professional practitioners of PBS are certified as behavior analysts through Board Certified Behavior Analyst (BCBA) certification.

Authors of Positive Behavior Support

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Additional information describing Positive Behavior Support

Website: www.pbis.org www.apbs.org www.mayinstitute.org

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

Carr, E. G., Levin, L., McConnachie, G., Carlson, J. I., Kemp, D. C., & Smith, C. E., (1994). Communication-based intervention for problem behavior: A user's guide for producing positive change. Baltimore, MD: Paul H. Brookes.

Bambara, L. M., & Kern, L. (2005). Individualized supports for students with problem behavior: Designing positive behavior plans. New York: The Guilford Press.

Dunlap, G., Carr, E. G., Horner, R. H., Zarcone, J. R., & Schwartz, I. (2008). Positive behavior support and applied behavior analysis: A familial alliance. *Behavior Modification*, 32, 682-698.

Horner, R. H., Carr, E. G., Strain, P. S., Todd, A. W., & Reed, H. K. (2002). Problem behavior interventions for young children with autism: A research synthesis. *Journal of Autism and Developmental Disorders*, 32, 423-446.

Top 5 research references supporting Positive Behavior Support

1. Feldman, M.A., Condillac, R.A., Tough, S., Hunt, S., & Griffiths, D. (2002). Effectiveness of community positive behavioral intervention for persons with developmental disabilities and severe behavioral challenges. *Behavior Therapy*, 33, 377-398.
2. Koegel, L. K., Steibel, D., & Koegel, R. L. (1998). Reducing aggression in children with autism toward infant or toddler siblings. *The Journal of the Association for Persons with Severe Handicaps*, 23, 111-118.
3. Lucyshyn, J. M., Albin, R. W., Horner, R., Mann, J., Mann, J., & Wadsworth, G. (2007). Family implementation of positive behavior support with a child with autism: A longitudinal, single case experimental and descriptive replication and extension. *Journal of Positive Behavior Interventions*, 9, 131-150.
4. Moes, D. R., & Frea, W.D. (2002). Contextualized behavioral support in early intervention for children with autism and their families. *Journal of Autism and Developmental Disabilities*, 23, 521-534.
5. Reed Schindler, H., & Horner, R. H., (2005). Generalized reduction of problem behavior in young children with autism: Building trans-situational interventions. *American Journal of Mental Retardation*, 110, 36-47.

VERBAL BEHAVIOR

Overview

Verbal Behavior (VB) is an analysis of language that has led to treatment methods based upon the principles of behavior analysis. It is a term first introduced in 1938 by B. F. Skinner for any behavior (e.g., vocal, written, gestural, etc.) that achieves its reinforcement through the intervention of another person's behavior. In his book, *Verbal Behavior* (1957), Skinner contends that language is the legitimate subject of a natural science. The book contains an interpretive analysis of the role of the experimentally derived basic principles (e.g., reinforcement, extinction, motivation, etc.) in selecting and determining the verbal behavior of speakers. In the past decade VB has been used as a behavioral treatment approach, using Skinner's specific analysis, for children with autism spectrum disorder (ASD).

Verbal Behavior is targeted across functional categories of verbal behavior identified by Skinner in his book *Verbal Behavior* (1957). The expressive functional categories typically targeted are: Mand Responses- social initiation in the form of requesting: Tact Responses- labeling what is seen, heard, tasted, etc.: Echoic Responses- vocally producing what someone else just said: and Intraverbal Responding- responding to what others say, e.g. answering questions (conversation). In addition to Speaker Behavior, the Verbal Behavior program also targets Listener Behavior, including nonverbal responses to others verbal behavior.

Pair 1

Left Video Clip: This 5-year-old girl with ASD has learned to label (tact) animals with manual sign language during a Discrete Trial Instruction of Verbal Behavior. The purpose of this lesson is to teach her to respond with manual signs in a more "natural" language context.

Right Video Clip: This 22-month-old girl with ASD has limited vocal production and she is learning manual sign language as a bridge to vocal production.

Pair 2

Left Video Clip: This video clip shows a 3 ½-year-old boy with autism during a natural environment teaching session. Natural environment teaching is an effective way to teaching skills during play and other daily routine activities.

Right Video Clip: This 5-year-old girl is learning many skills in a discrete trial instruction format.

Pair 3

Left Video Clip: This 4-year-old boy with ASD had not developed a functional vocal repertoire. He is learning manual sign language paired with vocalizations to increase his tendency to produce vocalizations. In this video clip he is practicing his production of sounds through echoic instruction.

Right Video Clip: This 3-year-old boy with ASD has learned to request toys and play items spontaneously from his instructor. Note his development of eye contact as a language pragmatic skill. Very precise behavioral procedures were implemented over several weeks to teach this important skill.

Pair 4

Left Video Clip: This video clip shows a 4-year-old boy with ASD during a discrete trial instruction session. The pace of instruction, errorless teaching, and mixing and varying the presentation of skills are all designed to increase his instructional attention.

Right Video Clip: This 6-year-old non-verbal boy with ASD has recently transitioned back to school. Each day he spends 30 minutes in the general education classroom with his typically developing peers. Here he is engaging in the daily morning activities. He communicates with manual sign language and all of his peers have also been taught sign language. During the activities when this student is in the classroom all of the students sign and voice simultaneously. This has provided an inclusionary experience that benefits all of the students.



How goals and objectives are prioritized and selected for treatment

A taxonomy of speaker and listener behavior divided into functionally independent categories serves as the body of skills to be assessed. An assessment of speaker and listener responses (described above) is conducted to determine areas to be targeted for treatment.

Measures for determining if treatment is working

Performance data are recorded during treatment sessions. Data are typically gathered on the occurrence of the verbal responses across the functional categories (mand, tact, intraverbal, etc.), across settings and persons. In addition, occasional measurement of overall performance indexed to age can be obtained through administration of the VB-MAPP (Sundberg, 2008).

Who can implement this treatment?

Trained clinician Trained educator Trained parent Other (Any properly trained professional)

What is the role of the family?

The role of the family is significant. To insure the best outcome, training of parents to implement the treatment methods and analysis in everyday environments is required.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

Competency based training is required that includes didactic instruction along with many opportunities to receive in vivo coaching from an experienced behavior analyst with specialized training in the application of Skinner's analysis of verbal behavior.

Authors of Verbal Behavior

Dr. B.F. Skinner

Dr. Jack Michael, Western Michigan University (Retired)

Dr. Mark Sundberg, Sundberg and Associates

Dr. James Partington, Behavior Analysts, Inc.

Additional information describing Verbal Behavior

Website: www.marksundberg.com

www.Carboneclinic.com

Publications:

Barbera, M. (2007) *The Verbal Behavior Approach: How to Teach Children with Autism and Related Disorders*. London: Jessica Kingsley Publishers.

Greer, R. D. & Ross, D. (2007) *Verbal Behavior Analysis*. New York: Pearson Education Inc.

Sundberg, M. & Partington, J. (1998) *Teaching Language to Children with Autism and Other Developmental Disabilities*, Behavior Analysts, Inc.

Sundberg, M. (2008). *VB-MAPP*- Published by AVB Press.(www.marksundberg.com)

Sundberg, M. L. & Partington, J. W. (1998). *Teaching language to children with autism or other developmental disabilities*. Pleasant Hill, CA: Behavior Analysts, Inc.



Top 5 research references supporting Verbal Behavior

1. Braam, S. J. & Poling, A. (1983). Development of intraverbal behavior in mentally retarded individuals through transfer of stimulus control procedures: Classification of verbal responses. *Applied Research in Mental Retardation*, 4, 279 – 302.
2. Carbone, V., Sweeney-Kervin, E., Attanasio, V., Kasper, T., (2010). Increasing the vocal responding of children with autism and other developmental disabilities using manual sign language, mand training, prompt delay procedures, and vocal prompting. *Journal of Applied Behavior Analysis*.43, 705-709.
3. Egan, C. E., & Barnes-Holmes, D. (2009). Emergence of tacts following mand training in young children with autism. *Journal of Applied Behavior Analysis*, 42(3), 691-696.
4. Lamarre, J., & Holland, J. G. (1985). The functional independence of mands and tacts. *Journal of the Experimental Analysis of Behavior*, 43, 5 – 19.
5. Sundberg, M. L., Michael, J., Partington, J. W., Sundberg, C.A. (1996). The role of automatic reinforcement in early language acquisition. *The Analysis of Verbal Behavior*, 13, 21 – 37.

DIR[®]/FLOORTIME[™] MODEL

Overview

The DIR[®]/Floortime[™] Model is a framework for orchestrating a comprehensive program that meets the current developmental level and emotional interests of the child. DIR, which stands for “developmental, individual-difference, relationship-based approach”, enables parents, educators, and clinicians to make assessments and plan treatment programs tailored to the child’s unique profile. Parents and a team of professionals work together, focusing on individual differences in auditory and language processing, motor planning and sequencing, sensory processing and modulation, and visual-spatial processing. The Floortime philosophy, which is central to the model, involves parents and other caregivers joining the child in his world of emotional interests and bringing him into a shared world to promote higher and higher levels of emotional and intellectual functioning, as well as strengthening processing capacities.

Pair 1

Left Video Clip: This video clip shows a 3-year-old child with ASD. At the beginning a therapist observes the interaction between the child and the parents, as they would do at home (baseline). The child walks away from his parents and is not engaged in social interaction. Parents try to talk to him from behind, sing songs and try pretend play to get his attention without much success. A second therapist coaches the parents on how to entice the child to interact with them and use themselves “as the toys”, making sure to be right in front of him and use affect cues. This video clip illustrates how the child becomes more engaged and shows improvement in social reciprocity with caregivers as a result of the new interaction style of the parents. He enjoys back and forth gesturing with his parents, and shows progress through the first three stages of the DIR/Floortime Model (shared attention, engagement and purposeful communication).

Right Video Clip: This video clip shows a 22-month-old child with ASD. At first the mother is asking many questions of the child but he does not respond back. Instead, he explores the toys on his own in a fragmented, unorganized way. The mother describes the child as very distracted and not capable of elaborating on a particular play. This video clip illustrates how the therapist coaches the mother, helping her to enter into the child’s world, follow his interests, and then help him elaborate on what he wants. As a result, the child becomes much more interactive and starts using gestures and language to express his desires.

Pair 2

Left Video Clip: This video clip shows a 4-year-old child with ASD. Early on you see the child wander and become self-absorbed in his own drama, not interacting with the mother when she invites him to play. The therapist uses this opportunity to suggest to the mother that she engage with the child at all functional emotional developmental levels at the same time by combining “Words, Action, and Affect” (WAA) when interacting with the child. He encourages the mother to use high affect, constant dialogue and gesturing to support a continuous flow of engagement and then support the language that is emerging. At the end of the video clip you can see how the mother follows these suggestions and is able to engage the child in a continuous flow, both enjoying the interaction.

Right Video Clip: This video clip illustrates how academics are taught within the DIR / Floortime Model. The teacher has taken a book from the curriculum and creatively transformed it into an experience-based activity. The students must incorporate movement and motor planning into their academic lesson. Comprehension of each page read is reinforced by an experience. This clip is four years into intervention for this child, now 7 years old. The early foundation work that focused on sensory integration, relationships, sustaining interactions, intentionality, problem solving, and thinking result here in the child’s ability to be independent and learn from this academic lesson. He is humorous and jokes with his teacher and peers. At the end of the video clip he gives the pretend money he has earned to his classmates. He is a caring, smart, and social child who is happy and independent in his world.



How goals and objectives are prioritized and selected for treatment

Goals and objectives are prioritized based on the child's unique developmental profile. The primary goal is to build the foundations for healthy emotional, social, and intellectual functioning and overcome challenges. Typically this includes the goals of fostering shared attention and self-regulation, engagement and relating, two-way communication with emotional signals and other gestures, shared social problem-solving, creative use of ideas, and the logical and abstract use of ideas (i.e., the child connecting his ideas to those of others), as well as higher levels of thinking and social/emotional functioning.

Measures for determining if treatment is working

Outcome measures focus on the goals of the program (i.e., assessing the degree to which the child has mastered the foundations for healthy emotional, social, and intellectual functioning). These include measures of relating, communicating, and thinking.

Who can implement this treatment?

Trained clinician Trained educator Trained parent (parents and other caregivers are central to this approach) Other (OT, PT, Speech, Creative Arts, and mental health professionals)

What is the role of the family?

Role of parents and family is critical because of importance of their emotional relationships with the child. They provide the learning interactions, through multiple Floortime sessions each day, plus semi-structured work on motor, sensory, and language functioning, as well as peer relationships.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other (any setting where child/caregiver interaction can occur)

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

Many individuals are able to implement elements of the DIR/Floortime program through self-education from reading, attending ICDL conferences and the Spring Online Training Course, viewing training videotapes, etc. Many parents and professionals who are not certified become experienced in implementing many elements of the program, especially the Floortime component, through reading and/or attending workshops and conferences.

Author of DIR/Floortime

Stanley I. Greenspan, MD, Clinical Professor of Psychiatry, Behavioral Sciences, and Pediatrics at George Washington University; Chair, Interdisciplinary Council on Developmental and Learning Disorders (deceased)

Additional information describing DIR/Floortime

Website: www.floortime.org

Publications:

Greenspan, S.I. and Greenspan, N.T. *The Learning Tree: Overcoming Learning Disabilities from the Ground Up*. Cambridge, MA: Da Capo Press, 2010.

Greenspan, S. I. and Wieder, S. *Engaging Autism: The Floortime Approach to Helping Children Relate, Communicate, and Think*. Reading, MA: Perseus Books, 2006.

Greenspan, S.I. with Salmon, J. *The Challenging Child: Understanding, Raising, and Enjoying the Five "Difficult" Types of Children*. Boston, MA: Addison-Wesley, 1995



Interdisciplinary Council on Developmental and Learning Disorders Clinical Practice Guidelines Workgroup (Stanley Greenspan, M.D., Chair). *Clinical Practice Guidelines for Infants, Children and Families with Special Needs*. Bethesda, MD: Interdisciplinary Council on Developmental and Learning Disorders, 2000.

Training Videotape Series on the DIR Model and Floor Time. A twenty-hour series (13 tapes) of training videotapes featuring Stanley I. Greenspan, M.D. and Serena Wieder, Ph.D., illustrating the Developmental-Individual Difference-Relationship Based (DIR) model and Floor Time strategies for children and families with special needs. Bethesda, MD: The Interdisciplinary Council on Developmental and Learning Disorders (ICDL), 2001.

Top 5 research references supporting DIR/Floortime

1. Greenspan, S.I., and Wieder, S. (1997). Developmental Patterns and Outcomes in Infants and Children with Disorders in Relating and Communication: A Chart Review of 200 Cases of Children with Autistic Spectrum Disorders. *The Journal of Developmental and Learning Disorders*, 1(1), 87-141.
2. Greenspan, SI & Wieder, S. (1999). A functional developmental approach to autism spectrum disorders. *JASH*, 24(3), 147-161.
3. Pilarz, K. (2009). Evaluation of the efficacy of a seven week public school curriculum based DIR/Floortime parent training program for parents of children on the autism spectrum. Unpublished dissertation.
4. Solomon, R., Necheles, J., Ferch, C., & Ruckman, D. (2007). Pilot study of a parent training program for young children with autism. *Autism*, 11(3), 205–224.
5. Wieder, S. & Greenspan, S.I. (2005). Can children with autism master the core deficits and become empathetic, creative, and reflective? A ten to fifteen year follow-up of a subgroup of children with autism spectrum disorders (ASD) who received a comprehensive developmental, individual-difference, relationship-based (DIR) approach. *Journal of Developmental and Learning Disorder* 9, 1-29.

ENHANCED MILIEU TEACHING

Overview

Enhanced Milieu Teaching (EMT) is a naturalistic approach to teaching functional communication skills in everyday interactions using environmental arrangement, responsive interaction strategies, modeling, prompting, and natural consequences for communication. EMT incorporates both developmental and behavioral strategies to facilitate language learning through naturally occurring situations, prompting, and modeling; by following the child's lead or interest; and using responsive interaction techniques to build social, conversational interaction and new language in a functional context. Enhanced Milieu Teaching specifically targets communication and language, which includes social use, vocabulary, and syntax.

Pair 1

Left Video Clip: Children with ASD benefit from being taught in play and routines by a clinician using EMT strategies in a one-on-one play setting. In this video clip, a 6-year-old child with ASD who has beginning-level play skills interacts with a clinician while playing with a marble roll toy. He communicates verbally and occasionally uses an augmentative and alternative communication (AAC) device. His targets are single word utterances in both modes. The clinician begins the interaction by presenting a bag of parts that requires assistance to open and prompting the child to say "open" in a milieu teaching prompting episode. The clinician moves quickly on to set up an engaging activity. She talks to the child, faces the child, gives him pieces to place while assembling the toy, and paces her communication to match the child. She uses single words to map their shared actions and responds to his single words with two-word expansions. She occasionally models or expands his utterances using the AAC device. The interaction is sustained with mirrored actions (clinician imitates the child) and comments (mapping actions). Several environmental arrangements are used strategically to encourage child communication (giving choices, providing containers that require assistance in opening, and waiting with a cue in an activity). The activity and conversation move along smoothly with an episode of shared enjoyment by the clinician and child at the end of the video clip.

Right Video Clip: Children who use AAC devices need opportunities to communicate functionally using their systems across settings, activities, and routines. In this video clip, the clinician uses EMT strategies with a six-year old child with ASD who is using his AAC device in two routines. This young child uses echoic and rote language but fewer than 20 words spontaneously. His targets on the AAC device are two-word utterances. The clinician models single words and two-word utterances verbally and on the AAC device. In the Play-Doh activity, the clinician models commenting using the AAC device. When the child comments, the clinician expands verbally using the AAC device. Note the clinician's attempt to present a choice. When the child does not respond to her time delay and appears disinterested, the clinician moves quickly on without requiring the child to respond. In the second segment, the clinician and child eat a snack together and both comment on their activity using the AAC device. The clinician ignores some minor challenging behavior and then re-engages the child by presenting a choice of cookies or drink. The child requests using the AAC device and the clinician responds by providing cookies and moving the conversation back to commenting, turn taking, and expanding.

Pair 2

Left Video Clip: Parents of children with ASD are taught how to use EMT through systematic, individualized parent training. Training follows a Teach-Model-Practice-Feedback cycle and occurs in both the clinic and at home. Parents are taught EMT strategies in four hour-long interactive workshops. After each workshop, the clinician models the strategies with the child and describes what she is doing. The parent practices with the child and receives feedback from the clinician. In this video clip, during a home practice session following a workshop on expansions, the clinician reviews what an expansion is and how to expand the child's utterances by adding words. The 3-year-old boy with ASD uses single words. His goals are to increase label and action vocabulary in preparation for two-word utterances. His parents and clinicians expand his single word utterances to model new agent action and action object phrases. His parents and the clinician begin the session by problem solving about how and when to use expansions in home routines. Next, the clinician models the entire EMT intervention, emphasizing expansions of single word utterances. Then, the parent plays with her child and practices expanding his single word utterances while the clinician provides support and



coaching during the interaction. Finally, in the feedback phase, the clinician emphasizes positive examples of the parent's use of the expansions and the impact of expansions on the child's behavior.

Right Video Clip: An important part of teaching parents to use EMT is identifying routines at home in which parents can use EMT strategies to support their children's communication development. The familiar, predictable structure of the routine makes it easier for children to communicate and for parents to focus on using EMT strategies to support communication. This video clip shows four routines at home with a 3-year-old boy who currently uses single words but is ready to learn two-word utterances. First, the clinician and child participate in a play routine using a slide. The clinician presents choices (baby or monkey), the child chooses, and they slide the baby or monkey down the slide, labeling the action. The sequence is repeated several times to extend the routine. Next, the clinician and child look at pictures together. The child points, vocalizes or labels the picture, and the clinician expands the child's utterances to include a verb. The pace is quick and the clinician acts out actions included in the expansion. In the third routine, the parent and child drink juice. The parent mirrors the child's actions and maps words onto their shared activity. The clinician coaches the parent, suggesting actions and words that can be repeated in the routine. In the last routine, the clinician mirrors and maps opening and closing hands with water and bubbles in the bath, then the clinician closes her hands, waits and prompts the child to say "open."

How goals and objectives are prioritized and selected for treatment

Functional, social communication is the primary goal for all children. Specific means of communicating (spoken language, sign language, augmentative and alternative communication) and forms (vocabulary, semantics, syntax) are individualized based on child assessments and family priorities. Language samples, structured observations at home and in the clinic, standardized assessments, and parent report of routines and communication strategies are used to develop individual plans and goals.

Measures for determining if treatment is working

Changes in child productive language as measured by language samples (e.g., mean length of utterance, number of different words, number of spontaneous initiated utterances) and standardized assessments of vocabulary and language skills. Generalization across partners and settings is also measured. When parents or teachers are trained, observational assessments measure use of EMT across settings and time.

Who can implement this treatment?

Trained clinician Trained educator Trained parent Other

What is the role of the family?

All families are partners in EMT goal setting and progress evaluation. When families indicate interest, family members can be taught to implement EMT strategies at home and in the community.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

Ideal training includes intensive instruction and practice with feedback from an EMT specialist with follow-up consultation. Parents participate in a four-month training that includes weekly home visits. Professionals may attend an intensive two-week workshop offered at Vanderbilt (plus follow-up consultation) or complete an internship with the project. Teachers are trained onsite in their classrooms, usually over a period of two to three months with weekly consultations and monthly didactic training, plus video and email feedback.

Author of Enhanced Milieu Teaching

Ann Kaiser, PhD and Terry Hancock PhD Department of Special Education, Vanderbilt University



Additional information describing Enhanced Milieu Teaching

Website: <http://kc.vanderbilt.edu/kidtalk/>

Hancock, T.B. & Kaiser, A.P. (2006). Enhanced Milieu Teaching. In R. McCauley & M. Fey (Eds). Treatment of language disorders in children. Baltimore: Paul Brookes.

Kaiser, A. P. & Grim, J. C. (2005). Teaching functional communication skills. In M. Snell & F. Brown (Eds.), Instruction of Students with Severe Disabilities, (pp. 447-488). Upper Saddle River, NJ: Pearson.

Kaiser, A. P. & Hancock, T. B. (2003). Teaching parents new skills to support their young children's development. *Infants and Young Children*, 16, 9-21.

Kaiser, A. P., Hancock, T. B., & Hester, P. P. (1998). Parents as co-interventionists: Research on applications of naturalistic language teaching procedures. *Infants and Young Children*, 10(4), 1-11.

Kaiser, A.P., & Trent, J. A. (2007). Communication intervention for young children with disabilities: Naturalistic approaches to promoting development. In S. Odom, R. Horner, M. Snell & J. Blacher (Eds.), *Handbook of Developmental Disabilities*, (pp. 224-246). New York: Guilford Press.

Top 4 research references supporting Enhanced Milieu Teaching

1. Hancock, T.B. & Kaiser, A.P. (2002). The effects of trainer-implemented enhanced milieu teaching on the social communication of children who have autism. *Topics in Early Childhood Special Education*, 22(1), 39-54.
2. Kaiser, A. P., Hancock, T. B., & Hester, P. P. (1998). Parents as co-interventionists: Research on applications of naturalistic language teaching procedures. *Infants and Young Children*, 10(4), 1-11
3. Kaiser, A. P., Hancock, T. B., & Nietfeld, J. P. (2000). The effects of parent-implemented enhanced milieu teaching on the social communication of children who have autism. *Journal of Early Education and Development [Special Issue]*, 11 (4), 423-446.
4. Kaiser, A. P., Hancock, T. B., & Trent, J. A. (2007). Teaching parents communication strategies. *Early Childhood Services: An Interdisciplinary Journal of Effectiveness*, 1(2), 107-136.

MORE THAN WORDS[®] — THE HANEN PROGRAM[®]

Overview

More Than Words[®] – The Hanen Program[®] is a family-focused, social pragmatic intervention program for parents of children with Autism Spectrum Disorder (ASD). Based on social-interaction theory, the program recognizes the child as part of a dynamic social system and the family as the most important element in a child's life. In a More Than Words program, parents learn strategies that they can apply during every day, naturally occurring interactions with their child; strategies that facilitate the child's social and communication skills. More Than Words is based on It Takes Two to Talk – The Hanen Program for parents and best practice recommendations for treatment for children with ASD.

More Than Words targets the general areas of interaction and communication. The focus is on helping the child acquire the following skills, which are the underpinnings of interaction and communication:

- Imitation: parents learn to imitate their child and help their child imitate them by providing cues as needed
- Attention: paying attention and developing joint attention
- Shared Enjoyment: through inclusion of child's sensory preferences in activities
- Comprehension: of gestures, words, and sentences
- Expressive speech: gestures and verbal communication, depending on the child's level of communication development
- Play with toys: functional and pretend play
- Peer play: if the child is ready

Pair 1

Left Video Clip: In this video clip, you will see how the father of a 4-year old boy with ASD becomes familiar with what his son likes so he has a good idea of what might motivate him to communicate. By creating structured, repetitive games based on the child's preferences, parents can become the best toy in the house. This boy likes movement and visual patterns. When he's jumping up and down and watching his flicking fingers, he's sending a strong message about the kinds of sensations he likes. His dad uses his love of movement to create fun-filled, motivating activities in which he can learn to communicate that he wants his dad to keep throwing him "up" in the air. Dad comes up with another simple, predictable game that incorporates tickles – something else his son likes. Notice how the child in the video clip has no problem filling in the word "gotcha" when dad makes sure he's down at his son's level and cues him by waiting. And while looking at people is hard for this little boy, he can't help but look at dad because the game is so much fun.

Right Video Clip: In this video clip, you will see how a therapist brings together a group of parents of children with ASD for eight classes, helping them learn specific interaction strategies to promote their child's communication development during everyday situations and routines. Parents learn what to expect from their child at his current stage of communication and how to help him progress to the next stage. They learn to use simple, but powerful strategies, such as being face-to-face, waiting long enough to let their child respond, following their child's lead, and making activities predictable and repetitive so it's easier for him to know what to do or say. In addition to attending classes, parents attend three individual visits with their group leader. During the visit, the therapist videotapes the parents while they are interacting with their child and applying the strategies they've learned in class. While filming, the therapist acts as the parents' coach, making suggestions as needed. After the videotaping, parents watch their videos together with the therapist to see what is and isn't working. When the More Than Words program ends, parents have confidence in the skills they can use to foster their child's communication development on a day-to-day basis.

How goals and objectives are prioritized and selected for treatment

Through observation and collaboration with parents during the assessment and videotaped home visits, goals are established. There is a set of communication assessment checklists that parents complete together with the speech-language pathologist in order to assess the child's interaction skills, how and why the child communicates, as well as level of comprehension. These guide the goal development process.



Measures for determining if treatment is working

Parents complete a qualitative questionnaire at the end of the treatment program. In addition, the program leader, with the parent, completes the communication assessment checklists in order to compare pre and post measures for the child. Since there are four videotaped sessions of the parent/child interactions, changes in the targeted areas are assessed qualitatively.

Who can implement this treatment?

Trained clinician Trained educator Trained parent Other

What is the role of the family?

Parents become their child's primary language facilitator by learning to apply the More Than Words program strategies within everyday activities and conversations with their child. In essence, they become the interventionists.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other (any setting where child/caregiver interaction can occur)

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

Training for speech-language pathologists take place in two 3-day Hanen workshops.

Author of *More Than Words* – The Hanen Program

Fern Sussman, (BA, DSPA) Speech Language Pathologist, The Hanen Centre, Toronto

Additional information describing *More Than Words* – The Hanen Program

Website: www.Hanen.org

Books:

More Than Words (Sussman, 1999) – guidebook for parents

More Than Words Making Hanen Happen Leaders Guide (Sussman, F., Honeyman, S. & Lowry, L. The Hanen® Centre, Toronto, 2007)

Brochures:

Available from the Hanen Centre describing training and resources

Top 3 research references supporting *More Than Words* – The Hanen Program

1. Carter, A., Messinger, D., Stone, W., Celimli, S., Nahmias, A., & Yoder, P. (2011). A randomized controlled trial of Hanen's 'More Than Words' in toddlers with early autism symptoms. *Journal of Child Psychology and Psychiatry*, doi:10.1111/j.1469-7610.2011.02395.
2. Girolametto, L., Sussman, F., & Weitzman, E. (2007). Using case study methods to investigate the effects of interactive intervention for children with Autism Spectrum Disorders. *Journal of Communication Disorders*, 40, 470-492.
3. McConachie, H., Randle, V. & Le Couteur (2005). A controlled trial of a training course for parents of children with suspected autism spectrum disorder. *Journal of Pediatrics*. 147. 335-340.

RELATIONSHIP DEVELOPMENT INTERVENTION®

Overview

Relationship Development Intervention® (RDI®) is a program for educating and coaching parents and teachers of children with autism spectrum disorder (ASD) and others who interact and work with the child. The mission of RDI is to restore the guided participation relationship, the basis for dynamic intelligence. Remediating those specific deficits that impede people on the autism spectrum from productive employment, independent living, marriage, and intimate social relationships. RDI empowers families and those who are primarily involved in caring for and educating the child. The bulk of resources are invested in preparing parents and teachers to act as participant guides, creating daily opportunities for the child to respond in more flexible, thoughtful ways to novel, challenging, and increasingly unpredictable settings and problems.

Pair 1

Left Video Clip: One of the basic principles of the RDI Program is the idea of the "Master-Apprentice" relationship (also called "guided participation"). Guided participation is not about "getting" the child to comply or to do something. Compliance is a passive state where the child is continually awaiting information to determine the "right" thing to do, whereas apprenticeship is an active process where the child is learning to think and problem-solve like the master. But how do you develop a productive master-apprentice relationship if the child resists it? In this video clip of a 5-year-old child with ASD, you see the therapist models guiding and pacing for the mom, using the backdrop of making pancakes as the activity.

Right Video Clip: In this video clip a 3-year-old child at risk for ASD is focused on jumping into the water. Mom then increases the zone of connection by holding both of his hands while she chants to provide a little resistance so he is not just focusing on falling into the water, but also coming to understand his role in this interaction. Notice how he really starts listening to mom's chat and starts to watch her cues before falling into the water. In just a couple of minutes she has been able to guide her son into a co-regulated activity where they are participating actively with one another.

How goals and objectives are prioritized and selected for treatment

By an RDI Program Certified Consultant, through RDI Operating System.

Measures for determining if treatment is working

The RDA, a systematic assessment of family progress, is conducted every 6 months with the guidance of an RDI Consultant. See peer reviewed journal article, listed below.

Who can implement this treatment?

Trained clinician Trained educator Trained parent Other

What is the role of the family?

Both fathers and mothers are essential participants in the treatment process

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

Beginning, intermediate, advanced seminars and professional supervision is required during training/certification.



Authors of RDI

Steven E. Gutstein Ph.D, Director
Rachelle Sheely, Ph.D, Director

Additional information describing RDI

Website: www.rdiconnect.com

Publications:

Gutstein, S., Gutstein, H., Baird, C. Eds. (2006). [*My Baby Can Dance: Stories of Autism, Asperger's, and Success Through the Relationship Development Intervention \(RDI\) Program.*](#) Connections Center Pub.

Gutstein, S., Gutstein, H., Baird, C. Eds. (2007). [*The Relationship Development Intervention Program and Education.*](#) Houston, Texas: Connections Center Publications.

Gutstein, S. E., Ph.D. (2009). [*The RDI Book: Forging New Pathways for Autism, Asperger's and PDD with the Relationship Development Intervention Program.*](#) Connections Center.

Gutstein, S. E. (2009). Empowering families through Relationship Development Intervention: an important part of the biopsychosocial management of autism spectrum disorders. *Ann Clin Psychiatry*, 21(3), 174-182.

Top 1 research reference supporting RDI

1. Gutstein, S. E., Burgess, A. F., & Montfort, K. (2007). Evaluation of the relationship development intervention program. *Autism*, 11(5), 397-411.

SCERTS[®] MODEL

Overview

The SCERTS[®] Model is a comprehensive educational approach for children with autism spectrum disorder (ASD) and their caregivers. The model is derived from research based on typical and atypical development—emphasizing the core challenges for children with ASD and their unique learning styles. The SCERTS Model incorporates family and child-centered principles within individualized programs to support children and caregivers across home, school, and community settings. It is relevant for a wide range of abilities and ages, from Early Intervention to Adult Services.

The SCERTS domains address the core deficits of ASD and abilities that have the greatest impact on a child's long-term success. These include: Social Communication (SC), the development and use of spontaneous language, communication, emotional expression, and play skills to support participation in everyday activities and secure trusting relationships with children and adults; Emotional Regulation (ER), the ability to maintain a well-regulated emotional and physiological state (self-regulation) independently or respond to regulatory assistance provided by others (mutual regulation); and Transactional Support (TS), the implementation of interpersonal and learning supports in response to a child's needs and interests, to modify activities and the environment, to provide tools to enhance learning and to support families.

Pair 1

Left Video Clip: This 5-year-old boy with ASD is participating in an activity with his sister that addresses family priorities and supports that illustrate the SCERTS Model being used at home. His sister and parents have put a number of transactional supports in place to help this child achieve objectives that address his core developmental challenges and his family's priorities. Social Communication objectives that are targeted include 1) using words and phrases as a means to communicate, 2) watching his partners, 3) following instructions, and 4) utilizing pictures to focus attention in this fun, playful exercise routine. Transactional Supports for the child's partners have been developed in order to support his ability to actively participate. For example, his sister and father model simple language for him and use visual cues to support his understanding.

During the jumping jack routine, this child is supported while targeting the additional objectives of imitating actions and words spontaneously, as well as looking at others while using words. This was accomplished by coaching his partners (sister and father) to provide repeated learning opportunities and clear models to encourage imitation and social interaction. The repetition across activities allows him to learn and use specific words (1, 2, 3 times, up/down, fast/slow) in different contexts to promote generalization. In addition, visual supports help him to transition between activities and to engage in back and forth (reciprocal) interactions. Finally, the use of pictures, simplified language, and a slower pace increase this child's comprehension and allow him time to initiate interactions and participate actively.

The 4th step in this activity, "Go Boo Mommy", adds great fun as well as a transition to the next activity – brushing teeth to get ready for school. Notice that when this child goes into the bathroom, after he "boos" mom, there is a picture schedule on the wall and he moves the picture representing the "Finger Walk" game from the green to the red side and says spontaneously "Finger Walk finished", which mom affirms. Then he looks at the next picture, which is "Brush teeth", and he gets his tooth brush and tooth paste independently.

Right Video Clip: This video clip of the same 5-year-old boy with ASD demonstrates the SCERTS Model in action. It shows the use of picture symbols both in a picture schedule and a picture communication system as Transactional Supports to target spontaneous behavior and independence. The first segment shows this child looking at his picture schedule spontaneously, which has a green side for activities "To Do Next", and a red side for activities that are "Finished". He then takes the schedule, which is on a portable strip that he can take from room to room, and brushes his teeth independently. When he is done brushing his teeth, he moves the symbol to the "Done" side, and then looks at the next picture and says "Play". Mom has ordered the activities so that his teeth brushing is followed by something fun to motivate him.



In the next segment, mom has made his favorite snack, chocolate milk. She offers him the milk and provides supports for him to use language at many points in the activity. First, he uses language to describe turning the lid to close the top. Then mom prompts him to build a sentence with his communication board by touching the sentence strip. He then selects a series of picture symbols and attempts to say the words in the sentence he has built. Mom then models the speech to give him practice saying the words. Dad, who is running the camera, then shows that he is working on building two sentences. The first describes what mom did (mommy pour) and the second what the child gets (Shannon drink chocolate milk). The visual supports help build language at a higher level than this child is able to produce with his speech and also provide opportunities and supports for him to practice and use speech.

Pair 2

Left Video Clip: This 5-year-old boy with ASD (same child as the first pair of video clips in the home) is participating in his inclusive preschool classroom that targets objectives and incorporates supports that illustrate the SCERTS Model in action. You will notice that his educational team has put a number of Transactional Supports in place to help him achieve objectives that address his core developmental challenges and his family's and teacher's priorities. The student's objectives include 1) initiating interactions spontaneously, 2) utilizing picture schedules to navigate his environment independently, and 3) using visual supports to help him focus his attention and participate in whole group learning activities. In order to support the development of these abilities, goals for the student's partners (staff, peers) are established. You will notice that his preschool staff has organized the room with schedules and visual "check in" systems. The consistent use of these supports enables the student to navigate his classroom environment and transition between routines independently and in a well-regulated state ready to participate in the next activity. This is seen several times throughout the video clip, including during his initial transition from his cubby in the morning to lining up for outside play and from circle time to lunch.

During the initial morning meeting routine where the class is engaged in a language-based song routine about colors, this student is supported with a variety of strategies to help foster his participation in the group activity. Environmental modifications such as a carpet square helps define where he is to sit, while sensory supports such as the fidget toy help him to maintain his attention to the activity. Several visual supports also are in place to help foster his participation. He has a picture schedule to refer to that details the various activities within the morning meeting in proximity to his seat. Additionally, he is using written word strips with color names (a language-based strategy) to focus his attention. These written words provide information critical to supporting purposeful and independent engagement. Several key interpersonal supports or interactive style modifications can also be observed and are critical to supporting his spontaneous initiation of communication. For example, his school staff models simple language, responds consistently to his communicative attempts (e.g., his comments about color preference and requesting his turn), and provides him with opportunities to initiate.

Right Video Clip: This same 5-year-old boy with ASD is participating in a shopping activity with his father. This clip illustrates that the SCERTS model is designed to target objectives and active learning across contexts. Here you will see the child working on similar objectives with similar supports as are highlighted in the previous clips. SCERTS prioritizes learning within natural activities and routines in an effort to promote generalization of new skills and abilities. You will notice that his father has put a number of Transactional Supports in place to help this child achieve objectives that address his core developmental challenges and his family's priorities. For example, objectives include helping him to use words and phrases consistently as a means to communicate, as well as to utilize pictures to help focus his attention while shopping.

In order to support the development of these abilities, transactional support goals for the child's partners are established. For example, his father models simple, developmentally appropriate language, positive emotional support, and he uses a visual schedule comprised of word combinations to support his expression. During the shopping trip, this child is supported in achieving the additional objectives of using a visual schedule, a language-based organizational strategy, to focus his attention and to complete an activity. This is accomplished by coaching his father to provide repeated learning opportunities and to clearly model the schedule's use. In addition, his father supports his son's understanding and participation by providing gestural cues. While his father is off screen, he can clearly be heard cueing the child to look in the direction he is pointing several times. In each instance, the object he is pointing to is in close proximity ensuring greater likelihood of success in following the point. Finally, his father's interactive style, which provides a balance of



turns in the conversation, slows the rate of conversational turns, and follows the child's focus of attention, which all support this child's initiation of communication and active participation in the shopping outing.

Pair 3

Left Video Clip: This 7-year-old boy with ASD is participating in a family bowling activity based on practices and supports that illustrate the SCERTS Model in action in the community environment. SCERTS prioritizes learning within natural activities and routines in an effort to promote generalization of new skills and abilities. You will notice that his family members have put a number of transactional supports in place to help this child achieve objectives that address his core developmental challenges and his family's priorities. His objectives include using language based regulatory strategies such as self-talk to maintain a well-regulated state, to respond to regulatory assistance provided by others, and to participate in new and unfamiliar situations. In order to support the development of these abilities, goals for the child's partners are established. His mother has created a simple written schedule to preview the steps of bowling. This has been reviewed with the child several times prior to the bowling outing. Throughout the clip, you hear her using the simple language on the schedule to provide consistent and familiar organizing cues to her son.

Watching the clip you will notice that his family members focus on Emotional Regulation and are aware of the potential for dysregulation and disengagement throughout the activity due to the overstimulating environment and the unfamiliarity of the activity. Therefore, they monitor this child consistently for signs of mild dysregulation and offer support to prevent escalation. Sometimes, the support is offered by honoring his protests and refusals and other times it is offered by suggesting a regulatory strategy (e.g., covering his ears) and or engagement in a step of the activity (e.g., choosing a ball). You will notice that this level of support enables the child to use language to organize himself and feel comfortable within the challenging environment, so that after a few minutes he is able to suggest independently and confidently, "Let's go bowling." Finally, several key interpersonal supports or interactive style modifications can also be observed during this clip and are critical to supporting active engagement and extended reciprocal conversations. For example, his mother follows the focus of his attention, commenting on things of interest in the environment (e.g., the FedEx truck and the blue ball).

Right Video Clip: This same 7-year-old boy with ASD is participating in a karate lesson based on practices and supports that illustrate the SCERTS Model in action in the community environment. Here you will see the child working on communication and regulatory objectives within the context of his natural routines while supported by his instructor. You will notice that his karate instructor has put a number of transactional supports in place to help this child achieve objectives that address his core developmental challenges and his family's priorities. For example, his objectives include using written schedules to engage productively in extended activities and making choices when offered by his partners. In order to support the development of these abilities, goals for the child's partners are established. For example, his instructor offers repeated opportunities to make choices throughout the duration of the lesson and provides ample time for responding. This child is supported in achieving the objectives of 1) actively using written schedules (a language based organizational strategy), and 2) engaging productively during the lesson through the provision of direct teaching and modeling by his instructor. In addition, his instructor supports his active engagement by utilizing familiar routines, providing clear, positive feedback and modeling expected behavior—all key transactional supports within the SCERTS model.

How goals and objectives are prioritized and selected for treatment

The SCERTS Model incorporates a systematic 10-step assessment process that allows a child's team to have greater understanding of the child's developmental profile, challenges and interests, and caregiver concerns. A child's strengths and needs in social communication and emotional regulation are documented, and critical transactional supports for the family and educational team are identified. Specific goals and objectives are selected based upon three criteria: the child's developmental status, family priorities, and functional needs.

Measures for determining if treatment is working

The SCERTS Model utilizes a detailed curriculum-based assessment, which provides baseline data on an individual's developmental profile and available support. Progress is tracked daily and weekly via systematic observation during naturalistic settings and quarterly reassessment of goals and objectives. Parents also provide feedback about progress.



Who can implement this treatment?

Trained clinician Trained educator Trained parent Other (All partners in a child's life)

What is the role of the family?

SCERTS is a family-centered model, and caregivers are engaged as collaborators in assessment and programming efforts. Caregivers are recognized as experts of their child by contributing to and validating assessment findings and prioritizing goals and objectives. Educational and emotional support activities are provided for families based on assessed needs.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other (SCERTS can be implemented across all home, school, and community contexts)

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

In addition to becoming familiar with the framework as explained in the comprehensive two volume SCERTS manual, it is recommended that professionals participate in introductory and advanced implementation trainings.

Authors of SCERTS Model

Barry M. Prizant, Ph.D., CCC-SLP, Director, Childhood Communication Services, Adjunct Professor, Center for the Study of Human Development, Brown University, Providence, RI

Amy M. Wetherby, Ph.D., CCC-SLP, Director, FSU Autism Institute, Professor of Clinical Sciences and the Laurel Schendel Professor of Communication Disorders, Florida State University, Tallahassee, FL

Emily Rubin, MS, CCC-SLP, Director, Communication Crossroads, Lecturer, Yale University School of Medicine

Amy C. Laurent, EdM, OTR/L, University of Rhode Island, Private Practice Affiliate Communication Crossroads

Additional information describing SCERTS Model

Website: www.SCERTS.com

Publications:

Prizant, B. M., Wetherby, A. M., Rubin, E., & Laurent, A. C. (2003). The SCERTS Model: A transactional, family-centered approach to enhancing communication and socioemotional abilities of children with Autism Spectrum Disorder. *Journal of Infants and Young Children*, 16, 4, 296-316.

Prizant, B.M., Wetherby, A.M., Rubin, E., Laurent, A.C., & Rydell, P. (2002). The SCERTS model: Enhancing communication and socioemotional abilities of children with Autism Spectrum Disorders. *Jenison Autism Journal*, 14, 4, 2-19.

Prizant, B. M., Wetherby, A. M., Rubin, E., Laurent, A. C., & Rydell, P. J. (2006). The SCERTS Model: A comprehensive educational approach for children with autism spectrum disorders. Volume I: Assessment. Baltimore, MD: Paul H. Brookes Publishing Co.

Prizant, B. M., Wetherby, A. M., Rubin, E., Laurent, A. C., & Rydell, P. J. (2006). The SCERTS Model: A comprehensive educational approach for children with autism spectrum disorders. Volume II: Program planning and intervention. Baltimore, MD: Paul H. Brookes Publishing Co.

Wetherby, A.M., Rubin, E., Laurent, A. C., Prizant, B.M., & Rydell, P. J. (2006). Summary of Research Supporting the SCERTS Model. Accessible at:

<http://www.scerts.com/ResearchSupportingtheSCERTSModel10-7-06.pdf>



Top 5 research references supporting SCERTS Model

1. Laurent, A. C., Rubin, E. (2004). Implementing a curriculum-based assessment to prioritize learning objectives in Asperger syndrome and high-functioning autism. *Topics in Language Disorders, 4*, 298-315.
2. Prizant, B. M., Wetherby, A. M., Rubin, E., & Laurent, A. C. (2003). The SCERTS Model: A transactional, family-centered approach to enhancing communication and socioemotional abilities of children with Autism Spectrum Disorder. *Journal of Infants and Young Children, 16, 4*, 296-316.
3. Walworth, D.D. (2007). The use of the SCERTS model within music therapy for children with autism spectrum disorder. *Journal of Music Therapy, 2*, 1-22.
4. Walworth, D.D. (2009). Using the SCERTS model assessment tool to identify music therapy goals for clients with autism spectrum disorder. *Journal of Music Therapy, 3*, 204-216.
5. Wetherby, A. & Woods, J. (2006). Effectiveness of early intervention for children with autism spectrum disorders beginning in the second year of life. *Topics in Early Childhood Special Education, 26(2)*, 67-82.

SON-RISE PROGRAM[®]

Overview

Son-Rise is a home-based, child-centered program that helps children and their families to bond and build relationships. Son-Rise sees autism as a social relational disorder (not a behavioral disorder). Son-Rise practitioners teach parents how to join children in their world first, forming a powerful bond. Using each child's motivations, they encourage the child to relate more and more deeply with others. The Son-Rise Program focuses on training parents because they are viewed as the child's primary resource. Son-Rise practitioners help parents and therapists to cultivate a non-judgmental and optimistic attitude, a crucial relationship-building element of the program. This treatment targets specific domains such as social development, language, non-verbal communication (including eye contact), feeling and expressing love, attention span, and flexibility (vs. rigidity).

Pair 1

Left Video Clip: This 5-year-old child with ASD and his family came to the Son-Rise Program to work on two of his main challenges, making eye contact and interacting with other people. In this video clip, the therapist first joins the child in his repetitive behaviors of chewing and rocking on the ball. When he engages with the therapist, she helps him to stay interactive in the game while also helping him to develop his eye contact.

Right Video Clip: Although this 7-year-old child with ASD is highly verbal, one of his main challenges was allowing variation within a topic of conversation. He also found it challenging to answer other people's questions. This segment shows the Son-Rise therapist joining in with the child's highly repetitive conversation. The child repeatedly asks, "Who's coming next?" because he wants to review the list of individuals who he will be seeing that day. The therapist then asks, "What do you eat?" and then persists in a delightful way. Using these Son-Rise Program techniques the therapist is able to encourage the child to be flexible enough to answer his question.

How goals and objectives are prioritized and selected for treatment

Enabling children to build meaningful relationships with others is paramount. Social goals take priority over academic goals. In fact, the Son-Rise program prioritizes human interaction over any other goal. Beyond that, goals and objectives are pursued in the context of the five stages of development outlined in the program's Social Developmental Model.

Measures for determining if treatment is working

The Son-Rise Program Social Developmental Model enables parents and professionals to track where children are according to the Four Fundamentals: eye contact, communication, interactive attention span, and flexibility. Son-Rise also values a parent's direct experience of their child as more interactive, communicative, and affectionate.

Who can implement this treatment?

Trained clinician Trained educator Trained parent Other (In-home parent-trained volunteer)

What is the role of the family?

Son-Rise views the family as the child's primary resource. The program is family-focused, and training is conducted first and foremost with and within the family.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required



Certified Child Facilitator: 1.5 years of training. Certified Teacher: an additional 2 years. Parents need a minimum of three 5-day training programs (not a certification).

Authors of Son-Rise Program

Barry Neil Kaufman
Samahria Lyte Kaufman

Additional information describing Son-Rise Program

Website: www.autismtreatment.org

Books and DVDs:

Kaufman, B.N. Son-Rise: The Miracle Continues.

Kaufman, R. K. Breakthrough Strategies for Autism Spectrum Disorders (DVD)

Kaufman, B.N. A Miracle To Believe In.

The Autism Treatment Center of America, Autism Solution: Getting Started with The Son-Rise Program (DVD)

Top 5 research references supporting Son-Rise Program

1. Dawson, G., and Galpert, L., (1990) Mothers' use of imitative play for facilitating social responsiveness and toy play in young autistic children. *Development and Psychopathology*; 2: 151-162.
2. Field, T., Field T., Sanders, C., Nadel, J. (2001) Children with autism display more social behaviors after repeated imitation sessions. *Autism*; 5(3): 317-323.
3. Mahoney, G., and Perales, F., (2005) Relationship-focused early intervention with children with pervasive developmental disorders and other disabilities: A comparative study. *Developmental and Behavioral Pediatrics*; 26(2): 77-85.
4. Mahoney, G. and Perales, F., (2003) Using relationship-focused intervention to enhance the socio-emotional functioning of young children with autism spectrum disorders. *Topics in Early Childhood Special Education*; 23: 74-86.
5. Williams, K. R., & Wishart, J. G. (2003). The son-rise program intervention for autism: An investigation into family experiences. *Journal of Intellectual Disability Research*, 47(4-5), 291-299.

AUGMENTATIVE AND ALTERNATIVE COMMUNICATION

Overview

Augmentative and alternative communication (AAC) refers to a range of strategies, commonly used by Speech-Language Pathologists (SLPs), to compensate for or enhance communication impairments. SLPs utilize AAC with individuals with autism spectrum disorder (ASD) in order to improve their overall social and communication competence. In addition to social communication, AAC can be used to impact language, literacy, behavior, and emotional regulation. There are two main categories of AAC approaches: unaided and aided. Unaided approaches include, but are not limited to, the use of gestures, manual signs, body language, and facial expressions. Aided AAC approaches include the use of tools such as pictures, graphic symbols, or written cues, as well as high technology tools such as notepad computers or speech generating devices (SGDs).

Pair 1

Left Video Clip: This 4-year-old child with ASD and apraxia (impairment in motor skills and coordination) is slightly verbal as he utters a few words, but he is not verbally communicative. Using an SGD, this child is able to answer and ask questions, communicate his thoughts and feelings, as well as make his needs known. Without this type of device and being unable to communicate, this child would likely be frustrated and might have behavioral issues. During the first half of the clip, you see the child answer questions spontaneously and independently and communicate his feelings. In the second half of the clip, the camera zooms in on the device so you could see it in action.

Right Video Clip: This 5-year-old child with ASD and significant motor speech challenges is using pictures to augment or aid his speech. His mom sets up the need for communicating by pouring a drink of chocolate milk and then guiding him to build a sentence on his sentence strip. This child can easily and spontaneously select a series of pictures from an array of more than 50 pictures of vocabulary items attached to his board with Velcro. He builds two sentences- the first one says, “mommy pour” and the second one says, “Shannon drink chocolate milk.” His pictures are a combination of photos and picture symbols created with Mayer-Johnson Boardmaker software.

How goals and objectives are prioritized and selected for treatment

Goals and objectives are selected by matching AAC approaches to the individual’s developmental level of social communication skills while also considering the individual’s learning style, motor skills, and the contexts in which they communicate. Individual preferences, caregiver and family preferences, and cultural variables also need to be considered.

Measures for determining if treatment is working

Treatment outcomes are determined based on the individual’s ability to participate as a social communication partner fully in a variety of communication contexts in order to communicate their wants and needs effectively and interact meaningfully with others.

Who can implement this treatment?

Trained clinician Trained educator Trained parent (parents and other caregivers are central to this approach) Other (OT, PT, Speech, Creative Arts, and mental health professionals)

What is the role of the family?

Family members of individuals with ASD using AAC play a key role in the success of the treatment by serving as communication partners and by incorporating the use of AAC into all daily routines and settings.



In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other (any setting where child/caregiver interaction can occur)

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

Certified SLPs have the required knowledge and skills to determine the most effective AAC for an individual and to implement the treatment. SLPs train family members and other professionals to incorporate the use of AAC into daily activities and routines. For some AAC approaches, such as the use of SGDs, a trained SLP is required to program the equipment effectively.

Additional information describing augmentative and alternative communication

Website: The American Speech-Language Hearing Association, www.asha.org

Top 5 research references supporting augmentative and alternative communication

1. Light, J. C., Roberts, B., Dimarco, R., & Greiner, N. (1998). Augmentative and alternative communication to support receptive and expressive communication for people with autism. *Journal of Communication Disorders, 31*(2), 153-180.
2. Mirenda, P. (2003). Toward a functional augmentative and alternative communication for students with autism: Manual signs, graphic symbols, and voice output communication aids. *Language, Speech, and Hearing Services in Schools, 34*(3), 203-216.
3. Schlosser, R. W., Sigafoos, J., Luiselli, J. K., Angermeier, K., Harasymowycz, U., Schooley, K., & Belfiore, P. J. (2007). Effects of synthetic speech output on requesting and natural speech production in children with autism: A preliminary study. *Research in Autism Spectrum Disorders, 1*(2), 139-163.
4. Schlosser, R. W., & Wendt, O. (2008). Effects of augmentative and alternative communication intervention on speech production in children with autism: A systematic review. *American Journal of Speech-Language Pathology, 17*(3), 212-230.
5. Vaughn, B., & Horner, R. H. (1995). Effects of concrete versus verbal choice systems on problem behavior. *AAC: Augmentative and Alternative Communication, 11*(2), 89-92.

TEACCH

Overview

TEACCH, which stands for **T**reatment and **E**ducation of **A**utistic and **C**ommunication related handicapped **C**hildren, is a program for individuals with autism spectrum disorder (ASD) and their families. The theoretical foundation of the TEACCH program combines Social Learning Theory, a cognitive behavioral approach, and a developmental framework. The social learning theory aspect identifies self-efficacy as a major goal and also emphasizes an individual's understanding of a situation as a major cause of their behavior. Cognitive behavioral theory also stresses an individual's understanding and the developmental perspective suggests different levels of understanding for different individuals. Executive functioning and attentional differences are also emphasized with structure and organizational skills as major targets of interventions. TEACCH's goal is to understand the neuropsychological differences in individuals with ASD and make the world more consistent with how they think, learn, and understand.

Pair 1

Left Video Clip: This mother of a 2-year-old with ASD comes to the clinic to learn more about her son's learning style. The child is in the play area and is shown a visual of "First work", "Then play". After this visual cue is presented, he transitions to the work area.

The child follows a left to right work system. The work he will complete is on the yellow shelf to his left and when that work is finished, he places it into the "finished" basket on his right. The work system, visually answers four questions for the child: (1) What work will I do? (2) How much work will I do? (3) When will I be finished? (4) What happens next?

In the first activity the child is building a Duplo construction following a sequence of photographs. The teacher limits his access to the extra Duplo pieces. Once the construction is complete, the teacher models pretending the construction is a boat that is floating through the water. The photos are a symbolic representation since they are smaller than the blocks themselves.

In the second activity the child is matching numerals to sets of Thomas the Tank Engine characters. The child is learning to touch each train and count aloud using one-to-one correspondence. Placing the answer on the page using Velcro enables the child to demonstrate their understanding without having to write an answer.

In the third activity this child is learning the skill of joint attention while looking at a picture book. He is given a visual cue that says, "Look, I see a ____". He places a sticker on the picture of what he sees and uses the visual cue to state aloud what he sees. This helps to direct his attention to a specific item on the page. His mother also places a sticker in the book and uses the same phrase, "Look, I see a ____." She expands on his sentences to increase his vocabulary.

When all of the work is finished and in the finished basket to the child's right, the teacher presents the visual cue, "First work", "Then play" and the child transitions to play area.

Right Video Clip: This same 2-year-old boy's mother sets up a teaching area in his bedroom. She reinforces skills and concepts with a focus on generalizing skills into the home that will facilitate social interactions with family members. The child uses the same "First, Then" visual system with photographs that correspond to activities at home. The mother presents the "First, Then" visual. The work area is set up in a corner of the child's bedroom with the same organization as his work area at school.

In the first activity the game was too confusing as he was over focused on specific moving pieces and could not engage with his mother. Reorganizing the game so that the pieces were in a covered container and adding the turn-taking visual helped the child play the game and engage with his mother. This game incorporated the child's matching strength to teach the concept of giving and sharing materials within an activity. In the second activity the child enjoys building and Play-Doh but he does not know what to do with the materials. He is given a photograph to show what his Play-Doh bear will look like when finished. Using the same photo turn taking



card, the child and his mother take turns selecting a body part from the covered can and matching it to the corresponding red or purple bear. The child is encouraged to share the piece if it matches his mother's bear. In the third activity the child is shown photographs of favorite characters doing different actions with objects. He chooses a photo and then acts out the action with the character and object. The child is interested in many different characters but struggles with playing flexibly. Offering the photos and changing the action and character helps him learn flexibility by following the instruction.

Pair 2

Left Video Clip: In this video clip the teacher uses the same "First, Then" visual system with this 2-year-old boy with ASD. She incorporates daily hygiene routines of brushing teeth and washing face. The teacher shows the child the visual so that he can see, "First" brush teeth, "Then" wash face. The teacher brushes her teeth at the same time to give the child a model. When the child is finished brushing his teeth, then the brushing teeth photograph is taken off and put finished. The teacher started with the preferred activity of brushing teeth. The engagement and joy of the first activity make it easier for the child to complete the more stressful and confusing second activity of washing face.

To help the child understand what and where to wash his face, he is shown a photograph of himself with "dirty" spots on the parts of his face where he will wash. To teach the child the meaning of the visual cue, the teacher shows him what he will wash, washes the dirt off, and then helps child wash the same part of his face. Asking the child what is next keeps him engaged and helps him understand the concept of washing until finished. When the child is finished washing his face, then the washing face photo is removed from the "First, Then" visual.

Right Video Clip: This 4-year-old girl with ASD is learning how to follow visual cues, build with construction toys, share with others, and play symbolically. She is playing in the dinosaur area when the teacher tells her it is time to clean up. Once all dinosaurs are put away, the child is given her name card. She carries her name card to her schedule, places it in the pocket on top with her name and then takes the photographs one at a time, moving top to bottom. The first photograph designates going to the teacher table. The child carries the card to the corresponding area and places it in the matching pocket. At the teaching table, the child follows matching picture work system to help her complete a series of activities from beginning to end.

In the first activity she is using visual instructions to put together K'Nex. As she puts the pieces together, she turns the page to see the next set of instructions. In the second activity she is opening boxes and showing what is inside to the teacher. As she opens a box, she holds the object in the air and shows the item to the teacher using simple phrases, "Look" or "Look what I found." In the third activity the teacher provides her with pictures of different actions to help the child learn to play with different figures and characters. The child chooses a picture and then acts out the action with her Dalmatian dog. When the work session is finished, the child takes the last card on the work system, which is her name card, and transitions back to her schedule.

Pair 3

Left Video Clip: This 3-year-old boy with ASD is learning how to follow visual cues, build with construction toys, perform familiar action of eating with puppets, and request items using an object exchange system. When it is time to transition, he is given an object that he carries and matches in the corresponding area. This child is in the play area and it is time to transition to the teacher table. The teacher pairs the verbal cue "work" with an object, a plastic egg that is a part of the first activity at the teacher table. The child carries the egg to the teacher table, places it in the cut out lid on the can and then places the remaining eggs into the cut out lid. Each egg is filled with objects to make noise as he shakes each egg. This is a familiar and meaningful activity. The session starts with this type of activity to help the child understand where he is going and to help him get engaged into the work routine as soon as he arrives.

In the first activity the child builds K'Nex by matching them to a matching photo of the finished construction. The child lays each piece onto the photo and then puts them together moving left to right. In the second activity the child feeds the puppet food from the picnic basket until all of the food is eaten. In the third activity the child strings beads following a pictured pattern moving left to right until the pattern is complete. In the fourth activity the child requests bugs to put into the tube filled with water using an object exchange system. Two objects are placed into plastic containers, a magnetic letter and a plastic bug. The child gives the teacher the container



with the bug in exchange for a bug that he drops into the tube of water. The child is learning not only to initiate the request but also to discriminate between choices and to persist with the request when his need is not met immediately. This child enjoys watching things slowly fall down.

Right Video Clip: The same 3-year-old child is beginning to learn the work system, although he can complete each activity independently, he still needs support to transition between each activity. The teacher uses non-social prompts, pointing and some physical guidance to help the child put the finished work into the basket to his right and to get the next activity. As the routine becomes more meaningful, the child begins to initiate these transitions.

When all of the activities are completed and placed into the “finished basket” to the child’s right, then he takes the plastic blue ring, carries it to the play area and plays with the stacking ring.

How goals and objectives are prioritized and selected for treatment

Goals and objectives are selected and prioritized based upon an individual’s developmental levels, interests, emerging skills, and level of independent functioning. Family input, community-based experiences and involvement, and, for older children, vocational possibilities are additional important considerations.

Measures for determining if treatment is working

Throughout the TEACCH program individual level of independence and use of visual support is observed and monitored. TEACCH has developed objective scales to measure performance on various components of structured teaching. In collaboration with other researchers, a fidelity scale that can be used as an outcome measure has been published. Goals and objectives are modified as needed to appropriately meet individual needs while continuing to support overall independence.

Who can implement this treatment?

Trained clinician Trained educator Trained parent Other

What is the role of the family?

Family involvement is central to all aspects of the TEACCH program and has been a cornerstone since the program’s inception in the 1960s. From initial contact with the family through diagnosis and assessment, treatment planning and implementation to advocacy in the community and working in partnership to develop lifespan services, parents and TEACCH work in close collaboration.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

Authors of TEACCH

The TEACCH program was developed by professionals working for the program and affiliated agencies over the past four decades. Major leaders include the founder, Dr. Eric Schopler (now deceased) and Dr. Gary B. Mesibov, Professor Emeritus and Former TEACCH Director, University of North Carolina School of Medicine. As of September 1, 2011, Laura Klinger, Ph.D. will assume the Directorship of TEACCH and continue the long tradition established by Drs. Schopler and Mesibov.

Additional information describing TEACCH

Website: www.TEACCH.com

Publications:

Mesibov, G.B. et al. (2005). The TEACCH approach to autism spectrum disorders. New York: Kluwer Academic/Plenum.



- Mesibov, G.B., Browder, D.M. & Kirkland, C. (2002). Using individualized schedules as a component of positive behavioral support for students with developmental disabilities. *Journal of Positive Behavioral Interventions*, 4, 7379.
- Mesibov, G.B. & Shea, V. (2010). The TEACCH Program in the Era of Evidence-Based Practice. *Journal of Autism and Developmental Disorders*, 40, 570-579
- Van Bourgondien, M.E., Reichle, N.C., & Schopler, E. (2003). Effects of a model treatment approach on adults with autism. *Journal of Autism and Developmental Disorders*, 33, 131-140.

Top 5 research references supporting TEACCH

1. Hume, K., & Odom, S. (2007). Effects of an individual work system on the independent functioning of students with autism. *Journal of Autism and Developmental Disorders*, 37(6), 1166-1180.
2. Odum, S.L., Boyd, B., Hall, L. & Hume, K. "Evaluation of Comprehensive Treatment Models for Individuals with Autism Spectrum Disorders." *Journal of Autism and Developmental Disorders*, 40: 425-436.
3. Ozonoff, S. & Cathcart, K. (1998). Effectiveness of a home program intervention for young children with autism. *Journal of Autism and Developmental Disorders*, 28, 25-32.
4. Panerai, S., et al. (2009). Special education versus inclusive education: The role of the TEACCH program. *Journal of Autism and Developmental Disorders*, 39, 874-882. doi: 10.1007/s10803-00900901-6.
5. Panerai, S., Ferrante, L. & Zingale, M. (2002). Benefits of the treatment and education of autistic and communication handicapped children (TEACCH) programme as compared with a non-specific approach. *Journal of Intellectual Disability Research*, 46, 318-327.

VISUAL SUPPORTS

Overview

Visual supports enable students to function in their area of strength. Students with ASD tend to understand what they SEE better than what they HEAR. Current research is highlighting functioning differences such as difficulty establishing attention and delay in processing speech sounds. Speech is transient. That means it is fleeting and then gone. By contrast, visual cues are present long enough for students to establish attention, process the information and respond.

This treatment targets specific domains including communication, behavior, social skills, and more.

Pair 1

Left Video Clip: A 6-year-old boy with ASD assembles a home visual schedule on a day that has a change from his usual schedule. He did not go to school on a day that would normally be a school day. The visual schedule provides this information to help prepare him for this change.

Right Video Clip: The same 6-year-old boy with ASD uses a chalkboard to write words. He already knows how to spell a lot of words. In this clip the writing of words becomes a social activity with mom. Mom explores how he is able to copy words to expand his written vocabulary. Writing messages can become an important form of communication since his spoken language is very difficult to understand.

Pair 2

Left Video Clip: Labels from food choices are hung on the cupboard door so this 6-year-old boy with ASD can show his mother what he wants.

Right Video Clip: The same 6-year-old boy with ASD reads a social story about using the toilet with his mother.

Pair 3

Left Video Clip: This 6-year-old boy with ASD is being prompted through a tooth brushing sequence by his mom using a picture sequence for the task. The eventual goal will be to have him follow the sequence independently, without mom's prompting.

Right Video Clip: In this video clip the therapist is offering food choices to a 4-year-old child with ASD. Foods are contained in clear plastic bags. The therapist holds up the choices so the boy can make his selection.

How goals and objectives are prioritized and selected for treatment

Visual supports can be used as strategies for reaching individual goals and objectives, such as following directions, getting wants and needs met, making choices, giving information, and self-regulation. In turn, this can aid in improved communication, appropriate behavior, and effective participation.

Measures for determining if treatment is working

Observation will determine if the student is performing the desired behavior or if he is participating successfully in the targeted activity independently or with a specified amount of support.

Who can implement this treatment?

Trained clinician Trained educator Trained parent Other

What is the role of the family?

Visual supports are equally important at home and school. Families can benefit significantly from learning how to integrate visual strategies into family routines at home and in the community.



In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other (any environment)

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

The book *Visual Strategies for Improving Communication* is an example of a resource that gives basic information. Most people are able to begin to use visual supports after some initial instruction.

Authors of Visual Supports

Division TEACCH training methods have proposed using schedules, activity routines and other visual supports for teaching skills and managing behavior. Eric Schopler, University of North Carolina at Chapel Hill.

Linda Hodgdon, M.Ed., CCC-SLP, wrote one of the first user friendly books that explains and instructs various ways to use visual supports to improve communication, behavior and participation. (1995). *Visual Strategies for Improving Communication*, QuirkRoberts Publishing.

Additional information describing Visual Supports

Websites:

<http://www.usevisualstrategies.com/>

<http://card.ufl.edu>

<http://www.teacch.com>

<http://www.pecs.com>

<http://www.lindahodgdon.com/newsletters.html>

Books:

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

Hodgdon, L. (1999). *Solving behavior problems in autism*. Troy, MI: Quirk Roberts Publishing.

Top 5 research references supporting Visual Supports

1. Bellini, S. & Akullian, J. (2007) A Meta-Analysis of Video Modeling & Video Self-Modeling Interventions for Children and Adolescents with Autism Spectrum Disorders. *Exceptional Children*, 73, 264-287.
2. Bryan, L.C., & Gast, D.L. (2000). Teaching on-task and on-schedule behaviors to high-functioning children with autism via picture activity schedules. *Journal of Autism and Developmental Disorders*, 30, 553-567.
3. Dettmer, S., Simpson, R.L., Myles, B.S., & Ganz, J.B. (2000). The use of visual supports to facilitate transitions of students with autism. *Focus on Autism and Other Developmental Disabilities*, 15, 163-169.
4. Mesibov, G., Browder, D., & Kirkland, C. (2002). Using individualized schedules as a component of positive behavioral support for students with developmental disabilities. *Journal of Positive Behavior Interventions*, 4, 73-79.
5. Schmit, J., Alper, S., Raschke, D., & Ryndak, D. (2000). Effects of using photographic cueing package during routine school transitions with a child who has autism. *Mental Retardation*, 38, 131-137.

ART AND MUSIC

Overview

Art and Music therapies provide a treatment alternative for children with autism spectrum disorder (ASD) by reaching their core through nonverbal, symbolic aspects of the creative process to enhance their social, emotional, and communicative functioning. Using interactive art and music, therapists engage children in a creative experience that promotes communication and social interaction while opening a path to self-discovery. Within the freedom of creative expression lies the potential for teaching concepts, enhancing self-awareness, and providing the opportunity to re-experience the developmental stages that were interrupted by processing or physical disabilities. Building upon the creative sensitivity and interest displayed by many children with ASD, treatment focuses on eliciting interactive engagement through painting, drawing, singing, and playing easily mastered, quality instruments. Children are motivated and often work willingly and joyfully on developmental goals in individual or group sessions.

Art and Music therapies can target specific domains including social interaction, communication, affective functioning (emotional expression and regulation), on-task, purposeful behavior, attention/focus, creative/cognitive functions.

Pair 1

Left Video Clip: This 8-year-old boy with ASD is participating in an art therapy session that targets language and communication, focus and attention, and enhanced self-awareness and self-confidence. This video clip was taken after one year of participating in art therapy. The child has become fully engaged in choosing colors and material for painting and drawing, and he is able to stay on task for the entire session. His relationship with the therapist has grown into one of trust and friendship, allowing him to use art as a vehicle for interaction and verbal conversation. The boy's mother, who appears in the video, has also benefited by seeing her child's more expressive behavior.

Right Video Clip: This 5-year-old girl with ASD is engaged in interactive, improvisational music making. Activities within the session are designed to promote speech and language, and better gross motor control. Rhythm is very important, as shown in this footage. It helps her feel herself in space and connects her to the musical activity of the moment. Music creates a flow to the session and enables this child to interact in a very natural way. Speech is incorporated into a song and playing instruments, dancing and singing become the conversation that grows into verbal relating. This little girl can take this experience and transfer her musical skills into a classroom or family activity. Her confidence and growing self-awareness allows her to take more risks socially, and participate further in school or community events.

Pair 2

Left Video Clip: A team of music therapists works through the medium of music to encourage the children's purposeful engagement, communication, emotional involvement, and relatedness with one another. Music is created and adapted to the group's moment-to-moment responses, while focusing on a range of developmental goals.

In their twelfth session, two eight-year-old boys are beginning to interact more with one another. Relationships have developed out of weekly musical interactions and activities in which they feel accepted and positively engaged. The boys are activated and participating in a pre-composed song (*Beat! Beat! Beat the Drum!*), which calls for the playing of specific rhythms at particular times. The activity requires attention, physical control, turn taking, and interaction. The structure of the music and its lyrics help to direct the children's actions, while the co-therapist facilitates the boys' successful participation. There are opportunities for playing in a strong but regulated manner, and the children clearly enjoy this dynamic beating. At one point, music is improvised as a playful reaction to one of the children. Songs such as this one are often repeated in a contrasting soft variation so that the children can "practice" a range of musical expression.

Right Video Clip: Later in the session, a pre-composed song, *Let's Sit and Talk*, is reintroduced to further stimulate verbal expression. As the boys share ideas, they are incorporated into the song. One child sings



“The subway’s not running.” Singing helps him to be more fluent verbally, and he enjoys hearing his words taken up in the music. He is also able to express something that might have been upsetting to his routine. An unplanned musical variation arises when one child shows the therapist his new sneakers. In this way, the musical form provides both a predictable organization and opportunities for spontaneous expression, both of which are vital for the children.

Pair 3

Left Video Clip: A team of therapists works through the medium of music to encourage a 4 ½-year-old boy with ASD to have purposeful engagement, relatedness, communication, and emotional involvement. In this therapeutic approach, therapists create and adapt music to his moment-to-moment responses, while focusing on a range of developmental goals.

This boy sits attentively, motivated to join in an activity using the xylophone to which he is naturally attracted. With the primary therapist’s use of melody, rhythm, and harmony on piano and voice, along with the assistance of the co-therapist, the child achieves moments of purposeful engagement. He has discovered his own way of playing, using a specially adapted mallet. He shows pleasure, looking directly at the primary therapist at times during this shared activity.

A few minutes later, the child notices a larger xylophone and the therapists support his initiative by inviting him to play it. This time he plays independently, in a sustained way, achieving a more rapid tempo. When the music gains in intensity to reflect his excitement, he is able to maintain control and modulate between fast/loud and slow/soft experiences.

Then the therapist works to encourage the child’s relatedness through singing. For this child, singing is a vital form of expression and communication, especially given his limited ability to use words. The therapist invites the child to participate in vocal give-and-take by creating and repeating short melodic phrases in a song form. The child is able to prolong his attention and engage vocally with the therapist. Later, he is encouraged to strum the guitar with hand-over-hand facilitation. At the end of the session, the therapist encourages him to sing with words, and he approximates “Good (bye)” and then fills in the word “Bye.”

Right Video Clip: This 2 ½-year-old boy with ASD is moving to the music crafted especially for him by his primary therapist. With the help of the co-therapist, he plays a strong single beat on the drum. The therapist waits for the child’s response, and then reinforces his efforts strongly with music. The child smiles each time he plays. He is beginning to use his body with more intention, and experiences pleasure in the shared activity. Throughout the interaction, the therapist adjusts the music to the child’s particular pace and ability to participate.

Pair 4

Left Video Clip: This 2 ½-year-old boy with ASD is being seen in his initial intake session by a team of therapists. They are working through the medium of music to assess the child and encourage his purposeful engagement, relatedness, communication, and emotional involvement. In this therapeutic approach, therapists create and adapt music to the child’s moment-to-moment responses while focusing on a range of developmental goals.

As this was his first time at the Center, the child’s mother is in the room and he is looking over to her at times as he plays. He shows curiosity and interest in playing the drum, and he uses mallets with natural skill, sustaining his involvement in this shared experience. The therapist establishes a melody, which helps structure the experience. When the child hears short melodic phrases coming from the piano, he turns in recognition and then moves toward the therapist, becoming aware of the interaction occurring between them. The child takes initiative by playing in a variety of ways and the therapist incorporates these changes into his music.

Right Video Clip: This 5-year-old girl with ASD is being introduced to a pre-composed song that calls for the playing of specific rhythms at particular times. The activity requires her attention, physical control and interaction with the therapists. The structure of the music and its lyrics help to direct the child’s actions. The co-therapist facilitates her successful participation and she shows an immediate grasp of the structure of the piece.



Then the primary therapist creates gentle music on the guitar. The child is relaxed and spontaneously verbalizes about what she will do later in the day. Her words are immediately incorporated into the ongoing music, encouraging her to continue to use her language and express her thoughts. To support her continued engagement, the therapist repeats the song, and moments of attention and contact take place.

How goals and objectives are prioritized and selected for treatment

Goals and objectives are often determined by an initial assessment, consultation with parents and other professionals, and continual assessment and updates.

Measures for determining if treatment is working

Ongoing evaluations using measures of such areas as positive affect, attention, joining in with peers/therapists, reciprocal verbal and musical communication. Parent feedback is also an important source of information regarding efficacy of treatment.

Who can implement this treatment?

Trained clinician Trained educator Trained parent Other

What is the role of the family?

The family is considered an important resource in terms of receiving information about the child at home and in school settings; giving feedback on ongoing clinical work; and supporting the therapeutic interventions by utilizing art and music as a means of interaction in the natural setting.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other (Hospital, residential settings)

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

Therapists hold graduate degrees in art and/or music therapy, are professionally credentialed, and may be state-licensed and complete post-graduate certification.

Additional information describing Art and Music Therapies

Website: www.artsforhealing.org

www.cbmt.org

www.musictherapy.org

www.steinhardt.nyu.edu/nordoffrobbins

Publications:

Nordoff, P., & Robbins, C. (2007/1977). *Creative music therapy: A guide to fostering clinical musicianship*. Gilsum, NH: Barcelona.

Robarts, J. (1996). Music therapy for children with autism. In C. Trevarthen, K. Aitken, D. Papoudi, & J. Robarts (Eds.), *Children with autism: Diagnosis and interventions to meet their needs* (pp. 134-169). Bristol, PA: Jessica Kingsley Publishers.

Nisenson K. (March 2008) Arts For Healing: The Importance of Integrated Music and Art in Therapy and Special Education. *Exceptional Parent*, 38/3(42-44).

Nordoff, P., & Robbins, C. (1983). *Music therapy in special education* (2nd ed.).

Top 5 research references supporting Art and Music Therapies

1. Aldridge, D., Kern, P., & Wakeford, L. (2007) Improving the Performance of a Young Child with Autism during Self-Care Tasks Using Embedded Song Interventions: A Case Study Music Therapy Perspectives, Volume 25, Issue 1, pp. 43–51.
2. Edgerton, C. L. (1994). The effect of improvisational music therapy on the communicative behaviors of autistic children. *Journal of Music Therapy*, 31, 31-62.
3. Wigram, T. (2002). Indications in music therapy: Evidence from assessment that can identify the expectations of music therapy as a treatment for Autistic Spectrum Disorder (ASD): Meeting the challenge of Evidence Based Practice. *British Journal of Music Therapy*, 16, 11-28.
4. Aldridge, D., & Kern, P. (2006). Using Embedded Music Therapy Interventions to Support Outdoor Play of Young Children with Autism in an Inclusive Community-Based Child Care Program , *Journal of Music Therapy* Volume 43, Issue 4 pp. 270–294.
5. Brownell, M. (2002). Musically adapted social stories to modify behaviors in students with autism: Four case studies. *Journal of Music Therapy*, 34, 117–144.



OCCUPATIONAL THERAPY / SENSORY INTEGRATION

Overview

Occupational therapy (OT) is a treatment consisting of purposeful activities that help in the functioning of gross motor, fine motor, motor planning, perceptual, oral motor, and self-help skills in daily living. Sensory Integration (SI) is an intervention often used by occupational therapists and integrated into occupational therapy sessions to help improve a child's sensory processing functions as a means to affect positive changes in behavior or performance of daily activities and routines (such as play, feeding, dressing, wake/sleep patterns), as well as broader outcomes for enhanced social and community participation.

SI interventions specifically target sensory processing functions that are thought to further facilitate performance in other domains including play, daily activities, and social/community participation.

Pair 1

Left Video Clip: In this video clip the OT/SI therapist is working with a 7-year-old boy with ASD on a hug swing, bouncing him up and down and providing controlled rotary vestibular input as he is asked to reach and grasp for specific items on the mat. This incorporates not only vestibular and kinesthetic inputs but also challenges his sensory system to locate items visually during movement and attend to specific auditory instructions given by the therapist as he plays in the therapy room with other children. He is given just the right challenge through slow and rhythmical movement, not bombarding him with too many commands at once. This allows his nervous/sensory system to adjust to the various stimuli and activities slowly that these children often encounter throughout their day.

In the second part of the video clip the OT/SI therapist has the child complete an obstacle course, which helps build his ability to sequence several commands or tasks in a fun and meaningful way. Through this obstacle course (which continues in the video clip on the right) he is also incorporating heavy work or kinesthetic- and vestibular-based activities through climbing, jumping, crawling, use of a zip line, and balance beam.

Right Video Clip: This same 7-year-old boy with ASD is now engaging in heavy play through combined vestibular and kinesthetic activity on a whale swing in which he is asked to hold and squeeze legs and arms around the belly of the swing as the therapist moves the swing about vigorously. With this challenge he is able to adjust the amount of pressure he needs to keep himself on the swing. These activities improve a child's ability to understand how his body relates to others and the environmental surroundings. The use of familiar and playful songs or rhymes can help sustain a child's attention and give him something familiar to remain engaged and motivated in the task at hand.

Pair 2

Left Video Clip: This 7-year-old boy with ASD is doing OT/SI therapy with a peer to work on the social aspects of play as well as to improve his tolerance of tactile input through forming shapes and letters with shaving cream on a therapy mat. You will see the back and forth exchange of communication and sharing of the towel and other materials during this video clip. The boy begins to flay his hands to express his intolerance or sensitivity with becoming messy so the therapist redirects him gently to request the towel and allows him to use it as needed to help build up his tolerance to these materials/inputs. He is then cued to share this towel with his peer when she requests the use of the towel verbally. The two children work on forming simple shapes in shaving cream to build up to more challenging letters and numbers using the *Handwriting Without Tears* format and terminology. To provide more meaning to their communication dialogue and motivation, the therapist suggests forming letters they would find in their names. This not only gives them something meaningful to complete but also gives them the ability to problem solve together to identify the letters they need to write their names.

Right Video Clip: This 3 ½-year-old boy with ASD engages in bear walk, trampoline jumping, and a Theraputty game while his OT/SI therapist gives him additional auditory commands (playing the "head, shoulders, knees, and toes" game) to challenge his ability to discriminate auditory information as he listens to modulated music through his headset. He engages in these kinesthetic-based activities prior to sitting at the



table to help him become more regulated and therefore more attentive to the tabletop task. At the table he continues to listen to his modulated music as he pulls and pinches Theraputty with the expectation of finding “treasures” (small items) to remove with his fingers. Two things are happening here as he sits: the need to sustain attention to the task at hand, which is difficult for many children with ASD, and improving his fine motor strength and function.

Pair 3

Left Video Clip: The OT/SI therapist works with a 7-year-old boy with ASD who is completing an obstacle course. The obstacle course helps build his ability to sequence several commands or tasks in a fun and meaningful way. Through this obstacle course he is also incorporating heavy work or kinesthetic- and vestibular-based activities through climbing, jumping, crawling, use of a zip line, and balance beam. To help him remain focused and regulated a fine motor task is placed at the end of the tunnel to help him learn how to learn how to adjust his speed and pressure he uses on a small pair of plastic tweezers to grasp plastic bugs.

Right Video Clip: In this video clip a 4-year old boy with ASD and his therapist are engaging in a game of “shark find” in the pillow pit. He has to maneuver about the large foam jellos to search for stuffed sharks, integrating the sense of balance, body in space awareness, visual perceptual and visual scanning skills while participating in dialogue about the sharks possible locations (auditory processing skills). While participating in this heavy work of climbing, jumping, lifting, and pulling of the large jellos/pillows the child is receiving a lot of feedback into his joints and muscles that is helpful in keeping him modulated or regulated.

Pair 4

Left Video Clip: In this OT session with a 4-year-old girl with ASD the therapist’s focus is on sensory integration. Here a speech-language pathologist is present for a co-treatment. Environments and activities rich with sensory input can illicit increased language in many cases. The therapist sets up a running and jumping activity that provides deep pressure to the skin and joints. This helps to increase awareness of one’s body position in space as well as to help regulate attention. Safety awareness is modeled for the child so that they may prepare the environment appropriately before beginning. Giving the child a specific starting space also helps to orient the child to where they are in the environment.

Sensory integration uses a child-led approach. This is important to determine what the child’s sensory system is seeking. In this case, the therapist picks the activity but allows the child a choice in how that activity will be carried out. Vestibular movement is necessary in helping one to develop a sense of moving securely through their environment. Generally speaking, linear movement is “calming” while rotational movement is “alerting”. The therapist stops the child’s movement periodically by pulling firmly on her legs to provide some grounding deep pressure in order to regulate her sensory system. It also allows the therapist an opportunity to look at the child’s eyes for signs of sensory overload. The added benefit of increased social interaction is also achieved in this moment.

Right Video Clip: In this same co-treat therapy session with a 4-year-old girl with ASD the vestibular system is being targeted. The vestibular system is important in understanding your position in relation to gravity. It helps one to develop a sense of balance and bilateral coordination. This child is experiencing some sensory dysregulation and as a result is distractible and seeking out deep pressure. She chooses to bounce strongly and then begins to drop her body from the swing repeatedly into the firm mats below. The OT therapist responds to this by trying to increase the intensity of the deep pressure through “squishes” with a pillow. She allows the child to continue this deep pressure seeking until she becomes more regulated. At this point the child is ready to participate in more intense swinging on the swing while the speech-language therapist tries to elicit more language by having her comment on her activities.

How goals and objectives are prioritized and selected for treatment

Goals and objectives are determined individually, based on the needs of the child. Therapists use guiding principles from sensory processing conceptual models combined with empirical studies to support the use of SI intervention strategies. A variety of approaches may be considered, ranging from classical SI interventions (i.e., clinic-based) to naturalistic interventions (e.g., embedding sensory strategies into daily activities and natural family routines), as appropriate for the individual child.

Measures for determining if treatment is working

Outcome measures are selected individually for each child. These may include changes in specific sensory processing functions (e.g., improved sensory modulation, discrimination, or praxis), as well as broader measures of performance (e.g., tolerance of food textures during mealtime, improved play skills in preschool class), and social participation (e.g., improved level of engagement with peers, participation in community activities).

Who can implement this treatment?

Trained clinician Trained educator Trained parent Other

Interventions are designed by a trained clinician, but some strategies can be taught to other professionals or parents and integrated into daily routines.

What is the role of the family?

This depends on the model of service delivery being used. In a clinic setting, interventions may be one-on-one with a child (with or without the parent). In the best circumstances, a family is integral to the intervention program. They are educated about sensory processing issues and become aware of strategies and modifications they can make in their daily activities and routines with the child. Often the therapist may act as a consultant/resource to the family.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other

The setting depends on the intervention model utilized. Classical Sensory integration is done in a clinic setting. Other SI-based interventions can be easily accommodated into home or classroom settings.

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

Yes, training to be an Occupational Therapist (OT) as well as to implement treatment based on Sensory Integration theory or other sensory processing conceptual models is required.

To be a practicing Occupational Therapist, you must have a degree from an accredited program and pass the national registration exam. Many states have licensure as well. Additional coursework/training is often recommended for therapists using SI interventions, but these certifications are not required for practice of OT, or for the use of SI strategies. Likewise, professionals other than OTs may attend SI workshops and incorporate techniques as appropriate to the scope of their practice.

Authors of Occupational Therapy / Sensory Integration Therapy

Classical Sensory Integration was developed by A. Jean Ayres, Ph.D., OTR at the University of Southern California. Since then, several researchers and clinicians have expanded the theories and practices.

Additional information describing Occupational Therapy / Sensory Integration Therapy

Websites: <http://www.spdfoundation.net/>

http://portal.wpspublish.com/portal/page?_pageid=53,123039&_dad=portal&_schema=PORTAL
<http://www.pediatrictherapynetwork.org>

Top 4 research references supporting Occupational Therapy / Sensory Integration Therapy

1. Baranek, G.T. (2002). Efficacy of sensory and motor interventions for children with autism. *Journal of Autism and Developmental Disorders*, 5(32), 397-422.



2. Baranek, G.T., Wakeford, C. L., & David, F. J. (2008). Understanding, Assessing, and Treating Sensory-Motor Issues in Young Children with Autism. In K. Chawarska, A. Klin & F. Volkmar (Eds.), *Autism Spectrum Disorders in Infancy and Early Childhood*. NY: Guilford Press.
3. Case-Smith, J. & Arbesman, M. (2008). Evidence-based Review of Interventions for Autism Used in or of Relevance to Occupational Therapy. *American Journal of Occupational Therapy*, 62, 416-429.
4. Watling, R L, & Dietz, J. (Sept-Oct 2007). Immediate effect of Ayres's sensory integration--based occupational therapy intervention on children with autism spectrum disorders. (Report). *AJOT: American Journal of Occupational Therapy*, 61, 5. p.574(10).

SPEECH-LANGUAGE THERAPY

Overview

Speech-language therapy is the treatment of delays and disorders in language and communication development and speech. Since social communication (i.e., joint attention, language development, social reciprocity) is a core feature of autism spectrum disorder (ASD), speech-language pathologists (SLPs) play a critical role in the screening, assessment, and treatment of children with ASD. SLPs often form collaborations with the families of children with ASD as well as other professionals (i.e., occupational therapists, teachers, pediatrician) to provide comprehensive services to help enhance the social communication development in children with ASD. An ad hoc committee on ASD formed by the American Speech-Language-Hearing Association (ASHA) suggested that SLPs should assess and enhance (a) the initiation of spontaneous communication in functional activities across social partners and settings; (b) the comprehension of verbal and nonverbal discourse in social, academic, and community settings; (c) communication for a range of social functions that are reciprocal and promote the development of friendships and social networks; (d) verbal and nonverbal means of communication, including natural gestures, speech, signs, pictures, written words, as well as other AAC systems; and (e) access to literacy and academic instruction, as well as curricular, extracurricular, and vocational activities (ASHA, 2006).

Pair 1

Left Video Clip: In the first segment of this video clip, this 21-month-old child with ASD is playing with a toy with his mom, which provides a baseline observation context to see what supports mom is using. The SLP used the SCERTS model to target goals and objectives. The second segment shows how the mom has learned to use supports to promote her child to look at her face while rolling the ball. Although mom is off-camera, you can hear her count to 3 while she is holding up her fingers near her face, which along with rolling the ball to him, promotes the child to look at her face. In the last segment, the clinician imitates his actions and mom does the same as a strategy to promote turn-taking, imitation, and gaze to face.

Right Video Clip: In this video clip with the same 21-month-old, the SLP is now trying out a transactional support to target shifting gaze from the object to her face and back, to build from the achievement of looking at faces in the video clip on the left. The SLP sets up a predictable turn-taking routine with the nesting cups by naming the number on the bottom several times in a row and then waiting, which yields a shift in gaze from the object to her face while he is pointing and vocalizing. In the next segment, mom participates in play and models language about what he is doing (spin, stop), which leads to a nice gaze shift from the toy to her face. In the next segment, the child selects a bin of boy and girl figures with which to play. The SLP offers two figures and the child touches each one, using his thumb to point. After several repetitions, the SLP waits and the child adds a vocalization. She waits again and he adds a gaze shift to her face. The final segment illustrates the mom using several transactional supports. She is positioning herself at his physical level, face-to-face, and models language at his language-level (up-down, with the movement of the toy radio antenna). This leads to him shifting his gaze spontaneously to her face and back to the toy and using a reach-up gesture to indicate “up” when she says the word.

Pair 2

Left Video Clip: In this video clip, a preschool student is participating in activities in the school environment utilizing practices and supports from the SCERTS Model[®]. This child’s goals are based on core developmental challenges and his family’s priorities. These goals are then addressed by coaching partners to use consistent transactional supports across environments (e.g., school, home, and community). Specifically, this child is working on the objectives of requesting desired activities and foods, and using pictures to make transitions, while his partners model language related to his choices, and use visuals to help support transitions. In addition to these objectives, at school this child’s team supports his participation in dramatic play, and his interaction with a classmate by modeling familiar preschool play activities and by following his focus of attention. Partners in this context are encouraged to model language for him and to use visuals to help support his understanding, enabling him to participate successfully in this natural and functional activity.



Right Video Clip: This video clip is of the same preschool student with ASD. In the video clip, the child is ordering food at a fast-food restaurant in the community. The child's team is supporting his attainment of additional objectives such as following social rules and using pictures to attend to new situations. He is demonstrating his understanding of the social demands of a fast-food restaurant.

Pair 3

Left Video Clip: A SLP works with a 4-year-old child with ASD. The goal is reciprocal conversation and joint attention but the child has sensory needs and difficulty attending to task. The therapist combines sensory activities with language facilitation and play, first placing a mat on the floor to identify the play area. The child says she wants to sleep and the therapist follows the child's need for sensory input. She suggests the hiding game with the "jello" pillows and engages in a hiding game with her, using affect and rolling her into the pillows. The child says, "I feel better now" and the therapist shows the child a music box and she is focused and calm.

The therapist then follows the child to the zip-line where she asks for language from the child by suggesting, "You call this the trolley?" The child answers, "No, that's the zip-line." The therapist asks, "What would you like me to do?" The child answers, "Help me!" The therapist responds and helps as they swing into the ball pit. The child returns to the play mat focused and engages in pretend play. They engage in back and forth conversation that is about their actions in play. The therapist asks the child for a sip of her juice and she holds up the juice cup to get the child to attend to her face.

Right Video Clip: Shortly after, the therapist helps the same 4-year-old child with ASD to organize the materials while the child gets the sensory stimulation she needs by rolling the Play-Doh. She listens intently to the child's words and observes her facial expressions, body language, voice tone, and gestures. Then she responds with clear, short statements about what she thinks the child may be thinking. The child asks for a rolling pin so the therapist improvises by finding a bowling pin for her to use. The child takes the bowling pin, rolls the Play-Doh, then says, "I messed it up." The therapist repeats her statement, making suggestions to roll the Play-Doh again.

Then the therapist follows the child to the "mountain", spongy mats that will give the child more sensory input. When the child falls into the ball pit and is now more engaged in a reciprocal conversation with the therapist. The therapist takes the role of the "whale" with affect, plays with the child back and forth in puppet talk. Focus is on joint attention, when the child and therapist join each other to "share the puppet event." Notice how the therapist holds up the whale puppet at her eye level to encourage eye contact from the child.

Pair 4

Left Video Clip: The therapist takes a 3-year-old child with ASD to Drumlin Farm for Narrative Play, a developmental, relationship-based approach that incorporates speech therapy and peer relationships in natural settings. In phase one of Narrative Play, the therapist develops a connection with the child and develops goals for speech, play, and language. This child is beginning phase two, where the therapist introduces a peer or sibling to work on joint attention. This child is allowing the clinician to be close to him as they watch together and touch the "fuzzy" sheep. He is learning to share a real life event with another participant. The child is using eye gaze shifts (from the clinician to the farm animals and back to the clinician), and responding with social affect (giggles, facial expression, body language), and joining another in an experience.

As the child moves into phase three of reciprocity, where he develops awareness of others in reciprocal interactive play, he is using language with appropriate social affect as he responds with reciprocity to his mother (hayride). The child is talking about his thoughts and actions with back and forth reciprocal interactions with others. He is also using symbolic play in his actions with his mother on the hayride when he makes a pretend birthday cake out of hay. His language is clear and he is moving back and forth in conversation, sustaining a conversation about one topic. This child is socially connected to others as he plays.

Narrative Play includes all three domains (language, play, and narrative). The all come together in Phase four, social engagement, where the child engages with several peers in outside settings.



Right Video Clip: The same clinician is working with two 4- year- old children with ASD who are learning to create a narrative and use language along with their play skills. They are in the third phase of Narrative Play (reciprocity) and learning to use the back and forth interaction while they play.

At first the therapist has to redirect the boy away from looking at the wheels of a train and engage with him and his peer. Then the therapist gives the boy a suggestion to ask the girl “what do you want to do now?” He imitates this language. They both respond with what they want to do. When the therapist repeats that the girl wants to be the “doctor,” the boy hears this and responds that he wants to be a “football” player.

The therapist follows each child’s lead. She gives the girl some language to ask the boy permission to “look in his ear” with her play doctor tool. The boy stays on topic and he is socially engaged through play with his peer. His affect is appropriate. He asks the girl what she wants to be when she grows up. The clinician focuses the girl on the question and she answers. Both children are responding with eye gaze shifts, body language, and language that keeps them socially engaged. They are working with the clinician on how to sustain an interaction with a peer during play. The clinician is trying to keep them talking about one single subject, staying close to them, at their eye level, and following their interests in the play theme. Notice how the therapist listens to their responses, shows her affect in her voice intonation, and guides them to stay on topic.

How goals and objectives are prioritized and selected for treatment

Given the diversity among children with ASD, it is imperative that goals and objectives are selected for each individual child based on their current level social communication skills and family priorities. A child’s social communication skill level and family priorities should be combined with an understanding of the core challenges of ASD that can affect a child’s level of functioning when selecting goals. Together, these factors allow for the SLP to prioritize goals using a developmental framework that target the core features of ASD and have meaningful outcomes.

Measures for determining if treatment is working

In 2001, the National Research Council (NRC) formed a committee to evaluate the evidence available regarding the effectiveness of interventions for young children with ASD and published a report in 2001 with their findings. Regarding outcome measures of intervention, the council recommended that outcomes should be meaningful and include both gains in initiation of spontaneous communication and functional activities and generalization of gains across activities, communication partners, and environments.

Who can implement this treatment?

Trained clinician Trained educator Trained parent Other

What is the role of the family?

Family members of children with ASD play an integral role in the assessment of skills, selection of goals, measurement of progress, and if interested implementation of strategies in naturalistic contexts such as within daily routines at home.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

A master’s degree is the minimum level of education required to become an SLP. In addition, state licensure is required although the licensing requirements vary among individual states. Lastly, the majority of SLPs hold a Certificate of Clinical Competence, which is a nationally recognized professional credential that means the SLP has the knowledge, skills, and expertise to provide high quality clinical services and they actively engage in ongoing professional development to keep their certification current.



Additional information describing Speech-Language Therapy

American Speech-Language-Hearing Association. (2006). Roles and responsibilities of speech-language pathologists in diagnosis, assessment, and treatment of autism spectrum disorders across the life span: Position statement. Available from <http://www.asha.org/policy>.

American Speech-Language-Hearing Association. (2006). Roles and responsibilities of speech-language pathologists in diagnosis, assessment, and treatment of autism spectrum disorders across the life span: Guidelines. Available from <http://www.asha.org/policy>.

American Speech-Language-Hearing Association. (2005). Principles for speech-language pathologists in diagnosis, assessment, and treatment of autism spectrum disorders across the life span: Position statement. Available from <http://www.asha.org/policy>.

National Research Council. (2001). Educating children with autism. Washington, DC: National Academy Press, Committee on Educational Interventions for Children with Autism, Division of Behavioral and Social Sciences and Education.

Top 5 research references supporting Speech-Language Therapy

1. Diehl, S.F. (2010). Children with autism spectrum disorders: Three case studies. *The ASHA Leader*, January.
2. Diehl, S. F. (2003). Autism spectrum disorder: The context of speech-language pathologist intervention. *Language, Speech, and Hearing Services in Schools*, 34, 253–254.
3. Goldstein, H. (2002). Communication intervention for children with autism: A review of treatment efficacy. *Journal of Autism and Developmental Disorders*, 32, 373–396.
4. Retherford, K.S., Sterling-Orth, A. J. (2009). Facilitating functional social-communication skills in adolescents with asperger’s syndrome. *Perspectives on Language Learning and Education*, 16, 55-61.
5. Schwartz, H., Drager, K. R. (2008). Training and knowledge in autism among speech-language pathologists: A Survey. *Language, Speech, and Hearing Services in Schools*, 39, 66-77.

EARLY ACHIEVEMENTS

Overview

Early Achievements is an early intervention model program that focuses on enhancing the development of social communication, language, and play for toddlers with autism spectrum disorder (ASD). This is a comprehensive intervention that provides an extra emphasis on the development of interpersonal synchrony, defined as socially contingent imitation, affect sharing, and joint attention. Early Achievements embraces the following developmental and behavioral principles: (1) autism is a disorder of learning and conceptual development; (2) motivation and attention are fundamental to learning; (3) strategically created opportunities for self-initiated, goal directed action are important to maximize learning in young children with ASD; (4) event representation provides a natural foundation for organizing new experiences; (5) targeting joint attention, affect sharing, and socially-contingent imitation within engagement with peers is vital for addressing the core social deficit in interpersonal synchrony in children with ASD; and (6) relationships between stimuli and rewards must be carefully constructed to maximize learning in children with ASD. This is a comprehensive intervention that provides an extra emphasis on the development of interpersonal synchrony, defined as socially contingent imitation, affect sharing, and joint attention.

Pair 1

Left Video Clip: In this video clip, a 2-year-old boy with ASD shows his aversion to being touched and being in close proximity to others. He has very limited language abilities, lack of interest in toys or people, stereotypic behavior (hand flapping), and difficulties with self-regulation. He was difficult to engage. Instruction at this time involved frequent but brief interactions, with every effort being made to entice him to engage with a toy or a person.

To create opportunities for engagement, duplicate toys were placed all around the classroom. This enabled his therapists to imitate his actions on toys, create opportunities for choice making, and create communicative temptations. Major instructional strategies involved providing high levels of predictability, imitating his actions on objects, expanding his play in developmentally appropriate ways, creating communicative temptations, scaffolding play and social engagement in ways that permitted his behavior to be contextually appropriate, creating joint action routines, and use of song gesture games. Gradually, he began to tolerate being in proximity to others, imitating others' actions and words, playing with toys, communicating, and taking turns.

Right Video Clip: In this video clip the same 2-year-old boy is talking, turn taking, imitating, playing appropriately, and staying engaged with a partner in close physical proximity. Self-regulation has improved considerably. He is becoming interpersonally synchronous as he learns how to communicate and play.

There are several important intervention ingredients present in this clip. First is the environmental setup. Note that there are two cheese shakers, two pans with pizza, two spoons, and so forth. This enables the therapist and child to synchronize with each other through imitation, language, attention and affect. In addition, objects have been selected based on the properties that will draw and sustain the child's attention, as well as having role relationships that link categories of objects together conceptually and functionally (e.g., pizza, cheese shaker, Elmo, cup, milk). The properties of the cheese shaker (filled with rice) afford auditory and tactile feedback to the child as he shakes it. This captures his interest and he inspects it before continuing to use it in play.

This therapist uses many strategies to scaffold the child's play, pragmatically appropriate spoken and gestural communication, and joint engagement. First the therapist labels the objects ("You know what else we have? Cheese!"), so that the introduction of the new object is conceptually linked to the ongoing play activity and the therapist's communicative bid comes in the form of a comment. This provides a model for pragmatically appropriate language that extends beyond the usual form of labeling and requesting that typifies many early interventions.

The therapist is using Pivotal Response Training (PRT) in this clip. In the first example of PRT, the child is offered a choice between two contextually relevant cheese shakers. The therapist requires that the child

express his choice through speech before she releases the shaker after he has grasped the one of his choice. Because he did not spontaneously use spoken language, and because speech is an emerging skill for this child, the therapist provides a verbal model (“red or green”). Once the child labels the color of the shaker top, the therapist rewards his request by allowing him to have the shaker. The therapist expands his utterance by saying “Oh you want green. Okay.” Then she extends the conversation by saying “Shake on our cheese. Shake shake shake.” In saying this, she labels the relevant action, using key target vocabulary (shake, on, cheese) in grammatically simple phrases, to emphasize the conceptual relevance of the action of shaking the bottle. The therapist’s use of language is pragmatically appropriate, as she comments on the child’s choice, their joint actions, and uses language to transition to the next segment of the play sequence (“I think our pizza’s ready”).

Pair 2

Left Video Clip: In this video clip, a 2-year-old girl with ASD and her therapist are in the sensory-motor segment of the daily classroom schedule. As the clip opens, you see the girl self-selecting an object. Immediately, but gently, the therapist follows the child’s lead and assists the child in covering herself with the parachute. The therapist takes the opportunity to translate a simple, familiar peek-a-boo routine from the traditional blanket-as-cover to a novel parachute-as-cover. The primary instructional strategy used here is a joint action routine. Within this interaction, clearly defined segments are observed, which can be described as an ‘antecedent-behavior-consequence’ sequence. At first, the therapist performs all elements of the sequence: covering the child, saying “Where’s Sarah?”, lifting the parachute, joining the child inside the covering of the parachute, then moving out of the parachute. Note the brevity of the period during which the therapist joins the child under the parachute. Also note how the therapist pauses prior to joining the girl under the parachute. This provides her time to process and anticipate what will happen next.

Next, the therapist cues the child that the routine is about to begin again by gently touching the sides of the child’s head and saying “Where’s Sarah?” This time, the child shows anticipation of the next element of the routine by raising her arms. This is reinforced by the therapist as she lifts the parachute and says “There she is!”, then briefly tickling the child and then lowering the parachute around the child again.

Then the child vocalizes when the therapist joins her under the parachute. The therapist adds an element to the routine when she embraces the girl. Note that the embrace leaves a distance between the therapist and the girl. She turns her head, pulls back from the embrace, and turns her back to the therapist.

Finally, the therapist shortens the activity with the parachute and pulls the girl into a full hugging embrace. Now she accepts the embrace. At this point in the intervention, she has not yet begun to initiate social engagement with others, respond to joint attention cues, or use spoken language.

Right Video Clip: In this video clip, made a few months later, the same 2-year-old girl is a fully engaged, attentive participant in classroom activities. During the story time activity at circle, a communicative temptation is presented. This communicative temptation is designed to elicit initiation of joint attention and shared positive affect from the children. As this clip opens, the children have just finished hearing and participating in activities related to the story about a Shape Person. A staff member is causing a 2-dimensional story character to emerge from behind the shelves. All of the children engage in joint attention, looking at the salient event of the Shape Person emerging from behind the shelves. The teacher models an excited affect through facial cues and intonation, as she points to the object of interest and says, “Look!” The children share her affect, and one of them comments, “Wow!” The therapists imitate the child’s comment, and soon thereafter, the girl exclaims “Wow!” as well. She no longer recoils from proximity to others. The teacher lingers in this moment of excited interpersonal synchrony with all of the children. This provides time for gaze monitoring (triadic gaze), initiation of joint attention, response to joint attention, affect sharing, commenting, and turn taking (teacher exclaiming, children exclaiming, teacher commenting, etc.).

The teacher labels the “Shape Person”, who is an exact replica of the story character so that the children make the link between the experience they just had when the teacher reads the book to them, and the experience they are having now. Note the pace of the event, the simple language and gestures used by the teacher, the teacher’s pauses that allow children to comment and react, the repeated salient pointing gesture produced by the teacher, and the teacher’s provision of an opportunity for the children to see the match between the Shape



Person in the book and the enlarged replica of this character. The girl's gains in social cognition and communication are evident in this clip as she exhibits triadic gaze (monitoring the attention of other) in this social event, shows awareness of the novelty of the event, shows positive affect, communicates her excitement through words, recognizes the relationship between the Shape Person who has emerged from behind the shelves and the character in the book, and regulates her behavior to conform with the social rules of the class and returns to her seat.

How goals and objectives are prioritized and selected for treatment

Goals are selected based on the child's current abilities. Priority is given to goals that: (1) are deemed pivotal, such that once the ability is acquired, numerous other skills begin to emerge; and (2) enable the child to become more effective in communication, play, and social engagement. Social goals are addressed from the very beginning of the intervention.

Measures for determining if treatment is working

Response to joint attention, frequency of initiation of joint attention and shared positive affect (as from the Communication and Symbolic Behavior Scales Developmental Profile), diversity of play acts (CSBS DP), spontaneous imitation coded from a peer play sample, ADOS, and Mullen Scales of Early Learning.

Who can implement this treatment?

Trained clinician Trained educator Trained parent (There is a parent training component, but parents are mainly trained to enhance social engagement, play and communication in a less comprehensive way) Other

What is the role of the family?

To engage with children as often during the day as possible using strategies they are taught. This may be done in activities of daily living as well as in playtime with the child.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

40 hours of didactic training paired with guided practice, then on-site guided practice.

Author of Early Achievements

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Additional information describing Early Achievements

Website: www.Kennedykrieger.org

Publication:

Landa R. Autism Spectrum Disorders in the First 3 Years of Life. Shapiro BK & Accardo PJ (Eds.) Autism Frontiers: Clinical Issues and Innovations. 2008; 97-123. Baltimore: Paul H. Brookes Publishing Co.

Top reference supporting Early Achievements

1. Landa, R., Holman, K., O'Neill, A., & Stuart, A. (2011). Intervention targeting development of socially synchronous engagement in toddlers with autism spectrum disorder: a randomized controlled trial. Journal of Child Psychology & Psychiatry, 52, 13-21.

EARLY SOCIAL INTERACTION PROJECT

Overview

The Early Social Interaction (ESI) Project is a comprehensive, parent-implemented, early intervention program for young children with autism spectrum disorder (ASD) and their families. ESI integrates evidence-based practices drawing from research on autism, early intervention, child development, and applied behavior analysis with a focus on the core deficits associated with autism. ESI targets children's social communication, language, play, and emotional regulation skills that are functional and meaningful for the child using the SCERTS curriculum to increase active engagement. The interventionist coaches parents on how to embed intervention strategies and supports into everyday activities in the natural environment to ensure the level of intensity needed for meaningful outcomes using methods consistent with Part C of Individuals with Disabilities Education Act (IDEA). With practice, the everyday activities become predictable routines with clear roles for the child to increase meaningful participation.

The overarching aim is for parents to embed intervention strategies and supports in everyday activities so that their child is engaged actively at the recommended level of 25 hours a week. Three layers of supports are taught—(1) supports to establish a common agenda by positioning, following the child's attentional focus, and structuring activities that are interesting to the child with clear roles and turns; (2) supports to enhance social reciprocity by using natural reinforcers, waiting for initiation and balance of turns, and providing clear message to ensure comprehension; and (3) supports to develop better skills by modeling and expanding language and play skills, extending the activity, child's roles, transitions, and pushing the demands with a balance of supports. Over time the parent is encouraged to implement intervention strategies in multiple contexts and loosen up the structure and predictability so everyday routines become more and more natural to promote generalization.

Pair 1

Left Video Clip: This video clip takes place during a naturalistic assessment before beginning ESI treatment to learn what supports mom is using with her 20-month-old son who has ASD. First you see mom offering a snack (cereal) to her son. Notice, even though mom is providing a nice balance of turns and talking to him, he is not sure how to communicate that he wants more cereal and he becomes frustrated. This activity does not yet have the features of layer one supports to make this a clear and predictable routine. In the next activity, the child entertains himself by wobbling the lid to a container. He expresses frustration at first by whining when the plate is out of reach and shows his interest and persistence in wobbling the plate in this unstructured activity. While mom is talking with the clinician he gets very excited when the plate wobbles and he flaps his arms and jumps up and down, a behavior common for this age.

The next activity is during the first treatment session on the same day. The interventionist coaches mom through her first attempt at including her son in doing laundry. Mom and the interventionist decide that taking clothes from the dryer and putting them into the basket would be a reasonable role for him. Mom first models this and then encourages her son to take a turn. When he does not seem to understand that he is supposed to put clothes into the basket (rather than into the dryer), she prompts him physically twice and he is able to follow her instruction by taking a turn without any help. In the last segment you see mom and the interventionist trying to get an exchange going with a rolling musical toy in which the child is interested. Notice how at this point, he uses a "whine" like vocalization to ask mom to help push the toy. Mom does a nice job helping him turn this vocalization into a more sophisticated turn, by pairing it with a gesture directed toward her. She also offers support for him to remain well regulated when he is upset by the clinician taking a turn with the toy. Now that mom is using supports for layer one, there is a sense of a common agenda.

Right Video Clip: This video clip shows the same 20-month-old boy during later activities that illustrate mom's progress using layer one supports and her son's progress in active engagement. In the first segment mom establishes a new routine that encourages him to look at her face while tossing him gently on the bed. Notice all the fun opportunities for communicating and sharing. Mom positions him on her shoulders, which encourages him to look at her face. She says "ready", then counts and waits until he looks at her face, and then she tosses him. This shows the features of layer one supports in this routine.

The next segment, two months later, shows mom implementing layer two and three supports. The video clip shows the beginning and ending of bath, which is now a 20-minute activity packed with opportunities for active engagement. You see her son getting ready to take a bath. Notice how mom sets up a predictable sequence of events that involves expanding roles for her son, such as closing the door, getting a wash cloth, turning on the water, and requesting the bubble soap. Mom is using simple, exaggerated language and frequent praise to keep him motivated. Notice how many times now he looks to mom to share his excitement. Bath ends with him taking on the role of unplugging the water. Again, mom is using simple, motivating language with nice intonation like "Ooopen, shut them!" to create anticipation and a nice balance of turns. Notice how she follows his interest when he points by looking at his reflection, which provides another opportunity for joint attention and shared joy.

The last segment is during snack and illustrates how mom provides a model and waits expectantly for her son to try to vocalize a request. She is also working on imitating gestures and following instructions. She does a nice job of embedding many transactional supports to target multiple objectives within one activity. She gives clear instructions and if he does not follow, she holds him firmly but gently to each one. This activity has a nice density of active engagement with a balance of turns and mom using supports from all three layers. It is a nice contrast with the snack at age 20 months and shows how much both mom and her son are learning.

Pair 2

Left Video Clip: This video clip shows a 21-month-old boy with ASD during a book sharing activity with his mom. His mom has been learning ESI strategies and supports for about a month and is using supports in layer one to establish a common agenda with the book and beginning layer two to build social reciprocity. Mom is positioned well on the floor next to her son. She reads the book leaving a space for him to fill in so that his turn and role are clear. She follows his attentional focus, letting him turn the page. While he is looking at the next page she talks about the pictures or asks him to point. She waits on each page with an expectation for him to fill in or find the "hippo" and turn the page. This leads him to look at her and share the fun.

In the next segment the interventionist is helping mom figure out how to have a smooth transition from playing with the bear to the next activity rather than just letting him wander off. The interventionist points out the signs that he is ready to be done, models "clean up" for mom, and then explains the supports she was using to keep him well regulated and engaged actively. Mom does a good job holding him to helping put away the toys.

The next segment illustrates how the interventionist coaches mom on layer two and three supports. The interventionist guides mom on how to encourage active participation in Ring-around-the-Rosie. The interventionist first models and explains and then moves to guided practice with the mom involved in the activity. An important part of ESI is building independence for the parents so they will be able to implement supports and strategies when the interventionist is not there.

Right Video Clip: The same child is now 22 months old. This video clip illustrates layer two and three supports in three different segments. During the first segment, the parent and interventionist discuss how to offer food choices and model the names so he can learn to request specific food items. In the second segment, mom offers a choice of two different characters in play. When he protests her toy set she is responsive by allowing her son to choose other toy materials (play food) but she holds him to playing with the owl. She does a great job modeling language and play to motivate him and develop better skills.

In the third segment, while sitting at the kitchen table playing with Play-Doh, this child requests "bubbles" spontaneously. Mom acknowledges his request but negotiates that first they need to make a star with the Play-Doh. He requests the swing (outside) and comments that he needs his jacket. The interventionist shows mom how to use visual supports with a "first-then" picture schedule to increase active engagement and help with transitions across activities. The schedule (first make star with Play-Doh, then swing) affirms that they will go outside after they finish making the star and that helps to keep the child engaged and focused on the Play-Doh.

Pair 3

Left Video Clip: This video clip shows a 20-month-old boy with ASD who initiates requesting peek-a-boo by handing the blanket to his mom. His mom has been learning ESI strategies and supports for about a month and is using supports in layer one to establish a common agenda with the blanket and beginning layer two to build social reciprocity. Notice how mom responds to his initiation and then puts elements in place quickly to make the routine predictable and language consistent. She does a nice job supporting his active participation and use of gestures and vocalizations.

The next segment illustrates how mom puts a favorite verse from a nursery rhyme to “horsie ride”, which makes a nice predictable sequence of words associated with the routine. Notice also that mom is now expecting her son to communicate to initiate and continue the routine, either with a vocalization or an attempt at a gesture or sign language. She will model first then jump in to offer help when needed for him to fill in certain words of the song. This leads to gaze shifts, shared joy, and more active roles.

The last segment shows how mom uses layer one and two supports during a book sharing. She positions herself well for face-to-face interaction and structures turn taking with a clear role for him to touch a picture, vocalize, and turn the page. The interventionist provides specific feedback to mom and they problem solve together to push him more in social reciprocity.

Right Video Clip: This same child with ASD is now 22 months old. Mom offers choices, then structures the ball activity to provide clear roles and predictability, and adds waiting for practice on vocal approximation of the words “ready, set, go”.

In the second segment you will see how books have evolved in two months of treatment. The predictable nature of this book, *Brown Bear*, offers the structure this child needs. Notice how mom pauses in key places in the book and is now able to hold out for more sophisticated communication such as gesturing and even imitating key sounds and words in the book. Notice that shifts in gaze and shared joy continue even though expectations for better communication have increased significantly.

How goals and objectives are prioritized and selected for treatment

ESI identifies goals and objectives and monitors progress with SCERTS, which is a curricular-based assessment and intervention published in a two-volume manual (Prizant, Wetherby, Rubin, Laurent, & Rydell, 2006). The acronym “SCERTS” refers to Social Communication (SC), Emotional Regulation (ER) and Transactional Support (TS), which are the primary developmental dimensions targeted to support the development of children with ASD and their families. The SCERTS curricular-based assessment includes parent report and observation forms that are administered initially to identify high priority goals and objectives and are updated quarterly. The SC and ER domains delineate specific, measurable goals and objectives for the child and are organized by communication stage. The TS domains delineate specific, measurable goals and objectives for the parent or other communicative partners and include teaching strategies and learning supports that are selected to help the child meet his/her individualized goals and objectives.

Measures for determining if treatment is working

The SCERTS curricular-based assessment is administered initially and updated quarterly to track progress in selected goals and objectives.

Who can implement this treatment?

Trained clinician Trained educator Trained parent (parents and other caregivers are central to this approach) Other (OT, PT, Speech, Creative Arts, and mental health professionals)

What is the role of the family?

Families are maximally involved in ESI by the simple fact of the child’s age and reliance on parents for nurturance. ESI incorporates the existing research that supports use of adult learning strategies that incorporate the adult’s experiences and interests, demonstration and specific feedback, problem-solving strategies to increase independent decision making and generalized use of information, self-assessment on effectiveness, and sequential instruction (Buysse & Wesley, 2005; McGee & Morrier, 2005).

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other (any setting where child/caregiver interaction can occur)

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

In addition to becoming familiar with the framework as explained in the ESI website, it is recommended that professionals participate in implementation trainings.

Authors of Early Social Interaction

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Additional information describing Early Social Interaction

Website: <http://esi.fsu.edu/>

Publications:

- Wetherby, A. & Woods, J. (2008). Developmental approaches to treatment of infants and toddlers with autism spectrum disorders. In F. Volkmar, A. Klin, and K. Chawarska (Eds.), *Autism Spectrum Disorders in Infancy and Early Childhood*. N.Y.: Guilford Press.
- Woods, J. & Wetherby, A. (2003). Early identification and intervention for infants and toddlers at-risk for autism spectrum disorders. *Language, Speech, and Hearing Services in Schools*, 34, 180-193.
- Woods, J. & Wetherby, A. (2007). Considerations for family guided communication assessment of infants and toddlers in natural environments. In A. Kamhi, J. Masterson, & K. Apel (Eds.), *Clinical decision making in developmental language disorders*. Baltimore, MD: Paul H. Brookes Publishing.
- Woods, J., Wetherby, A, Kashinath, S., Holland, R. (2013). Early social interaction model for young children with autism. In P. Prelock (Eds.) *Treatment of Autism Spectrum Disorders: Evidence-Based Intervention Strategies for Communication and Social Interaction*. Baltimore, MD: Paul Brookes Publishing.

Top 5 research references supporting Early Social Interaction

1. Wetherby, A., Guthrie, W., Woods, J., Schatschneider, C., Holland, R., Morgan, L. & Lord, C. (2014). Parent-implemented social intervention for toddlers with autism: An RCT. *Pediatrics*, 134, 1084-1093
2. Wetherby, A. & Woods, J. (2006). Effectiveness of early intervention for children with autism spectrum disorders beginning in the second year of life. *Topics in Early Childhood Special Education*, 26(2), 67-82.
3. Woods, J., Kashinath, S. & Goldstein, H. (2004), Effects of embedding caregiver implemented teaching strategies in daily routines on children's communication outcomes. *Journal of Early Intervention*, 26, 175-193.
4. Kashinath, S., Woods, J., & Goldstein, H. (2006). Enhancing generalized teaching strategy use in daily routines by parents of children with autism. *Journal of Speech, Language, Hearing Research*, 49, 466-485.
5. Woods, J., Wilcox, M. J., Friedman, M. & Murch, T. (2011). Collaborative consultation in natural environments: Strategies to enhance family centered supports and services. *Language, Speech, and Hearing Services in Schools*.

EARLY START DENVER MODEL

Overview

The Early Start Denver Model (ESDM) is an early intervention program designed to promote language, learning, and engagement for young children 12-48 months of age with autism spectrum disorder (ASD). ESDM is supported by the principles of developmental psychology and applied behavior analysis (ABA). Their teaching interventions are delivered within play-based, relationship-focused routines. The ESDM curriculum is designed to address all areas of the child's development using applied behavior analysis (ABA) based teaching strategies that involve interpersonal exchange and positive affect, shared engagement with real-life materials and activities, adult responsiveness and increasing parent sensitivity to child cues, and focus on developing the child's verbal and nonverbal communication skills. Three main goals are: 1) bringing the child into social relationships, 2) following the child's lead when socially engaging the child, and 3) developing play activities to fill in any learning deficits that the child may have.

Pair 1

Left Video Clip: This 17-month-old child with ASD does not yet vocalize or gesture intentionally to communicate. His eye contact is generally poor. This is a fourth hour of intervention with this child. In the seconds before the clip begins, he has just approached the bucket and ball, touched them, and then crawled away. The therapist follows up his fleeting interest in the ball and creates a simple dyadic game involving throwing the balls in the bucket. This activity addresses one of the child's motor objectives, throwing with directionality. She positions herself in front to maximize his attention, takes turns with the ball both to demonstrate the skill and to provide a model for imitation, thus addressing another of his objectives - imitating familiar actions on objects. Her turn taking allows for opportunities to label the most salient objects and actions, and she follows the ESDM principle of "one word up" to simplify her language appropriately for his current language level. She creates opportunities for his nonverbal intentional communications during her turns, and on the clip we see her reinforcing his communicative gaze, gestures, and vocalizations by giving the ball to him right away. His nonverbal communications increase over the course of the interaction, and by the end he has evolved an idiosyncratic communicative gesture - hands up - as a clear request for the ball.

Other ESDM principles being illustrated in the clip are the 4-part joint activity structure (set up, theme, variation, closing - though the closing occurs off camera), the creation of a positive emotional exchange, optimizing children's arousal states for learning, working on multiple objectives within one activity (gross motor, receptive communication, expressive communication, social, and imitation), clear ABC (antecedent, behavior, consequence) teaching, and careful use of reinforcement strategies to support current skills, to increase frequency of communications and to shape the gesture, maximizing child attention and motivation for learning, dyadic exchanges, and a very high rate of learning opportunities embedded within the play activity.

Right Video Clip: Central to the ESDM teaching approach is the use of dyadic engagement in which activities do not involve objects or materials, called a sensory social routine (SSR). It is important that children with ASD participate in SSRs because of the rich social learning opportunities for shared attention and engagement, understanding and use of facial expressions and gestures, regulating arousal or emotional state, imitation, and communicative exchanges, all of which are equally important to build and foster when objects are not involved in play.

In this example, the therapist introduces the concept of SSRs for the first time with this 21-month-old child with ASD. Currently, the child does not have any songs, physical games, nursery rhymes, or other sensory social routines in her repertoire so this is a good goal for the therapist to start addressing. As the therapist begins to work with the child, she abandons the SSR of "ring around the rosie" when the child protests and instead develops an imitative game involving various body actions, such as standing up, lying down, turning around, patting the floor, and kicking the ground. The therapist models each action with the appropriate length of language (in this case the use of single words) and pauses throughout each learning opportunity to allow the child to respond to and initiate actions to continue the routine.

This balance of teaching versus pausing to allow for child responses and initiations is critical during any



learning exchange and here in this example, pausing allows this child to process the visual and linguistic information provided by the therapist and to take her turn by actively participating in the SSR with body movements and vocalizations. Although the child's arousal level occasionally increases in time, her enthusiasm never interferes with her ability to interact with and respond to the therapist's teaching opportunities. The child continues to focus her attention on the therapist and responds with related behaviors in an immediate fashion to continue the SSR. Alternating between sensory social and object-focused routines should happen throughout teaching in order to monitor the child's level of arousal and attention for maximal learning. This video clip is an optimal example of a very passive child transforming into an active, communicative, intentional learner through the use of a sensory-based game.

How goals and objectives are prioritized and selected for treatment

Goals and objectives are selected based on the developmental profile of the individual child and the goals of the child's family.

Measures for determining if treatment is working

Independent measures of adaptive behavior, autism symptoms, cognitive ability, and language level used to test for changes in child skills. Additionally, parents complete taped play samples periodically to identify changes in parent skills.

Who can implement this treatment?

Trained clinician Trained educator Trained parent Other

Both clinicians and parents are active treatment providers. Parents are taught basic ESDM strategies and asked to use them during everyday activities.

What is the role of the family?

ESDM includes a strong parent-family component that is flexible to each family's characteristics. Parents are encouraged to use ESDM strategies during everyday activities such as meals, bath time, and play. Parents choose objectives from the curriculum that they view as important as intervention targets.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

Training/certification: 1) Reading ESDM manual 2) Attending training workshops 3) Submitting training materials for certification including videotaped therapy sessions, a completed child curriculum, developing child objectives and data collection system. Trainees receive feedback until meeting fidelity.

Certification is available for three different levels: Advanced, Parent Coaching, and Trainer-of-Trainer.

Authors of Early Start Denver

Sally Rogers, PhD

Geraldine Dawson, PhD

Additional information describing Early Start Denver

Website:

<http://www.ucdmc.ucdavis.edu/mindinstitute/research/esdm/>

Treatment Manual:

Rogers S.J. & Dawson G. *Early Start Denver Model for Young Children with Autism*. New York, NY: Guilford Press; 2009.

Top 5 research references supporting Early Start Denver

1. Dawson, G., Rogers, S., Munson, J., Smith, M., Winter, J., Greenson, J., et al. (2010). Randomized, controlled trial of an intervention for toddlers with autism: The Early Start Denver Model. *Pediatrics*, 125(1), 17-23. (Open Access)
2. Rogers, S. J., Estes, A., Lord, C., Vismara, L., Winter, J., Fitzpatrick, A., ... & Dawson, G. (2012). Effects of a brief Early Start Denver Model (ESDM)–based parent intervention on toddlers at risk for autism spectrum disorders: A randomized controlled trial. *Journal of the American Academy of Child & Adolescent Psychiatry*, 51(10), 1052-1065.
3. Smith, M., Rogers, S., & Dawson, G. The Early Start Denver Model: a comprehensive early intervention approach for toddlers with autism. In: Handleman JS, Harris SL, eds. *Preschool Education Programs for Children with Autism*. 3rd ed. Austin, TX: Pro-Ed Corporation, Inc; 2008:65–101.
4. Vismara, L.A., & Rogers, S.J. (2008). The Early Start Denver Model: A case study of innovative practice. *Journal of Early Intervention*, 31, 91–108. (Open Access)
5. Vismara, L.A., Young, G.S., Stahmer, A.C., Griffith, E.M., & Rogers, S.J. (2009). Dissemination of evidence-based practice: Can we train therapists from a distance? *Journal of Autism and Developmental Disabilities*, 39 (12), 1636-1651. (Open Access)

JASPER

Overview

JASPER, which stands for Joint Attention, Symbolic Play, Engagement and Regulation, is aimed at facilitating change in joint engagement interactions between caregivers and their toddlers with autism spectrum disorder (ASD). Young children with autism show impairments engaging in joint attention with others. This affects their ability to sustain a shared interest with another person in an interaction and use specific joint attention skills such as pointing and showing. The importance of joint attention is underscored by data showing that these skills are important to later language development.

The JASPER intervention program specifically targets joint engagement, specific joint attention skills, language, emotion and behavior regulation, and play development.

Pair 1

Left Video Clip: This 24-month-old boy is playing with his mother after 10 weeks of intervention. The mother sets up the environment in a way that creates many opportunities for communication and engagement. By keeping one toy out, the mother creates a space that allows her child to focus on one activity at a time. Additionally, the mother sits so that she is facing the child, with the toy in between them. The mother keeps the toy at eye level to promote engagement and eye contact. The mother picks toys that her child likes, and that are developmentally appropriate for him; the toys are not too easy or too difficult for the child. Mom establishes simple play routines that are broken down into small steps (e.g., take animal off the bus, then put animal in the truck). Mom “marks” each step of the routine with contingent language, such as phrases or labels (e.g., “Giraffe!” “Put in!”). Mom is also imitating sounds that her child is making.

By being animated and expressive, mom keeps her child engaged with her and with the toy. Mom creates opportunities for communication and waits for her child to initiate communication. For example, mom waits for her child to request a toy by pointing to it. By waiting and creating anticipation, mom provides opportunities for initiating different types of communication, such as shared looks and pointing to request.

Right Video Clip: This 30-month-old boy is playing with his dad after 10 weeks of intervention. Dad follows his child’s interest in a toy. He sets up the environment so that he and his son are facing each other, thus increasing opportunities for communication and engagement. By creating suspense and excitement around the toy, dad keeps his son engaged. He brings the toy to eye level, waits in anticipation, and then dumps the dolls off the bus. Dad builds a simple routine of putting the animals on the bus and then pushing the bus. Additionally, dad uses simple language to “mark” different steps of the routine (e.g., “Put on!” “Green or yellow?”). This predictable routine provides repeated opportunities for the child to communicate and respond.

Dad creates opportunities for communication by prompting his child to request. For example, he provides his son with a choice of two different animals, and his son points to the animal he wants. Dad recognizes and responds to his son’s communicative sounds and gestures. By scaffolding the activity in this way, dad keeps his son in a supported joint state.

How goals and objectives are prioritized and selected for treatment

Goals and objectives are determined individually, based on the developmental strengths and challenges of each child in the core domains of joint engagement, joint attention, regulation, language, and play. The primary goal is for the caregiver-child dyad to be in a supported and/or coordinated joint engagement state surrounding a shared play routine.

Measures for determining if treatment is working

Independent measures of joint attention, play development, and language collected by clinicians unfamiliar to the child are used to test for skill development. In addition, joint engagement, joint attention skills, regulation, play, and language are behaviorally coded within the caregiver-child play interactions that are collected throughout the course of treatment.



Who can implement this treatment?

Trained clinician Trained educator Trained parent Other

Intervention goals are designed and continually assessed by a trained clinician, but caregivers implement the strategies during play and can generalize these strategies to other daily routines.

What is the role of the family?

The intervention works collaboratively with primary caregivers by teaching them the strategies to engage successfully with their children.

In which setting(s) can treatment be implemented?

Clinical or therapy room Classroom Childcare program Home Community Other

Due to the young age of these children, the intervention is best delivered in the home or a clinic/educational setting.

Is special training recommended or required to conduct or implement treatment?

No Yes, recommended Yes, required

Yes, training should be given to parents by clinicians familiar with these intervention techniques.

Author of JASPER

Connie Kasari, Ph.D. UCLA

Additional information describing JASPER

There are several recent reports suggesting that joint attention skills can be taught to young children with autism using this treatment (Kasari et al., 2006 & 2008). In a randomized controlled group design, 58 preschoolers with ASD were taught initiations of joint attention skills using both developmental and behavioral teaching principles by trained interventionists (Kasari, Freeman, & Paparella, 2006). Results indicated that responding to joint attention and joint attention initiations of “showing toys” were significantly improved in the joint attention group compared to the control group on the independent assessment of joint attention. With their mothers, the joint attention group also showed significant improvement in joint attention initiations of giving to share, showing and coordinated looks, and in child-initiated joint engagement states compared to the control group. In Kasari et al., 2010, mothers were taught strategies to facilitate longer periods of joint engagement with their children. This study found that children who received treatment were in higher states of engagement with their caregivers than children randomized to a waitlist condition.

Top 4 research references supporting JASPER

1. Gulsrud, A. C., Jahromi, L. B., & Kasari, C. (2010) The Co-Regulation of Emotions Between Mothers and their Children with Autism. *Journal of Autism and Developmental Disorders*, 40, 227-237. (Open access)
2. Kasari, C., Freeman, S., & Paparella, T. (2006). Joint attention and symbolic play in young children with autism: a randomized controlled intervention study. *Journal of Child Psychology and Psychiatry*, 47, 611-620.
3. Kasari, C., Gulsrud, A.C., Wong, C., Kwon, S., & Locke, J. (2010) Randomized controlled caregiver mediated joint engagement intervention for toddlers with autism. *Journal of Autism and Developmental Disorders*, 40(9), 1045-56. (Open access)
4. Kasari, Paparella, Freeman, & Jahromi, (2008). Language Outcome in Autism: Randomized Comparison of Joint Attention and Play Interventions. *Journal of Consulting and Clinical Psychology*, 76, 125-137.