Autism:
Interventions and Strategies for Success

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The goal of the CESA #7 Department of Special Education is to produce a series of six articles on autism in **plain language** accessible to the general public, parents and school personnel. These six articles have been reviewed and edited by many parents of children with autism and school staff. Special thanks go to **Melanie Meulemans, Jan Serak, June Ninow** and **Candy Bar-Lev.**

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These articles can also be viewed at the CESA #7 Special Education web site:

http://www.cesa7.k12.wi.us/sped/.

The web site version also includes pictorial displays of the various tools and strategies described in the articles. The "print version" of these six articles may be downloaded from the web site as well.

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Assistive Technology for Children with Autism

For years, different modes of technology have been used to improve the quality of life of people who have various developmental disabilities. However, the **varied** use of technology for children with autism continues to receive limited attention, despite the fact that technology tends to be a high interest area for many of these children.

This article will discuss how **various** modes of technology (including technology designed as augmentative communication systems), can be used for children with autism to increase or improve their:

- ✓ Overall understanding of their environment;
- ✓ Expressive communication skills;
- ✓ Social interaction skills;
- ✓ Attention skills;
- ✓ Motivation skills;
- ✓ Organization skills;
- ✓ Academic skills;
- ✓ Self help skills;
- ✓ Overall independent daily functioning skills.

What is Assistive Technology?

According to the Technology-Related Assistance for Individuals with Disabilities Act of 1988 (Public Law 100-407), an **assistive technology** means any item, piece of equipment, or product system, whether acquired commercially, off-the-shelf, modified or customized, that is used to **increase**, **maintain,** or **improve functional capabilities** of individuals with disabilities. **Assistive technology service** is any service that directly assists an individual with a disability in the selection, acquisition, or use of an assistive technology device.

Typically, children with autism process visual information easier than auditory information. Any time we use assistive technology devices with these children, we're giving them information through their strongest processing area (visual). Therefore **various** types of technology, from "low" tech to "high" tech, should be incorporated into every aspect of daily living in order to improve the functional capabilities of children with autism.

Visual Representation Systems

It is important to determine which visual representation system is best understood by the child, and in what contexts. Various visual systems, such as **objects**, **photographs, realistic**

drawings, line drawings, and **written words,** can be used with assorted modes of technology, as long as the child can readily comprehend the visual representation.

Some children may need different visual representation systems in different situations. This may be dependent upon numerous factors, such as the skill being taught, as well as the unique characteristics of autism: attending, organization, distractibility, etc.

Example: A child may use **real objects** for his visual schedule, as the objects appear to give him more information as to where he's going and what's coming up next, as well as to help him remain more focused during the transition. However, this same child may use **photographs** or **line drawings** in a picture exchange in order to **communicate expressively**.

Some researchers suggest that, for most children, it is best to start with a visual representation system of line drawings, and move to a more concrete representation system of photographs or objects needed (18). See the line drawings in Mayer-Johnson Picture Communication Symbols.

The Mayer-Johnson software program, **Boardmaker,** is a user-friendly program for both adults and children (18). The program offers a 3,000 Picture Communication Symbol (PCS) library in either black/white or color, and can be accompanied by any written word/message. The symbols can be made in any size, and tend to be universally understood. They present a relatively clear, 'uncluttered' representation and remove any ambiguity, which can sometimes arise when using photographs, especially personally-made photographs, as in the following example.

Example: A teacher took photographs of the various teachers that a child with autism encountered at school, in order to help him learn the names of his teachers. When reviewing the names of the teachers in the photographs, the child referred to the photograph of a particular teacher as "Mexico". Upon further review of this photo, the teacher realized that in the background, barely visible, was the corner of a map of Mexico. Although the teacher's face was the prominent feature in the photo, the child processed the minimally visible map as the most prominent feature, and thus labeled the photograph according to this feature.

When using line drawings such as Boardmaker, caution should also be taken in determining whether to use black/white or color picture communication symbols, as some children with autism may prefer or dislike specific colors. They may focus only on the color instead of processing the entire picture. This will render the Picture Communication Symbol (PCS) virtually meaningless to the children as they are not processing the entire picture. Black and white picture communication symbols tend to remove any ambiguity which might arise.

Example: If a child prefers the color red, and the Picture Communication Symbol (PCS) for "lunch" has a red apple as well as a brown sandwich and orange juice, the child may only process the apple, as it contains his preferred color. The child may not even process the image, but attend only to the color red. Therefore, the PCS becomes non-meaningful to the child.

If the child has difficulty understanding the PCS line drawings and needs a more concrete representation, a good software program to use is **Picture This** (20). This program allows for the presentation of real photos, without risking ambiguous background clutter, which can be a part of

personal photographs. **Picture This** contains over 2,700 photos from numerous categories which are ideal for:

- ✓ Creating schedules;
- ✓ Augmentative communication systems;
- ✓ Games;
- ✓ Reading activities;
- ✓ Sequence activities for following directions;
- ✓ Various academic activities.

Strategy:
To teach a child, who is using photographs or objects as his visual representation system, to understand black/white line drawings, place a small black/white picture communication symbol in the corner of the various objects/photographs currently used by the child. Gradually increase the size of the picture communication symbol until it eventually covers up the entire photograph/object.

For children who have difficulty understanding two-dimensional visual representation systems (e.g., photo, drawings, line drawings), and require **objects** as their visual representation systems, the use of **True Object Based Icons** (**TOBIs)** is suggested (3). These TOBIs can be any line drawing, picture, etc., **which are cut out** in the actual shape or outline of the item they represent. The child can both **see** and **feel** the symbol and shape, thus assisting him to more readily understand the two-dimensional representation system. TOBIs tend to be somewhat larger than the typical two-dimensional visual representation system. When first introduced, they may be 3 inches in size or larger (3). The **printed word label** should always accompany the picture, and should be placed strategically so as not to alter the symbol shape.

Strategy:
When any visual representation system is used, it is important to combine it with a written word, as many children with autism exhibit a high interest in letters and words, and some even become early readers. Therefore we should continually enhance the child's literacy skills by also providing the written word with any type of visual representation system.

The rest of this article will outline the various skill areas commonly associated with children with autism, with supporting technology strategies defined as follows:

"Low" Technology: Visual support strategies which do not involve any type of electronic or battery operated device - typically low cost, and easy to use equipment. Example: dry erase boards, clipboards, 3-ring binders, manila file folders, photo albums, laminated PCS/photographs, highlight tape, etc.

"Mid" Technology: Battery operated devices or "simple" electronic devices requiring limited advancements in technology. Example: tape recorder, Language Master, overhead projector, timers, calculators, and simple voice output devices.

"High" Technology: Complex technological support strategies - typically "high" cost equipment. Example: video cameras, computers and adaptive hardware, complex voice output devices.

"LOW" TECH STRATEGIES

Comprehension Skills: Increasing comprehension of tasks/activities/situations is essential in addressing skill areas such as organization, attending, self help, following directions, following rules and modifying behavior. As a result, the child becomes more independent. The following "low" tech visual support strategies can be created and used to assist the child in increasing his comprehension skills and thus decreasing the occurrence of challenging behaviors:

- **Schedules:** Consistent daily use of an individualized visual schedule will increase a child's organization skills and independent functioning throughout all aspects of his life and will ease transition through adulthood. There are numerous ways to present visual schedules. Example: object schedule, 3-ring binder schedule, clipboard schedule, manila file folder schedules, dry erase board schedules, etc.

  Each child's individual needs should be considered in designing his personal **visual schedule**. It should be noted that visual schedules are as important for the child to use at school as at home. The information given to the child through a visual mode is extremely critical in helping him to understand the day's events and their sequence.

  A visual schedule will give the child the following information:

  - ✓ What is currently happening;
  - ✓ What is coming up next (the sequence of events);
  - ✓ When they are "all done" with something;
  - ✓ Any changes that might occur.

  A visual schedule is a "first-then" strategy, that is, "**first** you do ___, **then** you do ___", rather than an "if-then" approach (i.e., "**if** you do ___, **then** you can do___"). The "**first**" activity can be modified as needed to accommodate the child's changing ability to process in-coming information. Once this is done, **then** he can move on to his next visually scheduled task/activity. It is important for the child to indicate that he is "all done" with a scheduled activity. For example he can cross out/check off the scheduled item, or place the scheduled activity object/photo/ Picture Communication Symbol (PCS) in an "all done" envelope.

  Various social interactions can be included in the child's daily schedule as well as building in a balance of "high stress" (non-preferred) and "low stress"(preferred)

activities. Each child's "break time" or "quiet time" can also be visually scheduled at various times throughout the day as needed.

Example: Showing completed work to a teacher for social interaction and reinforcement, or saying "hello" to the teacher and students when entering the classroom.

Mini schedules/routines can also be incorporated as needed into the child's day.

Example: A visual routine checklist titled "Before Kindergarten" was developed for a child who was having difficulty establishing a routine while waiting to go to kindergarten following lunch. As he did not readily comprehend what was expected of him during this time period, challenging behaviors typically occurred. The "routine" was laminated and posted on the refrigerator with magnets glued to the back. The child would then check off each completed routine activity (e.g., eat lunch; wash face and hands; brush teeth; read 2 books; put on shoes and socks; put on coat and back pack; wait by the door for the bus).

- **Activity Schedules: Independently** engaging in appropriate tasks/activities for a certain period of time is an important life skill for children with autism. An activity schedule teaches this skill through a set of pictures (photo or PCS) or written words, which are used to visually cue the child to engage in a sequence of activities for **independent** recreation/leisure time (19). The number of activities and sequence of steps per activity need to be individualized for each child. For some children, activities will need to be broken down and depicted step-by-step in order for the child to complete the activity independently. For other children a more general, single photo/PCS/written word can be used to cue the child to perform an entire task or activity. Any type of binder, photo album, etc., can be used as the child's activity schedule book, or simple written lists may suffice for the child who is able to read and comprehend. The activity schedule book should contain the various tasks/activities (and steps if needed) depicted in whatever visual representation system the child best comprehends (e.g., photos, line drawings, etc.). Upon completion, a social reinforcer can be "built in" as the last page in the activity schedule book.

Example 1: On the first page of a photo album a photograph of a puzzle is depicted. On the next page, a photo of a shape sorter is depicted. On the third page, there is a photo of the child being thrown up in the air by Daddy.

Example 2: A written list with the following items listed, to be checked/crossed off by the child: Unload dishwasher; Vacuum living room; Fold towels; Computer for 30 minutes.

- **Calendars (home/school):** Use of a weekly/monthly **calendar** at both home and school can provide the child with important information regarding up-coming

events/activities, rather than relying on auditory information. When the child asks when a particular event will occur, he can easily be referred to the visual calendar. For example, class field trips, "bath night", McDonald's, etc.

Use of a visual calendar can also be helpful in assisting the child to understand when regularly scheduled events may not occur.

Example: If the child has swim lessons every Friday after school, but this Friday the pool is closed, draw an international "no" - circle with a slashed line through it on the scheduled swim lesson.

In this example, acknowledgement is made that the child has a scheduled activity that is not occurring on a particular day.

Calendars can also be used to give the child important information regarding school attendance, which is particularly helpful for "days off" from school during the typical school week. A visually depicted monthly calendar is used with each day that the child will be at home or at school. Many parents put these monthly calendars on the refrigerator and reference them daily with their child by crossing off a completed day, and noting where the child will be going (or staying) tomorrow.

In addition to schedules, comprehension skills can be increased by the following strategies:

- **International "No":** Use of the international "no" symbol (red circle with a line drawn through it) has proven very effective in visually communicating the very abstract concept of "no" for children with autism.

  Use of the international "no" symbol can assist the child in visually comprehending the following:

  "Stop - don't do what you are doing":

  Example: For behavior management cards such as the Picture Communication Symbol (PCS) of "no hitting" with an international "no" over it.

  "That is not a choice right now":

  Example: If the child hands you a Picture Communication Symbol (PCS) of something that he wants, that is not an option at this time, use a red dry erase marker to place an international "no" on the PCS and say "no_____, not now".

  "You are not permitted":

  Example: Placement of a tag board-size international "no" on doors has stopped children from running out of the door.

"Nonexistence":

Example: Placement of the international "no" on a scheduled activity to acknowledge that, although the activity typically occurs at this time/day, it will not be occurring today - for whatever reason.

- **Directions:** Low-tech strategies can be used in numerous ways to give the child **visual** information for following directions. Visual information greatly increases the child's comprehension of what is expected of him and is far more effective than auditory directions only. Visual directions help gain, maintain and refocus a child's attention, as well as ensuring that he gets complete instructions, thereby reducing the amount of support needed and increasing independent skills.

  The following "low-tech" strategies can be used to give the child visually presented directions:

  ✓ Use of a **dry erase board** or, contact paper white board, covering part of a notebook or schedule system, to write/draw various visual directions which are given auditorilly.

  Example: Take out your journals; Write 3 sentences about your weekend; Raise your hand when you are finished.

  ✓ **Sequential step directions** for specific tasks/activities.

  Example: Brushing teeth, making lunch, vacuuming, folding towels, setting the table, checking out books from the library, cooking, homework directions, school morning directions etc.

  "School morning directions"

  Example: Upon arrival at school a child is given a "morning directions" card to assist him in completing a visual list of instructions before sitting at his desk and beginning the day. The card is laminated with a dry-erase marker attached by a string and is located near the child's coat hook. After hanging up his coat and backpack, he can take the card and begin the "morning directions", checking off each item upon completion (e.g., Put reading book in tub; Put attendance stick in box; Put lunch ticket in hot/cold box; Put "Morning Directions" card away; Sit at desk).

  "Brushing teeth"

  Example: Picture Communication Symbols (PCS), representing each sequential step in this task, are placed on a Velcro strip positioned directly above the sink (in front of the child). As the child completes each step of the task, he pulls off the PCS representing the step which he has completed, and puts it in an "all done" envelope.

"Library"

Example: A small set of Picture Communication Symbols (PCS) representing the steps necessary to complete the library routine of choosing a book, "checking" the book out, sitting at a table and reading the book, and then walking back to class is created. This set of PCS is attached via a metal ring which can easily be kept in the child's pocket or attached to a belt loop or binder for easy step-by-step reference when going to the library.

"Setting Table"

Example: Photographs of each sequential step for setting the table are placed in a small photo album accompanied by the written direction. The last page should indicate something desirable for the child to do upon completion of this task, such as "computer for 30 minutes". The child is taught to turn each page as he has completed a step.

- **Forewarning**: For children who need very explicit **forewarning** regarding when something is going to "stop/end" or be "all done", use of "**go**", "**almost done**" and "**stop**" cards have proven very effective in giving children this important information to assist them in making this sometimes difficult transition (to stop).

Strategy: These cards are particularly useful for activities which do not have clear cut endings, such as some computer games, video games, drawing, etc.

Each card is a large colored circle with "go" as green, "almost done" as yellow, and "stop" as red, with the word written in large letters in the center of the colored circle. When the child starts an activity, the "go" card is placed on his desk, computer table etc., accompanied by a verbal message to "go" or "start" the task. When there are approximately 1-2 minutes left for the child to continue the activity, the "almost done" yellow circle is placed in front of the child again, accompanied by a verbal message. When it is time to stop the activity, the "stop" circle is placed in front of the child with the verbal message that it is time to stop.

- **Rules/Alternative Behaviors:** Putting rules in a visual form allows the child to understand the expectations, as well as what actions or alternatives are acceptable. This strategy results in more consistent behavior (12). In addition, visual representation of rules and alternative behaviors allows the child to improve his self-regulation and self-management skills without needing the support of an adult.

  - ✓ **Class rules or individualized personal rules taped to desk**: These rules should be provided through a visual representation system which the child can understand (written words, line drawings, etc.). If the child is engaging in an inappropriate behavior, he can be directed to look at a specific rule, e.g., "Read rule number 3".

- ✓ "**Good Choices That I Can Make" list:** This visual support strategy assists the child in understanding and making appropriate choices when he has "broken" rules or engaged in inappropriate behaviors. This list should be posted so that the child has easy visual access to it, and should initially be referenced by an adult in the environment to teach the child the importance of this visual support strategy.

Example: The child is making silly noises at the beginning of a math assignment, with math typically being a difficult subject for the child. An adult can direct the child to the appropriate rule that is visually represented on his desk, by either pointing to the rule or stating "Look at rule number___", which states "sit quietly and do my work" . The adult should then reference the child's "Good Choices That I Can Make" list. The adult may initially need to point out which specific choice the child should make in this circumstance.

This strategy will greatly assist the child in developing behavioral self-management skills. The following **"Good Choices That I Can Make"** list is an example:

1. **I can raise my hand to ask questions or get help.**
2. **I can ask <u>more</u> questions if I still don't understand.**
3. **If I don't understand what someone is saying or doing, I can ask them.**
4. **I know that my own words and actions can make people feel differently than I do.**
5. **I can use "I" messages to tell people how I feel. ("I feel bad when you tell me it's inside recess")**
6. **I can write down the problem and then think of appropriate things that I could do.**
7. **I could use relaxation strategies. "Take a deep breath, count to 10, breathe out slowly"**
8. **I could ask for time-out (break) all by myself.**
9. **I can make good choices.**

- ✓ **Individual rule/behavior cards:** These visual representation cards can be kept on a metal ring and used when needed, either singly or in succession. Use of the international "no" should be drawn in red on top of the Picture Communication Symbol (PCS) or photo, when appropriate, to clearly indicate that a specific behavior should **not** occur. Behavior management cards can also be "color coded". This gives the child additional visual information to better understand desired and undesired behaviors. The following colors are used:

  Red: behaviors you **don't** want the child to do (e.g., "no throwing").

  Yellow: behaviors you request the child to demonstrate (e.g., "shhh, quiet", "quiet hands").

  Green: appropriate alternative choices (e.g., "give a hug", "take a walk").

Example: PCS laminated on large index cards to communicate the following:

"Look at Mrs. Jones" - PCS of eyes;
"Sit on chair" - PCS of a child sitting in a chair;
"Shhh, be quiet" - PCS of a face with its finger to lips indicating "Shh";
"Don't hit" - international "no" drawn on top of PCS of a child hitting another child; etc.

- ✓ **Transition rule cards:** These cards can be used to help the child understand (visually) where he is going and what is expected of him in this environment.

Example: Going to McDonald's: A photograph of McDonald's is laminated to an index card. On the back of the card, specific "rules" for McDonald's are visually represented.

- ✓ **If something is bothering me I can...:** This strategy visually helps the child choose appropriate alternative behaviors when he is anxious or stressed. This card can be taped to his desk with the above heading and the following examples, or placed in a small photo album, which may also contain other visual support strategies:
  - ✓ **raise my hand for help**
  - ✓ **close my eyes and count to 10**
  - ✓ **take 5 big breaths**
  - ✓ **ask for a break**

Expressive Communication Skills: "Low-tech" strategies designed to focus on a child's expressive communication skills include the following:

- **Picture point communication board system:** In order to communicate, the child points to various visual representations (e.g., photos, PCS, objects, etc.) located on a "communication board". Numerous communication boards can be created that are child, task, or environmentally specific.

Example: Placemat communication board to be used during snacks and meals with PCS around the edge of the placemat; communication board created for the "play" area.

- **Picture Exchange Communication System (PECS):** The child **approaches** and **gives** a picture of a desired item (photo, PCS, object, etc.) to a communicative partner in exchange for that item (7). The use of this type of communication system provides the child with a way to communicate and most importantly, teaches the child to spontaneously **initiate** a **functional communicative exchange** (7).

  Numerous adaptations can be made when using a **PECS** program to meet the individual needs of a child. For example, placing the visual representation system on

frozen juice can lids or other hard discs or squares (counter top samples) allows the visual representation system to become more prominent to the child by giving him more tactile input (weight and hardness). He may tend to "crumple" up lightweight paper type items (pictures on plain paper) as a possible sensory need.

- **Break cards**: This is to help the child communicate that he needs some "down time" or a "break". Break cards should be easily accessible to the child and could be located in a consistent spot in the classroom, such as on the child's communication board or book, on the child's desk, etc. The purpose of the break card is for the child to communicate the message that he needs a break by using an appropriate communicative mode (visual representation system), rather than having to become increasingly anxious and frustrated, which may result in the occurrence of challenging behaviors.

- **Choice cards:** Choice cards (again using any type of visual representation system) allow the child a degree of independence by indicating a choice from a pre-determined set of possibilities. (e.g. a "work time" choice card could be presented to the child with several choices of activities for the child to choose from). When presented in this manner, the child is less likely to act out because he is allowed to make a "choice" of what he wants to do.

- ✓ **"All done" cards:** Many non-verbal children exhibit challenging behaviors to indicate that they are "all done" with something, as they typically have no other way to communicate this concept. Therefore, teaching a more appropriate way to indicate "all done" through a visual representation system will lessen both the child's and adult's stress and frustration. "All done" cards can be taped to the child's work area and taught to the child by stopping an activity **prior** to reaching the child's attention/frustration level, then pointing to the "all done" card. The child's hand can be physically prompted to point to the "all done" card if needed. "All done" cards can also be placed on the child's communication board, or book, for him to use.

- **Topic ring/topic wallet:** These are designed for children who are verbal, yet have difficulty initiating a topic with others or, have difficulty initiating **various** topics with others, particularly when these topics are not related to their high interest areas. The "topic wallet/ring" can have various topics visually illustrated (e.g., written words, PCS) to prompt the child to initiate a topic.

Example: The following topics are illustrated individually on small 3" by 3" laminated cards using both PCS and written words. They are either attached by a metal ring in the corner (for the child to hook on a belt loop) or placed in a small "communication wallet" to be kept in his pocket. The topics include "What did you do over the weekend"? "What is your favorite movie?" "Do you have any pets?" "What books do you like to read?"

- **Relating past events:** Many children with autism, both verbal and non-verbal, have significant difficulty relating past events. Using a visual representation system, which the child readily understands, can help to bridge this gap, at least between home and school. General templates are developed, which can be easily circled or filled out each day and sent to the respective location (home or school), to aid the child in relating past information through this visual representation system.

Social Skills:

Children with autism need to be directly taught various social skills in one-to-one and/or small group settings. Numerous low-tech strategies can be used for this purpose. Social skills training will also be needed to consider the child's possible difficulties in generalizing this information to different social situations, which may be supported through the following visual strategies:

- **Social Stories:** The use of Social Stories, developed by Carol Gray, provides the child with the use of visual information/strategies that will improve his understanding of various social situations, and teach him specific behaviors to use when interacting with others (9). Social Stories are written in first person and are individually written for each child for various difficult social situations (for example, staying in assigned seat on the bus). The Social Story should be visually represented in a mode which the child can most readily understand (such as written words, line drawings and written words, photos and written words).

  The repetitious "reading" of the Social Story, when the child is calm, is what leads to the success of this strategy. Two 3-ring binders of identical Social Stories, kept in page protectors, could be made, one for home and one for school, so the child can read them at his leisure. This strategy has proven to be very successful for many students in learning to recognize, interpret and interact appropriately in different social situations.

  A software program from Slater Software Company (23) which converts text to a graphic symbol, is called "Picture It". This software program is ideal for adding line drawing graphics above written words to increase the child's understanding of Social Stories.

- **Social Scripts:** Social scripts are similar to Social Stories; however, an actual script is developed for a specific social situation (it is specific to the child and the social situation).

  Example: A child has difficulty asking peers if he can join in their "ball-tag" game at recess. He typically runs in the midst of the game, takes the ball and then runs away. The script would read: Joey - "Hi guys. Can I play 'ball-tag' with you?" Guys - "Sure you can, Joey, but you will have to wait over there until it's your turn to throw the ball." Joey - "O.K. I'll wait until you tell me it's my turn."

Use of social scripts also readily helps in role-playing these various social situations with peers, puppets, etc. Social scripts can also be used to visually, and thus clearly indicate what went "wrong" in a social situation.

- **Comic Strip Conversations:** The use of simple drawings to visually clarify the elements of social interactions and emotional relations. Comic Strip Conversations are used to visually "work through" a problem situation and identify solutions (8).

- **Turn-taking cards**: Turn taking cards are used to visually represent and mark whose turn it is. This use of turn-taking cards through a visual representation mode (PCS, object, written word, etc), is very effective in teaching this social skills concept.

- **"Wait" cards**: Wait cards visually represent the abstract concept of "waiting" through the use of a large orange colored oval card printed with the word "wait". These cards can be used at any time to teach the abstract concept of "waiting".

Example: Place the "wait" card on the computer monitor while waiting for the computer or a program to boot up; have the child hold the "wait" card while waiting in line.

- **"Help" cards**: "Help" cards are used to teach the child the abstract concept of raising his hand in order to indicate that he needs help. Initially it is necessary to provide a concrete reason for the child to raise his hand by using the "help" card. An "I need help" visual representation (PCS, photograph, written word - taped to a Popsicle stick, or object) is used for the child to raise up in the air to indicate that he needs help. The item that he raises in the air can gradually be eliminated until the child is readily raising only his hand to seek assistance.

- **"Waiting hands" card**: An outline of a person's open hands on colored paper is used as a guideline as to where the child should place his hands while waiting (either for his turn, or for a chance to perform an action, etc.).

- **Social "rule" cards:** These cards are taped to the child's desk in the classroom (e.g., "I will raise my hand and wait for the teacher to call on me"). Social "rule" cards can be made for other environments than just the classroom. A "rule" card per environment can be written on an index card, laminated, and then given to the child to carry along as a visual reminder of the social "rules" for that particular situation.

Example: Library social rules cards: "I will sit at a table with at least one other student". "I will discuss my book with one other student". "I will discuss another student's book".

Attending skills:

The visual symbols **"go"**, **"almost done"** and "**stop**" can also be used to increase a child's **attending skills**. Data will need to be initially obtained to get a general idea of how long a child attends to a particular task.

Example: The child attends to a particular task for approximately 45 seconds and then throws all of his materials to indicate that he is "all done". To teach the significance of the "go" , "almost done" and "stop" cards, the "go" card is given at the start of the activity, the "almost done" card is given after approximately 30 seconds (as we already know the child will throw the materials after 45 seconds) and the "stop" card is given at approximately 40 seconds, with the activity immediately ceasing. It is critical to initially use the cards to "stop" the activity **prior** to the child throwing the materials, so that the child realizes the significance of the cards in relaying the messages of being "almost done" and "stopping". Gradually, the length of time for giving the child the "almost done" card and the "stop" card is increased, thus increasing the child's attending skills. It is important to note that the "almost done" card is always given to the child within a short time frame of giving him the "stop" card. Consistency is important in using these cards to increase the child's attention.

Academics:

- **File Folder Activities:** The use of file folder activities can assist the child to independently focus on numerous academic tasks. Long strips of Velcro are placed on the inside pages of a laminated file folder. Matching tasks focusing on colors, shapes, alphabet letters, common nouns, familiar people, categories, relations (e.g., shoes and socks) etc. can be developed for the child, as well as focusing on reading comprehension skills, math skills, generalization skills, etc.

- **Highlighter Tape:** Many children with autism possess relative strengths in their reading recognition skills (decoding), but experience significant difficulty understanding what they have read (comprehension). Highlighter tape is an economical, non-destructive way to highlight text wherever needed via a removable transparent tape (25). The tape can be used in such ways as highlighting key words pertaining to a reading comprehension question. Different colors of highlight tape can be used to encode different significant concepts (e.g., blue highlighter to mark **dates**, yellow highlight tape to mark **people**, etc.).

"MID" TECH STRATEGIES

Listed below are descriptions of several "mid" tech devices that can be used by children with autism to enhance specific skill areas. Most of these devices are very appealing to these children and provide them with motivation to participate and focus on various skills and classroom activities successfully. These devices are called **Voice Output Communication Aids (VOCAs).** Any type of visual representation system can be placed on simple voice output devices for children to access by a simple push of a "button". Most of these devices are battery operated and are easy to operate for recording messages. It is important to note that these devices were created for use as an augmentative means to expressively communicate. However, for many children with autism, as noted above, these devices are very appealing and motivating, and can be used in numerous ways to focus attention on various skill areas, as well as increase classroom participation, focus and communication. The following list identifies a number of such **VOCAs** mid tech devices.

- **"Big Mack":** A single switch/button device available from **AbleNet** (1) which allows for 20 seconds of record time. Approximate cost is $89.00.

- **Talk Pad:** A 4-message/button battery operated device available, which allows for 15 seconds of record time per button. Available from **Frame Technologies** (6) for approximately $99.00.

- **"Voice in the Box":** Multi-message battery operated communication devices available in 16, 24 or 40 messages/buttons from **FrameTechnologies** 6) for approximately $195.00.

- **"Cheap Talk 4":** A 4 message/button device which allows for 5 seconds of record time per button, available from **Enabling Devices** (5) for approximately $69.00.

- **"Step-by-Step Communicator":** A battery operated device which allows for prerecording a series of unlimited sequenced messages up to a total of 75 seconds of record time. Available from **AbleNet** (1) for $129.00.

Language Master: The Language Master is a "mid" tech piece of equipment that has been used for more than 20 years (25). The Language Master is an electronic device about the size of an old tape recorder. The cards, which are approximately 3" by 8" with a "recordable strip" across the bottom, are played "through" the Language Master. A short verbal message can be recorded on each card. The cards are also big enough to include corresponding visual cues (e.g., words, PCS, photos) of the recorded message.

Tape recorder: Any easily operated tape recorder can be effective in addressing various skill areas in children with autism spectrum disorder.

Voice Output Communication Aids (VOCAs) can be used to develop the following groups of skills for children with autism: Language Comprehension Skills, Expressive Communication

Skills, Social Skills, Attending Skills, Organization Skills and Academic Skills. The following is a discussion of these skill areas and the possible use of specific VOCAs to help children with autism function more independently.

Language Comprehension Skills:

- **Talk Pad:** This device can be programmed with simple 1-4 step directions. The child is motivated to hit the buttons and thus complete the sequence of steps.

Example: A child with autism experiences great difficulty following the 3 step sequence to complete his "job", which is to prepare for snack time. The child requires continual verbal and physical prompting from an adult to attend to the task - as the child typically runs around the room - and then to complete each step of the task. The 3 steps of the task are recorded on the Talk Pad, with the 4th message telling the child to "Sit in chair". Visual cues, corresponding with each verbal message, are placed on top of each "button" on the Talk Pad with Velcro. The child is extremely motivated to "push the buttons" on this device and, following the initial teaching, is now able to independently do his "job" for snack time.

- **Language Master:** The teacher may record multi-step directions on the cards, one step per card. If a student cannot remember the auditory directions that were given, he can run the cards through the Language Master to hear some or all of the directions (16).

Expressive Communication Skills:

- **Voice Output Communication Aid (VOCA):** Children can express themselves with the assistance of any visual representation mode, or visual cues placed on a "simple" voice output communication aid/device. Many children with autism are motivated to communicate by use of these devices, particularly by the auditory feedback immediately given as they use the device. Use of VOCAs have proven effective in teaching a child the cause/effect of language through activities which are stimulating to him.

Example: Use of the Big Mack for a child to request highly desired sensory activities, such as "chase me"; "tickle me"; "hug me"; "listen to music".

The use of **VOCAs** as **communication devices** are not always effective for all children with autism. Some children find the VOCAs so overly motivating and stimulating that they do not become effective communication devices. The child may repeatedly push down the button(s) on the device for the self-motivation that he receives from the auditory feedback, rather than for the cause/effect of the **communicative** message. In this case, the VOCAs can still be used with the child, since they are clearly motivating, but in a different manner. For example, they may be used to focus attention on various skill areas, as well as increase classroom

participation. In this case, the child's communication needs may be more effectively addressed through the use of "low" tech expressive communication strategies.

A research study evaluating the use of VOCAs by children with autism revealed the following (22):

- ✓ Young children with autism can learn to use VOCAs to effectively communicate various language functions (i.e., request, answer yes/no questions, make social comments);
- ✓ VOCA use generalized across settings;
- ✓ Use of VOCAs increased the child's use of gestures, words and vocalizations.
- ✓ Communication partner interactions increased when VOCAs were used.

- **Audio taping:** Audio taping can be used to focus on communication skills to draw the child's attention to an inappropriate communicative behavior. (e.g., interrupting, perseverative speech, incessant question asking, topic maintenance, etc.), as well as to develop self-awareness and self-regulation of appropriate communicative interactions.

- **Language Master:** For a child, who is able to imitate, the Language Master could be used as a model for imitation, as well as an opportunity to engage in social interactions (16).

Example: At the end of a child's activity-schedule-book is a Language Master card with a picture of bubbles glued on and the written words, "I want bubbles". The child places the card in the Language Master and then takes the card and gives it to someone while repeating the utterance.

Social Skills:

- **Big Mack:** This piece of equipment is a great motivational device to focus on turn-taking activities. Countless turn-taking activities can be created and incorporated into every aspect of the school day.

Example: During circle time: taking turns pushing the Big Mack button to respond to prerecorded calendar routines, songs and books. (What day is it? What month is it?); Using repetitive lines works great (Old McDonald had a farm); "Turn the page" - during large group reading; and "my turn" as a visual/physical marker during focusing on specific turn-taking tasks, etc.

- **Audio taping:** Any type of social interaction, both appropriate and inappropriate, can be taped and then replayed as a teaching method to assist the child in identifying what is an appropriate, and what is inappropriate social communicative behavior. (e.g., interrupting, asking for assistance, drawing attention, initiating varied topics, maintaining topics initiated by others, etc.).

Audio taping may also be used to focus on various **non verbal** social communication skills such as vocal volume or emotional tone of voice.

Attending skills (motivation):

- **Voice In the Box:** This device can help the child to focus his attention during large group-listening activities. These activities tend to be very difficult for children with autism. Again, countless activities can be created and incorporated into any large group listening time (6).

  Example: When the teacher is reading a book aloud to the class, numerous lines from a book can be visually represented with a corresponding recorded message on the buttons. The child can "assist" in "reading" the story by pushing the appropriate buttons for the story. Repetitive line books such as "Brown Bear" work great. The child can push the button for "Brown Bear, Brown Bear what do you see?" Another example would be the line "…but he was still hungry" from "The Very Hungry Caterpillar". Circle time activities can be programmed in a similar manner.

- **Big Mack:** To increase attention to large group listening/reading activities, record a repetitive line from a story, along with a corresponding visual representation system placed on top of the Big Mack (1).

  Example: A picture of the Big Bad Wolf placed on the Big Mack switch, with the repetitive line "I'll huff and I'll puff and I'll blow your house down" recorded.

- **VOCAs as Reinforcement:** Many students with autism find the VOCAs to be very reinforcing and thus provide the necessary motivation to attend to and complete other less desirable tasks/activities, if allowed to interact with the VOCA upon completion of those tasks (22).

Organization skills (story sequencing and time management):

- **Talk Pad:** The physical layout of the "buttons" on this device works well for focusing on sequence stories, because the four buttons are positioned from left-to-right, rather than the Cheap Talk 4, where the buttons are located 2 above and 2 below (6).

  Each step of a sequence story can be prerecorded on each of the four buttons in sequential order. The four corresponding sequence story pictures are placed in front of the child **not in order**. As the child presses the first button in the left-to-right sequence of buttons, he hears the auditory message for the first sequence picture. He can then select the corresponding picture to that message as the first picture in the sequence story, and place it on top of the first button using Velcro. This continues with each of the subsequent buttons and pictures. Printed sentences can also be used in place of pictures for the sequence story.

- **Language Master:** The Language Master (16) provides a motivating and novel approach to focus on sequence stories, a typically difficult activity for a child with autism. The child listens to the sentence on the card describing a picture, which is part of a sequence story. The child can then put the appropriate picture in sequential order for the story, according to the message given on the Language Master.

- **Timers:** Use of a timer (24) (either egg, kitchen, or Time Timer, Inc.) can assist many students with autism in providing much needed time constraints and structure for completing tasks. When given an unlimited amount of time, these students typically take an unlimited amount of time for completion. The use of timers tends to improve task completion. However, caution should be taken in the use of a timer, since some children may become too highly focused and distracted by the timer, and thus become less attentive to completing the task.

Academics:

- **Talk Pad:** This device can be used as a motivating way to focus the child's attention on phonics. Each button can be prerecorded with a sound from a 3 - 4 "sound" word (e.g., "dog"). The child then chooses the corresponding letter card to match with the recorded sound (6).

Example: The first button of the Talk Pad is recorded with the sound /d/. The child chooses from a selection of the 3 letters that comprise "dog", as well as the entire written word, and places the matching letter on the first button (using Velcro). The child progresses through each button in the same manner. The final button says "dog", and the child matches the whole written word, "dog", to this final button.

- **Voice In The Box:** This motivating device can be used in numerous ways to focus on various academic skills (6).

Example: Varied levels of reading comprehension skills can be addressed from matching simple single pictures to corresponding written words, to questions regarding various written information (e.g., Animal pictures are velcroed to a top-to bottom button column on the Voice In the Box, with corresponding words recorded under each button. When the child presses one of the pictures, such as "dog", the recorded button message says "dog, find the word dog". The child must then choose which written word matches the picture, and its auditory message, and place that written word (using Velcro) on the blank button next to the picture of the "dog". When the child places the written word, "dog", on the blank button, the button responds with a prerecorded message of "d-o-g, dog".

- **Overhead projector**: Billy, a child with autism, expressed extreme interest and motivation to the use of this teaching device, calling it "the most beautiful T.V. screen I have ever seen". Most academic areas lend themselves to the use of an overhead projector:

- ✓ Allowing the child to do math work on overhead transparencies;
- ✓ Teaching the child spelling words via the overhead projector;
- ✓ Focusing on reading comprehension by having the child fill-in-the blank for various questions regarding understanding of previously read materials;
- ✓ Focusing on mechanics of writing using the overhead projector.

"HIGH" TECH STRATEGIES

There are two "high" tech strategies which have proven very effective in focusing on various skill areas for children with autism: video taping and computers.

Video Taping: Children with autism are often highly interested, motivated and thus attentive to videos. Many children enjoy repetitive viewing of videos due to the "predictability" of the information given; that is, knowing what's coming up next. Thus video taping can serve as an excellent tool with which to teach numerous skills to children with autism. These skills may include:

- **Language comprehension skills:** Receptive vocabulary skills can be taught through video taping (names of common everyday objects, toys, names of familiar people, animals, etc.). Directions to complete various routines can also be taught by the same video taping strategy (e.g., making the bed, setting the table, getting dressed, going to the library, etc.).

- **Social skills:** Numerous social situations can be video taped and replayed to teach identification of appropriate/inappropriate social behaviors. Video taped segments can be made of any social area in which the child might be experiencing difficulties (e.g., asking for assistance, initiating varied topics, maintaining topics initiated by others, repetitive / perseverative speech or question asking, interrupting others, etc.).

  Non-verbal features of social communication can also be effectively taught through video taping (e.g., tone of voice, facial expressions, body postures/language, gestures, personal space, vocal volume, etc.).

  In addition, video taping can be used to demonstrate how to appropriately engage and/or interact in various social contexts, such as recess, lunch, music class, McDonald's, church, etc.

- **Expressive language skills:** Expressive vocabulary skills (i.e. names of items, people, places) can be taught in much the same way as receptive vocabulary skills. The teaching of categorization skills and concepts as well as pragmatic language skills (social interaction skills), can be enhanced through the use of video taping.

- **Self-help skills:** Self- help skills, such as getting dressed, brushing teeth, washing hands, even hygiene can be demonstrated through the use of videotaping.

- **Emotions:** Facial expressions showing various emotional states can be video taped, and shown, to demonstrate the various emotions/feelings.

- **Academics:** Writing skills, such as drawing shapes, writing alphabet letters, writing words (names of familiar nouns), story generation, etc. can also be demonstrated and taught through video taping.

Computers:

Research on the use of computers with students with autism revealed the following (15):

- Increase in focused attention;
- Increase in overall attention span;
- Increase in in-seat behavior;
- Increase in fine motor skills;
- Increase in generalization skills (from computer to related non-computer activities);
- Decrease in agitation;
- Decrease in self-stimulatory behaviors, and
- Decrease in perseverative responses.

Many students with autism are highly interested and motivated by computers. Therefore, computers should be infused into the child's daily curriculum, not used solely for reward or recreational purposes. Computer assisted learning can focus on numerous academic areas as well as provide an appropriate independent leisure time activity for people with autism. Camilla K. Hileman (11) states that computers are motivating to children with autism, due to their predictability and consistency, compared to the unpredictable nature of human responses. The computer does not send confusing social messages. The computer places the child in control, allowing for the child to become an independent learner.

- **Adaptive Hardware:** In order to access the computer, some children with autism might require that the standard computer be adapted with certain devices. Listed below are a variety of devices that can assist a child in accessing the computer:

  - ✓ **Touch Window:** The purpose of the touch window is to allow the child to "navigate" and "interact" with the computer by touching the screen, rather than operating the mouse. Touch window/screen can be easily mounted on the computer monitor, with the user simply touching the screen to replace mouse actions. The use of a touch screen can assist a student who experiences difficulty understanding the abstract relationship between the mouse actions and the resulting actions on the screen. With a touch screen, the concrete relationship between what the child sees and what the child directly activates is established (25). The Touch Window is available for Macintosh or Windows platforms from **Edmark** for approximately $335.00.

- ✓ **Intellikeys:** This is a commonly used alternative keyboard that easily connects to a computer, and is available for Macintosh or Windows platforms (14). In order to operate the computer, the child simply pushes various locations on an overlay that is placed in the Intellikeys. Standard overlays for the alphabet, numbers, mouse direction and a 'single switch hit' are included with the Intellikeys. However, various overlays can also be created to go with numerous software programs, through the purchase and use of additional Intellitools software programs. In addition to acting as an alternative keyboard, the Intellikeys has 4 switch jacks located on the side of the keyboard, so that a single switch or multiple switches can be connected to the computer through the Intellikeys for children to access via a single switch hit. This would allow children with limited fine motor control to access the computer. The Intellikeys is available from Intellitools for approximately $350.00.

- ✓ **Big Keys and Big Keys Plus:** This is an alternative alphabet keyboard that has been specifically designed for young children. The keys are large (1 inch square), with the various alphabet letters color coded to help children more readily find specific keys (i.e., vowels in one color, consonants in a different color). The keyboard is also arranged in ABC order for easy access for younger children. This keyboard is available from Greystone Digital (10) for approximately $150.00.

- ✓ **Trackballs:** Trackballs come in various sizes and shapes, and allow the child to move the mouse around the screen by rolling a stationary "ball" around with either this fingertips or hand. Some children with autism can master the mouse operations with a trackball, and eventually transfer to use of a standard mouse. Trackballs can be purchased from many retailers for approximately $40 - $100.

- ✓ **Software:** There are numerous software programs available that focus on a variety of skill areas such as:
  - Language skills;
  - Attending skills;
  - Problem solving skills;
  - Fine motor skills;
  - Academic skills;
  - Leisure time activities.

Please note the attached Software Suggestions for programs that have been used effectively for children with autism to address various skill areas. An excellent article is "A Review of Kids Software for Children with Autism Spectrum Disorder" by Jill Fain Lehman (17). This article lists various software programs for children with autism, by skill area (e.g., language comprehension skills, problem solving skills, etc.). Since autism is a spectrum disorder, the effectiveness and appropriateness of each program will be child specific.

- **Accessory Equipment:**

  - ✓ **Digital camera:** A digital camera can be very beneficial in making two-dimensional visual representation systems for children who have a strong preference for the visually-presented information.

  - ✓ **Scanner:** A scanner can be used to scan in numerous materials, such as pages from books, assignment sheets, CD covers, video covers, etc. Once the item is scanned, it can be shown as text or as a graphic on the child's computer, allowing him to access it through his keyboard.

Conclusion

It is interesting to note that the majority of strategies listed in this article fall under the category of "low" technology and should therefore be easily accessible to many at a relatively low cost. It is important to consider that all of these suggestions, from "low"-tech to "high"-tech should always be individualized to meet the unique needs of any child with autism. Most importantly, use of these varied modes of technology will greatly increase the child's independent functioning skills by decreasing the amount of direct support needed from another person.

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Children with Asperger's Syndrome: Characteristics/Learning Styles and Intervention Strategies

Introduction

Asperger's Syndrome was named for a Viennese psychiatrist, Hans Asperger. In 1944 Asperger published a paper in German describing a consistent pattern of abilities and behaviors that occurred primarily in boys. In the early 1980s Asperger's paper was translated into English, which resulted in international recognition for his work in this area.

In the 1990s, specific diagnostic criteria for Asperger's Syndrome were included in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV, 1994) as well as the International Classification of Diseases, 10th edition (ICD10) (3) & (15). In general, DSM-IV and ICD10 base their diagnostic criteria for Asperger's Syndrome on the following:

- ✓ **Impairment of social interaction**
- ✓ **Impairment of social communication**
- ✓ **Impairment of social imagination, flexible thinking and imaginative play**
- ✓ **Absence of a significant delay in cognitive development**
- ✓ **Absence of general delay in language development (in Wisconsin, the child may still have an impairment under the state eligibility criteria for speech & language)**

Recent research establishes the prevalence of Asperger's Syndrome as approximately 1 in 300, affecting boys to girls with a ratio of 10:1 (6). Children with clinical (medical) diagnosis of Asperger's Syndrome and who have been identified by schools as "children with disability" are typically found by the IEP team conducting the evaluation to have an impairment in such areas as Autism, Other Health Impaired or Speech/Language. Depending on the unique characteristics of the child, other impairment area listed under state law for special education may also be considered. This link will connect to Wisconsin Department of Public Instruction for additional information on these areas: http://www.dpi.state.wi.us/dpi/dlsea/een/program.html).

The general features and characteristics exhibited by children diagnosed with Asperger's Syndrome are similar to the general features and characteristics exhibited by children who have been clinically diagnosed with Autism and are described as having "high functioning autism". For educational purposes, the remainder of this paper focuses on the child with Asperger's Syndrome who has been identified by the IEP Team as being a child with a disability. Much of the following information is also relevant for consideration in working with children identified as having autism and who are described as having "high functioning autism".

Training

Each person who comes in contact with a child diagnosed with Asperger's Syndrome (either school staff or peers) should receive training on the unique characteristics and educational needs of such children. Due to confidentiality issues this should always be discussed first with the parents of the child with Asperger's Syndrome. Their written consent should be obtained prior to providing peer training.

Educational Staff Training should include the following two components:

- ✓ **General training of the entire school staff:** Prior to working with children with Asperger's Syndrome, it is critical to understand the unique features and characteristics associated with this developmental disability. Staff should be informed that children with Asperger's Syndrome have a developmental disability, which causes them to respond and behave in a way which is different from other students. Most importantly, the responses/behaviors exhibited by these children should not be misinterpreted as **purposeful** and **manipulative behaviors** (4).

- ✓ **Child specific training for educational staff who will be working directly with the child:** Educational staff who will be working directly with a child with Asperger's Syndrome should understand his **individual** strengths and needs **prior** to actually working with the child. A team of persons familiar with the child and his disability should provide this training. The team may include previous teacher(s), speech/language pathologist, occupational therapist, teacher aide and most importantly, the child's parents.

Peer training:

The peers/classmates of the child with Asperger's Syndrome should be told about the unique learning and behavioral mannerisms associated with Asperger's Syndrome. It is important to note that parent permission must always be given prior to such peer training. A successful protocol for training peers at the kindergarten to approximately second grade level was developed by Division TEACCH, and is available at their web site http://www.unc.edu/depts/teacch/ Another peer training protocol designed for children between the ages of 8-18 is Carol Gray's "Sixth Sense" (10).

Characteristics and Learning Styles: General

The following characteristics and learning styles associated with Asperger's Syndrome are important to consider, particularly their impact on learning, and in planning an appropriate educational program for the child (7). Children with Asperger's Syndrome exhibit difficulty in appropriately processing in-coming information. Their brain's ability to take in, store, and use information is significantly different than neuro-typically developing children. This results in a somewhat unusual perspective of the world (7). Therefore teaching strategies for children with

Asperger's Syndrome will be different than strategies used for neuro-typically developing children.

Children with Asperger's Syndrome typically exhibit strengths in their visual processing skills, with significant weaknesses in their ability to process information auditorilly. **Therefore use of visual methods of teaching, as well as visual support strategies, should always be incorporated to help the child with Asperger's Syndrome better understand his environment.**

The remainder of this article describes ten primary characteristics of children with Asperger's Syndrome and intervention strategies for each.

Social Relation Difficulties

Characteristics: Children with Asperger's Syndrome tend to exhibit a lack of effectiveness in social interactions rather than a **lack** of social interactions. They tend to have difficulty knowing how to 'make connections' socially (4). Social situations are easily misread by children with Asperger's Syndrome and as a result, their interactions and responses are often interpreted by others as being odd (4).

Children with Asperger's Syndrome can exhibit low self-esteem and possible depression, particularly when they reach adolescence, due to their painful awareness of the social differences that exist between them and their peers (12). They have a desire to "fit in" socially, yet have no idea how to do this. Children with Asperger's syndrome can be significantly impacted by the following characteristics of social relations:

- ✓ **Social Reciprocity:** Children with Asperger's Syndrome can exhibit an imbalance in reciprocal social relations (i.e., the "give and take" in social relationships), which can be exhibited in several ways:
    - ✓ The child can exhibit the need to take control and direct social situations according to his own limited social rules and social understanding. Although the child may be able to initiate interactions with others, these interactions are typically considered to be "on his own terms". These interactions appear to be very egocentric in that they relate primarily to the child's specific wants, needs, desires and interests and do not constitute a truly interactive, give-and-take social relation with another person.
    - ✓ The child can appear very quiet, withdrawn and even unresponsive. He exhibits limited social drive. It can be extremely difficult for the social participant to engage the child in a social relation. (e.g., A child with Asperger's Syndrome was having a birthday party at her home. When the other children arrived, she stayed in the living room with them for a short while. She then said, "good-night", and stayed in her room for the rest of the party.).

- ✓ **Recognizing and interpreting various social situations:** Typically developing children are able to recognize and interpret the social nuances of various social situations without being specifically taught. Their intact processing systems allow for this to occur. However children with Asperger's Syndrome typically have great difficulty recognizing, understanding and thus applying appropriate social skills to various social situations. Their unique processing/learning systems do not readily allow for accurate recognition and interpretation of this seemingly abstract information (14).

- ✓ **Social rules:** Children with Asperger's Syndrome typically do not learn social rules, either by observing others or through frequent verbal reminders. These children do not appear to be **intentionally** ignoring and/or breaking these rules. Instead, they have a difficult time accurately perceiving social environments and thus, they do not understand that a particular social rule is to be applied in a specific social context.

Example: A teacher frequently reminds a child with Asperger's Syndrome, prior to going out for recess, that he cannot push other children. The child repeats this rule prior to going out to recess. However when the child goes onto the playground at recess, he pushes several children.

- ✓ **Friendship skills:** Children with Asperger's Syndrome tend to exhibit limited knowledge of the concept of friendship.

Example: When a teenager with Asperger's Syndrome was asked if he had any friends, he responded that friendship was an area where he had some problems. He was able to name two peers whom he considered "friends"; however, he did not know the last name of one of the students. He proceeded to physically describe the student to see if the listener knew the student's last name. When asked why these students were his friends, he said because he saw them in the hallway during passing period, and that he also saw one of the students at a weekly church youth group meeting. When asked if he and his "friends" went to each others' houses, talked on the phone, etc., the teen with Asperger's Syndrome said no, that he just **saw** them at different places).

Children with Asperger's Syndrome also do not appear to attend to or respond to peer pressure. They may have definite preferences for clothing due to comfort level, in relation to sensory sensitivities without regard or concern for popular styles as worn by peers.

Example: Some children prefer no ridges on the collar, no buttons down the front of a shirt, no blue jeans - only elastic waist pants, no long/short sleeves or long/short pants, etc.

- ✓ **Understanding and expressing varied emotional states:** Children with Asperger's Syndrome may have difficulty identifying (labeling and understanding) varied emotional states, both in themselves and in others. In addition, regulation of emotional states can be extremely difficult.

> **Example:** When experiencing great distress, a child with Asperger's Syndrome continually asks others for monitoring of his emotional states, "Am I under control yet?", He has limited awareness of when he is calm, versus extremely upset. Another example would be laughing, seemingly inappropriately, when others are hurt, embarrassed, etc. One child with Asperger's Syndrome physically manipulates his face when requested to exhibit various emotional states.

Social Relations - Intervention Strategies:

The child with Asperger's will need to be **directly taught** various social skills (recognition, comprehension and application) in one-to-one and/or small group settings. Social skills training will also be needed to **generalize** previously learned social skills from highly structured supportive contexts to less structured settings and, eventually, real-life situations. **It is important to emphasize that children with Asperger's Syndrome typically will not learn social relations by watching other people, or by participating in various social situations.** They tend to have great difficulty even recognizing the essential information of a social situation, let alone processing / interpreting it appropriately.

- ✓ **Tools for teaching social skills:**

    - ✓ The use of **Social Stories** (9) and **social scripts** can provide the child with visual information and strategies that will improve his **understanding** of various social situations. See the previous article on "Assistive Technology" for an explanation on social stories. In addition, the Social Stories/scripts can teach the child appropriate behaviors to exhibit when he is engaged in varied social situations. The repetitious "reading" of the Social Story/script makes this strategy effective for the child with Asperger's Syndrome. A 3-ring binder of Social Stories/scripts kept both at home and school, for the child to read at his leisure, has proven very successful for many students with Asperger's Syndrome.

    - ✓ **Role-playing** various social situations can be an effective tool for teaching a child appropriate social responses.

    - ✓ **Video-taping/audio-taping** both appropriate and inappropriate social behaviors can assist the child in learning to identify and respond appropriately to various social situations.

- ✓ **"Lunch/recess club"** is a structured lunch/recess time with specific peers to focus on target social skills for the child with Asperger's Syndrome. This strategy can assist in generalizing social skills previously learned in a structured setting.

- ✓ **Comic Strip Conversations** (8) can be used to visually clarify social interactions and emotional relations.
- ✓ **Peer partners/buddies:** Specific peer(s) can be chosen to accompany and possibly assist the child with Asperger's Syndrome during less structured social situations and when experiencing social difficulties (e.g., out of class transitions, recess, lunch, etc.). This peer support network should initially be established in a small group setting.

- ✓ **Individualized visual social "rule" cards** can be taped to the child's desk as a visual reminder regarding appropriate social behaviors to exhibit. Portable "rule" cards can be used for environments other than the classroom. The rules can be written on index cards, laminated, and then given to the child to carry along as visual reminders of the social "rules" for any particular context.

Social Communication Difficulties

Characteristics: The child with Asperger's Syndrome typically exhibits highly articulate and verbose expressive language skills with large vocabularies, particularly regarding specific topics (high interest areas). However, his convincing language skills can easily be misinterpreted as **advanced communication** skills. In turn this can result in a mislabeling of the child's actions as purposeful or manipulative, rather than behavior that is due to the child's significant difficulty in understanding and using appropriate social communication skills. Children with Asperger's Syndrome often lack social communication skills to sustain even **minimal** social communicative interactions in any of the following areas:

- ✓ **Conversational discourse skills:** Children with Asperger's Syndrome can generally engage in routine social interactions, such as greetings. However, they may exhibit significant difficulty engaging in extended interactions or "two-way" relationships (12). They can have difficulty initiating and maintaining appropriate conversations, engaging in conversational turn-taking, and changing topics in an appropriate manner. Their language can be extremely egocentric in that they tend to talk **at** people, instead of **to** them, exhibiting seemingly one-sided conversations (2). Incessant question asking can also be prevalent, as well as difficulty in repairing conversational breakdowns.

- ✓ **Understanding and using non-verbal social communication (discourse) skills:** Children with Asperger's Syndrome can have significant difficulty interpreting

non-verbal social communication skills used to regulate social interactions (e.g., tone of voice, facial expressions, body postures, gestures, personal space, vocal volume, use of eye contact to "read" faces, etc.). For example, they may not understand that a raised vocal volume can convey an emotional state such as anger (e.g., A student with Asperger's Syndrome stated, "Why are you talking louder? I can hear you" when his mother raised her voice to communicate anger). These children may also have difficulty interpreting non-verbal cues, which the listener might be giving to communicate that a conversational breakdown has occurred (e.g., facial expressions to indicate not understanding the message, boredom, etc.). Some children with Asperger's Syndrome can exhibit conversational speech with a somewhat flat affect: limited vocal change regarding vocal tone, volume, pitch, stress and rhythm, particularly to indicate emotion and/or emphasize key words.

- ✓ **Narrative discourse skills:** Children with Asperger's Syndrome can exhibit difficulty with their narrative discourse skills, including relating past events, or retelling movies, stories, and T.V. shows in a cohesive and sequential manner. They may leave out important pieces of relational information, as well as referents, and may use many revisions, pauses and/or repetitions.

Example: A child with Asperger's Syndrome was relating his weekend to the class. The child with Asperger's Syndrome related: "Back through time, uhm, uhm, at my Grandma's, uh, it was (pause) back through time. I was, I was, I (pause) I uh, a long time ago. I was at my Grandma's.").

Social Communication - target skills and strategies for intervention:

The following social communication skills (pragmatic language skills) may be focused on for direct instruction, depending upon the child's individualized needs:

- ✓ Initiation of appropriate social interactions for various situations through appropriate **verbal** utterances, rather than actions or behaviors (e.g., On the playground, the child with Asperger's Syndrome should use the words "Wanna play chase?" to ask a peer to play tag, rather than going up to the peer and shoving them);

- ✓ Topic initiation of **varied** topics - not only topics related to high interest areas;

- ✓ Topic maintenance, particularly for topics initiated by others.

- ✓ Conversational turn-taking across 3-4 turns (reciprocal communication skills);

- ✓ Asking questions of others related to topics initiated by others;

- ✓ Calling attention to communicative utterances. The child **directs** his communication to someone by first calling the other person's attention to himself;

- ✓ Comprehension and use of nonverbal social communication skills: tone of voice, personal space, vocal volume, body orientation, facial expressions, etc.;

- ✓ Narrative discourse skills: relating past events, retelling stories sequentially and cohesively by including important pieces of relational information as well as referents;

- ✓ Greetings;

- ✓ Seeking assistance appropriately (e.g., raising his hand for help in the classroom).

Tools for teaching social communication skills: All of the tools listed previously for teaching social skills can also be used to teach social communication skills, with the addition of the following:

- ✓ Visual support strategies can be used to teach conversational discourse skills such as turn-taking, topic initiation, topic maintenance, etc. For example, a visual "my turn" card can be used to physically pass back and forth between conversational partners, to visually indicate who's turn it is in the conversation.

Language Comprehension/Auditory Processing Difficulties

Characteristics: Children with Asperger's Syndrome generally interpret auditory information **literally** and **concretely**. They can have difficulty understanding figurative language, jokes/riddles, multiple meaning words, teasing and implied meanings.

Example 1: A child with Asperger's Syndrome was participating in a local basketball clinic. He was playing very well, and the coach made the comment, "Wow! Your mom must have put gas in your shoes this morning". The child quickly looked at his mother with a worried expression. His mother shook her head "No" and encouraged him to keep on playing. The child responded to the coach, "Not today."
Example 2: A mother said to her child, "Stop back-talking to me". The child said, "I'm sorry Mom, I'll talk to your front."

It is also important to note that delays in processing information auditorilly may be present in children with Asperger's Syndrome. Even though they may be able to **comprehend** the auditory information given, it may take them additional time to **process** this information prior to responding. They may also have difficulty following multi-step auditory directions (e.g., "Go back to your desk and take out your journals, and then write about your weekend.").

Language Comprehension/Auditory Processing - Intervention Strategies:

- ✓ Auditory information/prompting should be kept to a minimum, as it can be too overwhelming for some children. Visual cues should be used to assist the child to more readily comprehend directions, questions, rules, figurative language, etc.

- ✓ Give the child with Asperger's Syndrome enough **time to respond**, in order to allow for possible auditory processing difficulties, before repeating/rephrasing the question/directive. The child can be taught appropriate phrases to indicate he needs additional processing time, (e.g., "Give me a minute, I'm thinking") (2).

- ✓ Written rules can help the child understand what is expected of him at all times. Reference to the rules can be used rather than verbally telling him what to do, or what not to do.

- ✓ Auditory directions can be written on a dry-erase board for the child with Asperger's Syndrome, greatly increasing his ability to independently complete tasks/activities.

- ✓ The adults in the child's environment should be aware of the child's concrete/literal interpretation of figurative language, and should provide concrete explanations if necessary. Focus should also be given to increasing the child's comprehension of figurative language skills, such as idioms, multi-meaning words, jokes, teasing, etc., through the use of visual supports.

Sensory Processing Difficulties

Characteristics: The child with Asperger's Syndrome may exhibit some sensory processing difficulties that result in atypical responses to sensory input (auditory, visual, tactile, smell, taste and movement). This difficulty in organizing his sensory input, experiencing both hypersensitive (over response) and hyposensitive responses (under response) to various sensory stimuli, can cause him to experience stress and anxiety in trying to interpret his environment accurately. Sensory processing difficulties can also markedly decrease the child's ability to sustain focused attention. It is important to note that the processing of this sensory information can be extremely inconsistent; that is, at one time the child may experience a hypersensitive response to a specific sensory stimuli, but at another time may exhibit a typical or a hyposensitive response.

Example: A child with Asperger's Syndrome was eating in a restaurant with family members and experiencing sensory overload. He ate as quickly as possible and then asked if he could go outside. The child paced for 20 minutes back and forth in front of the restaurant while waiting for the rest of the family to finish eating. While riding home, he pulled the hood of his coat all the way over his face and tied it tightly, in order to try to block out all sensory stimuli.

Example: While watching television with his family, a child with Asperger's Syndrome put his hands over his ears and exclaimed "That T.V. is driving me crazy".

Example: A child with Asperger's Syndrome exhibited an extreme sensory sensitivity to the sight and smell of eggs, particularly hard-boiled. The child gagged and vomited when exposed to hard-boiled eggs.

Sensory Processing - Intervention Strategies:

- ✓ It is important to be aware of possible auditory sensitivities and how the environment might be contributing to the child's marked increase in anxiety and challenging behaviors. Strategies to accommodate for auditory sensitivities can include:

- ✓ Use of headphones/headband to muffle extraneous auditory stimuli;

- ✓ Use of headphones to listen to calming music – when appropriate;

- ✓ Forewarn the child of any fire drills, tornado drills, etc. This can be done both verbally and visually (on his schedule). Although the child may appear calm outwardly and appear able to readily handle this change in routine, he may be experiencing internal stress/anxiety which could appear later.

- ✓ The use of a daily sensory diet, consisting of access to various sensory calming activities and/or physical activities (as deemed necessary), which are scheduled throughout the child's day. This can decrease his stress, anxiety and repetitive behaviors, as well as increase his calm/relaxed states and focused attention. Sensory "break" activities should be visually represented on the child's daily schedule. Examples of sensory calming activities include:

    - ✓ **Deep pressure (pressure touch) activities:** firm hugs; being rolled within a mat or blanket; wearing a weighted vest/blanket; water activities; ball bath; massage; chewing, wearing a "Body Sock".

- ✓ **Rhythmic vestibular stimulation:** swinging, rocking in a rocking chair; movement on a wagon, scooter board, tri/bicycle; jumping; bouncing; vibration; or rolling in a tube or mat.

- ✓ **Proprioceptive stimulation:** sitting on a T-stool, Dyna-Disk or therapy ball for increased focused attention.

- ✓ Incorporating heavy work patterns (i.e., push, pull, carry) into functional tasks/jobs appears to assist some children in becoming more calm and focused. For example, taking the attendance or lunch room count to the office for each classroom; getting the milk cartons for the kindergarten classrooms and delivering them to each classroom; sweeping a walkway; carrying books back to the library; cleaning the chalkboard, etc.

- ✓ Use of a "quiet space/area" in order to decrease sensory overload and increase self-calming, is another strategy. The quiet space should be a specified location/area with objects which are calming to the child (e.g., kush balls, books, bean bag chair). For children who transition to various classrooms, the use of a "home base" classroom, as a safe place to go, is suggested when they feel the need for calming (12).

- ✓ Access to a "fiddle basket"; containing small items for the child to manipulate (e.g., small kush balls, Bend Bands, Fiddle-links, clothespins, etc.), can help calm the child and focus his attention at certain times during the day (e.g., while sitting and listening to a story read aloud by the teacher).

- ✓ To avoid sensory overloading transitions such as changing class periods, going to/from recess, or changing clothes for gym in the locker room, allow the child to transition a few minutes earlier or later than the rest of the students.

Difficulty Representing Language Internally

Characteristics: Children with Asperger's Syndrome can "blurt out" their thoughts as statements of factual information, resulting in an appearance of insensitivity and lack of tact. However these children typically do not understand that some thoughts and ideas can and should be represented internally, and thus should not be spoken aloud. Therefore, whatever they think, they tend to say aloud.

Example 1: "Mrs. Jones why are you wearing that dress? It looks just like a bathrobe." **Example 2**: "This is boring. Don't' you think this is boring, Ryan? ".

Typically developing children can internalize thoughts by the time they are five to six years old (2). This aspect of language should show improvement as the child learns how to take the perspective of others. This perspective-taking ability is sometimes referred to being able to "mind-read" or developing "Theory of Mind".

Representing Language Internally - Intervention Strategies:

- ✓ Initially, encourage the child to whisper, rather than speak his thoughts aloud. Next, encourage him to "think it-don't say it" (1).

- ✓ Role playing, audio/video taping and social scripting can all be used to teach the child how to initially identify what "thoughts" should be represented internally, versus aloud. Role playing will allow the child to practice this skill.

Insistence on Sameness

Characteristics: Children with Asperger's Syndrome can be easily overwhelmed by minimal changes in routines and can exhibit a definite preference for rituals (13). As a result, these children can become quite anxious and worry incessantly about the unknown; that is, when the environment becomes unpredictable and they do not know what to expect.

Example: Unpredictability may occur during less structured activities or times of the day: recess, lunch, free play/time, physical education, bus rides to/from school, music class, art class, assemblies, field trips, substitute teachers, delayed start/early dismissal, etc.

The following features are important to consider for the child with Asperger's Syndrome:

- ✓ **Rigid, egocentric perceptions:** Children with Asperger's Syndrome tend to have very rigid egocentric perceptions of the world, and thus can become quite upset when changes occur that "go against" their preconceived "rules" or perceptions (14). Therefore, when a new situation occurs, they have to learn a "new rule" (perception) which can be very upsetting to them (e.g., indoor recess due to inclement weather) (14).

- ✓ **Strict adherence to rules:** Children with Asperger's Syndrome may generate rules based upon their perceptions of various experiences. As a result, they may strictly adhere to these self-imposed rules, and expect others to adhere as well. When these rules are "broken" by others, this can create a great deal of stress/anxiety in children with Asperger's Syndrome.

Example: Whenever a particular child with Asperger's Syndrome tells someone "Thank you", he expects the person to respond immediately with, "You're welcome". If the person does not immediately respond, the child will perseverate

in saying “Thank you” and become increasingly anxious until the person says “You’re welcome”).

Conversely, when **given** rules by others (teachers, parents, etc.), children with Asperger’s Syndrome tend to strictly and concretely interpret the rules, as well as exhibit strict adherence to the rule - for both themselves and others.

Example: A child with Asperger’s Syndrome was given the following rules in art class by the teacher regarding markers: “No throwing markers; No chewing on the markers; No smashing marker tips”. The child with Asperger’s Syndrome imitated a peer, and connected the markers together to make a long “sword” type structure. This child and the peer engaged in a “sword fight”. Both children got “in trouble” for this behavior, although the child with Asperger’s Syndrome was truly confused as to why he was in trouble, because he hadn’t broken any “rules”, according to **his** perceptions.

- ✓ **Need for closure/completion:** In relation to their ritualistic needs, children with Asperger’s Syndrome can exhibit an intense need for closure or completion of tasks/activities before transitioning to the next activity. This can create significant educational implications if not planned for accordingly (e.g., If a math worksheet is not able to be completed prior to going out for recess, the child with Asperger’s Syndrome may become quite upset - even though he may enjoy going outside for recess) very much. The anxiety relates to the need for closure, a ritualistic need, rather than in relation to the specific activities at hand, and typically cannot be alleviated by being **told** that the activity can completed later.

Insistence on Sameness - Intervention Strategies:

- ✓ It is important to provide a consistent, predictable environment with minimal transitions.

- ✓ Use of a visual schedule can assist in providing the child with information relating to his day, as well as preparing him for any changes which might occur in his daily routine.

- ✓ Visual and auditory forewarning/foreshadowing are also critical, in order to give the child much needed information relating to possible changes in routines.

- ✓ Assignments may need to be modified so that the child can complete them within a specific amount of time, prior to transitioning to the next activity.

- ✓ Use of a “finish later” folder or box may be helpful. Even though the child may be verbally reminded that he can finish his math worksheet after recess, this information will not be processed as readily as through the use of a visual strategy, such as a “finish later” folder/box.

Poor Concentration/Distractibility/Disorganization:

Characteristics: Children with Asperger's Syndrome can often appear off-task, and may be easily distracted by both internal (perseverative thoughts/concerns) and external (sensory) stimuli. For example, internal stimuli distraction: a child sees a single cloud in the sky and begins to obsess about whether it is going to rain and/or possibly storm. External stimuli distraction: attending to a fly buzzing around the room rather than the teacher; attending to fluorescent light flickering). Screening out information that is irrelevant can be very difficult, requiring conscious effort by the child with Asperger's Syndrome (13).

In addition, children with Asperger's Syndrome can exhibit significant difficulties regarding both their internal and external organizational skills, including the following:

- ✓ **Organizing** their thoughts and ideas to express themselves in a cohesive manner. For example, a child with Asperger's Syndrome was asked to explain how he figured out the answer to the math problem, 900 x 3=2,700. He responded: "Well, first of all, 9 x 3=27 and 90 x 3=270 and 900 x 3=2,700 and it sort of reminds me of another kind of math problem like the other day when you're multiplying and uh it goes 9 x 3=27 and then uhm, its like... I don't really know what I'm saying.").

- ✓ **Gathering** educational materials needed for specific tasks/activities/homework.

- ✓ **Keeping** track of their belongings - including personal and educational materials such as assignments.

- ✓ **Desk/locker** organization, etc.

Concentration/Distractibility/Disorganization - Intervention Strategies:

- ✓ A highly structured educational environment may be indicated for the child with Asperger's Syndrome to experience success (please refer to the "Structured Teaching" article for additional information).

- ✓ Use of a timer (either egg or kitchen) provides time constraints and structure for completing tasks. When given an unlimited amount of time, children with Asperger's Syndrome may take an unlimited amount of time for task completion. However caution should be taken in using timers. Some children may become highly interested (distracted) in the amount of time which is passing, via the

timer, and thus become less attentive to completing the task. Other children have exhibited extreme anxiety when timers are used because they become overly focused on the amount of time passing, and thus perceive that they cannot complete the task within the time constraint given.

- ✓ A written (visual) checklist is used to keep the child focused and "on task" so that he can complete each step listed in sequential order. This visual tool will allow for **independent** completion of an entire routine or task (e.g., use of a "morning routine" checklist or "homework" checklist).

- ✓ A daily (individualized) visual schedule should be used to communicate to the child what is currently happening, when he is "all done" with something, what is coming up next, and any changes that might occur. (Please refer to the article on Structured Teaching for more information regarding visual schedules).

- ✓ Use of a visual calendar at both home and school will give the child information regarding up-coming events/activities. When the child asks when a particular event will occur, he can easily be referred to the visual calendar, which presents the information through the visual mode, which the child can more readily understand (e.g., class field trip, "bath night", swimming lessons, etc.).

- ✓ Give **written** directions/cues whenever possible in various contexts/environments. Small dry erase boards and index cards are good tools to use for written directions as they are easily portable. (e.g., In computer lab, a three step direction could be written down to give the child information as to what he needs to do independently, rather than giving him continual auditory prompting for completion of the task).

- ✓ Use color-coded notebooks to match academic books.

- ✓ Use an assignment notebook consistently.

- ✓ Worksheets may need to be reorganized. Modifications could include fewer problems per sheet; larger, highly visual space for responding and boxes next to each question to be checked when completed.

- ✓ For class lectures, peer buddies may be needed to take notes. No Carbon Required (NCR) paper can be used or the student's notes could be copied on a copy machine.

- ✓ Use of an "Assignments to be Completed" folder as well as a "Completed Assignments" folder, is also recommended.

Emotional Vulnerability

Characteristics: Children with Asperger's Syndrome often have the intellectual ability to successfully participate in the regular education curriculum. However, they may lack the social/emotional abilities to cope with the demands of the regular education environment, such as regular classroom, recess, and lunch (13). As a result, these children may exhibit a low self-esteem, may be self-critical and may be unable to tolerate making mistakes (perfectionist) (13). Thus they can become easily overwhelmed, stressed and frustrated, resulting in behavioral outbursts due to poor coping strategies/self-regulation. These children can appear quite anxious for most of their waking day as they continually attempt to manage an ever-changing, sensory stimulating, social world. As stated by Tony Attwood, children with Asperger's Syndrome "are emotionally confused, not emotionally disturbed" (2).

Emotional Vulnerability - Intervention Strategies:

- ✓ **Utilize** the child's strength areas and incorporate them into special projects/assignments to be presented to the class by the child. This activity may increase his self-esteem with peers (e.g., a child with a high interest in geography could give a presentation to the class relating to the current area of study).

- ✓ **Teach** the child relaxation techniques that he could learn to implement on his own to decrease anxiety levels (e.g., "Take a big breath, count to ten", etc.) These steps could initially be written down as visual "cue" cards for the child to carry with him, and refer to as needed.

Restricted/Perseverative Range of Interests

Characteristics: Children with Asperger's Syndrome tend to have eccentric preoccupations or odd, intense fixations, as noted by the following characteristics (13):

- ✓ Relentless "lectures" on their specific areas of interest;

- ✓ Repetitive questions about interests, concerns or worries;

- ✓ Trouble "letting go" of thoughts or ideas, particularly relating to concerns or worries;

- ✓ Refusal to learn about anything outside of their limited field of interest, as they do not appear to understand the significance.

Common high interest areas for many children with Asperger's Syndrome may include: "Wheel of Fortune" game, transportation, astronomy, animals, dinosaurs, geography, weather and maps. It is important to note that these behaviors can often resemble obsessive/compulsive types of behaviors.

Example: Perfectionism regarding written work: erasing the same printed letter or drawing numerous times in succession due to the seemingly imperfect quality of the letter formation/drawing, resulting in increased frustration/anxiety; One child with Asperger's Syndrome exhibits a high interest in Barbies. She cannot go to bed unless all of her Barbies are lined up in the exact same way).

Restricted/Perseverative Range of Interests - Intervention Strategies:

- ✓ **Set** aside specific times of the day, and specific time periods, for the child to discuss his high interests. This "discussion time" can even be included on his visual schedule. If the child brings up a perseverative topic/question at another time, refer him to his visual schedule to indicate when he can converse about this topic.

- ✓ **Provide a written** answer to repetitive questions asked by the child. When the child repeats the question, he can be referred to the written answer, which may assist in comprehension, and thus decrease the occurrence of the repetitive question asking.

- ✓ Incorporate the child's high interests into academics (e.g., if the child has a high interest in maps, use maps to teach math skills). With creativity and individualization, almost any high interest area can be infused into any academic area. Many students with Asperger's Syndrome have sustained their high interests into higher educational studies and subsequent vocations (e.g., Temple Grandin - holds a Ph.D. in animal sciences and has designed over one third of our country's animal livestock holding facilities).

Difficulty Taking the Perspective of Others (Mind Reading/Theory of Mind Deficit)

Characteristics: Children with Asperger's Syndrome can have great difficulty understanding that other people can have thoughts, intentions, needs, desires and

beliefs different from their own (6). Thus their perceptions of the world are often viewed as rigid and egocentric, when in reality they are unable to infer other people's mental states. Typically developing children acquire "Theory of Mind" skills by age four, yet it estimated that this concept develops between the ages of 9-14 in children with Asperger's Syndrome (6). The following are educational implications for children who have "Theory of Mind" deficit (6):

- ✓ When the teacher asks a question to the class, the child thinks that the teacher is speaking directly (and only) to him, and therefore calls out the answer.

- ✓ A child with Asperger's Syndrome can be extremely vulnerable to wrongful intent initiated by other children. He can have great difficulty reading the intentions of others and understanding the motives behind their behavior (e.g., a fifth grade student "befriended" a child with Asperger's Syndrome and told him to say and do many inappropriate verbalizations/actions, for which he got into trouble).

- ✓ Due to difficulty in being able to understand the emotional perspective of others, the child may exhibit a seemingly lack of empathy (e.g., a child with Asperger's Syndrome may laugh seemingly inappropriately when another child gets hurt).

- ✓ The child may have difficulty understanding that his behavior (both actions and words) can affect how others think or feel. He doesn't appear to understand that his words or actions can make someone feel different than his own emotional state. He is not purposefully trying to hurt others. He is factually relating information, without regard to the other person's feelings.

  Example: The child with Asperger's Syndrome may want to play on the computer during free time, and will attempt to do so with little to no regard to the child who is already occupying this activity. Another example: The child may state quite bluntly, "Someone stinks in here. I think it's Lori. Lori, you stink!".

- ✓ Cooperative learning groups can be extremely challenging for the child with Asperger's Syndrome. Again, he may have difficulty understanding that the other children in his group can have thoughts and ideas different than his own. This can often result in a significant increase in the child's stress, frustration and anxiety, leading to the possible occurrence of challenging behaviors.

- ✓ The child may have difficulty taking into account what **other** people know or can be expected to know, leading to confusion on the part of the listener. Because the child can have great difficulty in considering the listener's perspective, he may exhibit the following shortfalls when relating information:

    - ✓ Provide insufficient background information to establish the subject;

    - ✓ A lack of referents;

- ✓ Excluding important pieces of relational information, as **he** already knows this information;

- ✓ Giving an excessive amount of irrelevant details when relating information, again oblivious to the listener's needs.

- ✓ These children may exhibit an inability to deceive or to understand deception. They are sometimes described as the "classroom cops", due to their concrete and literal interpretation of information given. When rules are broken, they willingly identify the guilty party, with no awareness that they should participate in any sort of deception, even if **they** are the guilty party.

Mind Reading/Theory of Mind Deficit - Intervention Strategies:

- ✓ Training designed to specifically address the above features will assist the child in learning to consider the perspective of others. "Teaching Children with Autism to Mind-Read: A Practical Guide" is a good resource book with specific skills and activities clearly outlined for intervention (11).

- ✓ The child will need to be taught to recognize the effect of his actions on others (6). If he says something offensive, let him know very concretely and literally that "words hurt, just like getting punched in the arm". Encourage the child to stop and think how a person will feel before he acts or speaks.

- ✓ Comic strip conversations can be used as a tool to visually clarify communicative social interactions and emotional relations through the use of simple line drawings. Specific colors are used to convey various emotional states for both the speaker and listener (8).

- ✓ Children's literature, videos, movies, or T.V. shows can be used to teach the child to interpret the actions of the characters, thus teaching him how to figure out what other people know (5).

Conclusion:

Children with Asperger's Syndrome exhibit significant social communicative difficulties, as well as other defining characteristics, which may severely impact their ability to function successfully in all facets of life. However, when given appropriate support strategies, through direct teaching

and various accommodations and/or modifications, the child with Asperger's Syndrome can learn to be successful in our unpredictable, sensory overloading, socially interactive world. It is critical that a team approach be utilized in addressing the unique and challenging needs of a child with Asperger's Syndrome, with parents being **vital members** of this team.

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Additional Resources for Asperger's Syndrome and High Functioning Autism

- ✓ MAAP (More-Able Autistic Persons) Newsletter: published by Sue Moreno and website (Maap Services, Inc., P.O. Box 524, Crown Point, IN 46307

- ✓ Connections Newsletter: The Newsletter for Asperger's Disorder and High Functioning Autism. 1177 West Loop South, Suite 530, Houston, Texas 77027. Newsletter published six times per year

- ✓ Autism-Asperger's Syndrome Digest: Future Horizons, Inc. 721 W. Abrams Street, Arlington, Texas 76013. Newsletter published six times per year

- ✓ The Morning News : Carol Gray, Editor; Jenison Public Schools 2149 Bauer Road Jenison, MI 49428. Newsletter published quarterly

- ✓ Asperger's Syndrome and Rage; Practical Solutions for a Difficult Moment: by Brenda Smith Myles and Jack Southwick; Autism Asperger Publishing Company, P.O. Box 23173, Shawnee Mission, Kansas 66283-0173. Book

- ✓ This is Asperger Syndrome: by Elisa Gagnon and Brenda Smith Myles; Autism Asperger Publishing Company, P.O. Box 23173, Shawnee Mission, Kansas 66283-0173. Juvenile Literature Book

Effective Programming for Young Children with Autism (Ages 3-5)

Introduction

The positive outcome of early intervention programming for any child with developmental delays/disabilities has been documented in numerous research articles and publications. However, unlike many other developmental disabilities, children with autism are typically not diagnosed until between the ages of two and three, as there are no medical tests to make a definitive diagnosis of autism at an earlier age. Many medical professionals prefer to take a "wait and see" approach, due to the wide range of "normalcy" in early developing children. Thus early intervention programming can often be delayed for these children, resulting in the "loss" of several critical years of intensive intervention during which significant developments in the brain are occurring. Due to this time factor, once a diagnosis is given, **early intervention programming becomes crucial to appropriately address the child's needs in all developmental areas, and, most importantly, to develop the child's ability to function independently in all aspects of his life.**

Effective interventions for young children with autism are based upon the presence of certain **fundamental features**. Therefore, a "best practice" approach for providing early childhood services for children with autism should incorporate the **fundamental features** discussed in this article**. Much of this information is also covered in more detail through the statewide training. This link will access information on Autism and the Early Childhood training: http://www.dpi.state.wi.us/dpi/dlsea/een/auttrain01.html .**

Fundamental Features

The fundamental features necessary for a successful early childhood program for children with autism are:

- **Curriculum Content**
- **Highly Supportive Teaching Environments and Generalization Strategies**
- **Need for Predictability and Routine**
- **Functional Approach to Problem Behavior**
- **Transition Planning from Early Childhood Program to Elementary School**
- **Family Involvement**

Each of these components will be discussed in detail.

Curriculum Content:

The curricular areas to be focused on in an early childhood program should address the core features and characteristics of autism spectrum disorder. The goals and objectives to address each curricular area should be highly individualized for each child's developmental level, as well

as his learning strengths and weaknesses (5). Knowledge of typical child development is also crucial in providing a guideline for intervention in the curricular areas. The following curricular areas have been identified as essential to meeting the needs of young children with autism spectrum disorder:

- **Attending Skills:** A common feature of autism is the child's significant difficulty in interpreting and prioritizing the importance of various external and internal stimuli continually bombarding him (e.g., a fly buzzing around the room; internal perseverative thoughts such as recitation of math facts). As a result, many of these children can exhibit the following:

  Variable attending skills: The child demonstrates attending skills that vary significantly, depending upon his interests. For example he attends well to what is interesting or "makes sense", such as the computer, videos, puzzles, etc., but attends poorly to large group listening activities.

  Difficulty in shifting attention from one stimulus to another: For example if the child is engaged in a visual perceptual task of putting a puzzle together, he may not be able to shift his attention to focus on an auditory directive given by the teacher.

  Difficulty attending in situations where there are multiple stimuli. Because the child with autism has significant difficulty shifting attention, as well as prioritizing stimuli, attending to the "essential information" is challenging. For example if the child's focused attention is on "sitting appropriately in a small group setting", he may not be able to focus on the information being taught by the teacher.

- **Imitation:** Imitation is a critical developmental skill for children with autism spectrum disorder to develop, as learning throughout life is based on the foundation of being able to imitate. The ability to imitate impacts learning in all areas, including social skills and communication. Various imitation skills must be specifically and directly taught to the child with autism. These include:

  Imitating fine and gross motor movements;

  Imitating actions on objects;

  Imitating designs with manipulatives;

  Imitating sounds and words;

- **Communication (Understanding and Use):** Children with autism exhibit significant communication difficulties in both their abilities to comprehend and to express language appropriately. Many children, at the early intervention level, have not

learned the "power" of communication - that is, the cause and effect of communication. They have not developed the "intent" to communicate. Some children will try to obtain the desired item themselves and not seek out others for assistance. Children with autism have difficulty understanding that communication is an intentional exchange of information between two or more people. Therefore in order to teach this intent to communicate at this early intervention level, many children with autism must be "tempted" to communicate by using their highly desired objects and actions (1).

- **Play Skills with Toys:** Children with autism exhibit marked difficulty engaging in appropriate play skills with toys. Play skills with **toys** can range from the following:

  No interaction: The child shows no interest in touching or holding toys.

  Manipulative/explorative play: The child holds and gazes at toys; mouths, waves, shakes, or bangs toys; stacks blocks or bangs them together; lines up objects.

  Functional play: The child puts teacup to mouth; puts brush to hair; connects train sections and pushes train; arranges pieces of furniture in dollhouse; constructs a building with blocks.

  Symbolic/pretend play: The child pretends to do something or to be someone else with an intent that is representational, including role-playing (e.g., child makes hand move to mouth, signifying drinking from teacup; makes a puppet talk; uses a toy person or doll to represent self; uses block as a car accompanied by engine sounds).

Appropriate play skills with toys and play with peers will need to be specifically and directly taught to children with autism.

- **Social Play/Social Relations:** A core feature of autism is difficulty understanding, and engaging in, social interactions. At the early intervention level, children with autism typically exhibit significant difficulty engaging in social play with peers. Social play skills with peers can range from the following:

  Isolation: The child appears to be unaware of, or oblivious of others. He may occupy himself by watching anything of momentary interest.

  Orientation: The child has an awareness of the other children, as evidenced by looking at them or at their play materials or activities. However the child does not enter into play.

  Parallel/proximity play: The child plays independently beside, rather than engaging with, the other children. There is simultaneous use of the same play space or materials as peers.

Common focus: The child engages in activities directly involving one or more peers, including: informal turn-taking; giving and receiving assistance and directives; and active sharing of materials. There is a common focus or attention on the play.

Typically developing peer models are **essential** to facilitate developmentally appropriate social behavior for children with autism.

Highly Supportive Teaching Environments and Generalization Strategies:

The previously noted curricular areas must be taught in an environment which takes into consideration the unique features and characteristics associated with autism spectrum disorder. The specific skills per curricular area should be taught in a highly supportive and structured teaching environment, and then systematically generalized to more functional, natural environments (1). Features of the **environments** which should be addressed include the following:

- **Physical Environment:** Due to difficulties in appropriately processing and modulating all in-coming sensory stimulation, the physically structured environment should provide environmental organization for children with autism. See next article for additional information.

Furniture arrangement: Environmental organization includes clear physical and visual boundaries, which (a) help the child to understand where each area begins and ends, and (b) minimize visual and auditory distractions (2). Each area of the classroom (or other environment) should be clearly, visually defined through the arrangement of furniture (e.g., bookcases, room dividers, office panels, shelving units, file cabinets, tables, rugs, etc.).

Children with autism generally do not automatically segment their environments like typically developing children. Large, wide-open areas can be extremely challenging for children with autism. They do not understand what is to occur in each area, where each area begins and ends, and how to get to a specific area by the most direct route. Strategically placing furniture to clearly, visually-define specific areas will decrease the child's tendency to randomly wander/run from area to area.

Visual distractions can be minimized by **painting** the entire environment (walls, ceilings, bulletin boards, etc.) a muted color (e.g., off-white) as well as markedly limiting the amount of visual "clutter" which is typically present in most classrooms in the form of art projects, seasonal decorations and classroom materials**. Reduction of Visual Clutter** can be accompanied by using sheets/curtains to cover classroom materials (including equipment such as a computer or TV/VCR), or by removing unnecessary equipment/materials from the classroom or to an area not in the student's view. Certain fluorescent lighting can be visually distracting to some children with autism**. Natural lighting** via

windows can provide an easy solution to this visual distraction. Through the use of blinds, curtains, or shades, the amount of light coming into the environment can easily be controlled, thus creating a warm and calm environment.

Auditory distractions: The lowering of auditory distractions in a physically structured environment can be achieved through the use of carpeting, lowered ceilings, acoustical tiles, P.A. system turned off or covered with foam to mute the sound, and headphones for appropriate equipment, such as the computer or tape players.

A physically structured environment will create an easily understood, predictable and thus calming environment for the child with autism. As a result the child's attention to the most relevant information for learning will be maximized.

See the article "Structured Teaching: Strategies for Supporting Students with Autism" for more information on a physically structured environment.

- **Visual Support Strategies:** Visual support strategies refer to the presentation of information in a visually structured manner. These strategies are effective in helping children with autism **understand** what is expected of them and how to function appropriately. These strategies support the children's strongest processing area – **visual**. The visual cues help the child to focus on the relevant and key information. Visual support strategies help children with autism learn better and more effectively. These strategies also minimize stress and anxiety by helping children grasp their environment. Visual support strategies in an early intervention program can include the following:

  schedules
  directions (e.g., self help skills - tooth brushing; hygiene; washing hands)
  forewarning/foreshadowing
  independent work activities
  teaching rules/alternative behaviors
  increasing language comprehension skills
  expressive communication skills
  making choices
  turn-taking
  waiting
  attending
  academic/readiness areas

See the other articles in this document "Structured Teaching: Strategies for Supporting Students with Autism" and "Assistive Technology for Students with Autism" for more information on visual support strategies.

- **Trained Staff:** A well trained staff in understanding the unique features and characteristics associated with autism is an essential feature in providing a highly supportive teaching environment. The Wisconsin Statewide Autism Training Project

is accessible year round and covers multiple areas. Information on the training is found at the Wisconsin Department of Public Instruction website: http://www.dpi.state.wi.us/dpi/dlsea/een/cspd_trg.html. In addition, CESA #6 provides numerous trainings relating to autism spectrum disorders. CESA #6 web site: http://www.cesa6.k12.wi.us . The Autism Society of Wisconsin also provides information of training opportunities. See http://www.asw4autism.org .

Additional training in specific strategies is also suggested (e.g., Structured Teaching Practices, Picture Exchange Communication System - PECS, Sensory Integration Strategies, Music/rhythm integration strategies, discrete trial, Greenspan's Floortime web site: http://www.stanleygreenspan.com , etc.).

Need for Predictability and Routine:

Another diagnostic feature of autism is the child's strict adherence to routines and the need for sameness in his environment (1). Early childhood programs which are **highly structured**, **consistent** and **routine**, can best meet the child's needs by taking into account this feature of autism. Just as with visual support strategies, programs that are predictable and routine-centered also minimize a child's stress and anxiety by helping him to better understand his environment.

Functional Approach to Challenging Behaviors:

The most effective approach to addressing challenging behaviors in children with autism is proactive. Preventing the development of challenging behaviors can occur by creating appropriate and meaningful learning environments that do not generate the stress, anxiety and frustration typically experienced by children with autism. Due to the characteristics of autism, stress, anxiety and frustration occur in such areas as language comprehension, expressive language, sensory processing, resistance to change, preference for familiar routines and consistency, organization, attending to salient stimuli and distractibility.

The use of the fundamental features in an early childhood program will assist in proactively addressing the occurrence of challenging behaviors. If and when challenging behaviors persist, they should be addressed through a functional assessment of the behavior. Again, the unique features and characteristics associated with autism should be considered in the functional behavioral assessment, to determine how they might be contributing to the presence of the challenging behavior. Specific training on challenging behaviors is covered in the Statewide Autism Training Project, found at the DPI website.

Transition Planning from Early Childhood Program to the Elementary School:

Due to difficulties in making transitions, accepting change and generalizing previously acquired skills, the child with autism may experience significant challenges in transitioning from his early childhood program to a primary elementary program (1). Therefore, several critical components have been identified to assist the child in making this transition successfully.

- **Develop independent functioning skills:** The initial development of independent functioning skills is an important factor in preparing the child for elementary school

(1). It is critical to begin teaching children with autism independent functioning skills as soon as they enter their early childhood program (1). These skills will assist them throughout their lives. Independent functioning in all curricular areas should be addressed (e.g., communication, social relations, play, self-help/daily living skills, attending, navigating the school environment, etc.).

- **Determine an appropriate placement:** The child's early childhood program should take an active role in assisting the parents and school districts in finding an appropriate placement for each child transitioning from an early childhood program to an elementary school (1). Factors to be considered can include: class size, degree of classroom structure, teaching style, and the physical environment.

- **Staff training:** It is critical for the elementary school staff, who will be directly working with the child, to be trained in the unique features and characteristics common to autism. The training should also include strategies directly applicable to a child with autism.

  Visitations to the child's early childhood program by the elementary school staff are also important, so that the early childhood staff can assist in providing direct, individual, child-specific information and training if necessary. In addition, the early childhood staff should visit the elementary school to determine skill areas which may need to be addressed, prior to the child's transition. Early childhood staff can also help assess the physical environment, and determine if there are any adaptations/modifications which should be considered.

  It is also suggested that the entire school professional staff participate in a general inservice, or receive information regarding the unique features and characteristics of autism, so that all staff members can more readily understand the child who will be entering their school.

- **Peer training:** Another component of training should involve the peers/classmates of the child who is transitioning into their school. Division TEACCH (3) has developed a successful protocol for training peers at this level and is available at its website: http://www.unc.edu/depts/teacch/ . This should only occur after written parent permission is obtained.

- **Visitation to elementary school placement:** It is suggested that the child's transition to his elementary school placement be accomplished gradually (1). This can occur in a number of ways. As mentioned previously, the child can become adjusted to the new teaching staff in his familiar and comforting early childhood environment when the elementary school staff visits the child's early childhood program. After this is accomplished, the child can begin to visit the elementary school placement on a gradual basis, accompanied by a familiar adult from this early childhood program. The amount of time that the child spends in the elementary school placement is gradually increased. This procedure tends to work best in that, if any difficulties arise

when the child is in his elementary school placement, these difficulties can still be addressed in his familiar and comforting early childhood environment (1).

Family Involvement:

- **Parallel training of Parent/family and staff:** The parent/family should be informed by school staff on strategies that are being used successfully at school. In turn, the parents should inform school staff on successful home strategies. This mutual sharing of information/ideas can be accomplished through the following:
  Monthly home visits;
  Monthly staff/family support meetings;
  Daily home-school communication notebook;
  Phone calls;
  School visitations.

- **Parents as visitors or volunteers:** Many parents may wish to visit or volunteer time to their child's early childhood program. This can be accomplished in many different ways, depending upon the parents' time schedules, the needs of the teacher, as well as the individual needs of the children. Some children can become quite anxious and upset when their own parents are in the classroom environment. The children perceive this as a "change"; that is, their parents are associated with the home environment and not the classroom. In such cases parents can volunteer by making materials, copies, etc. outside the classroom. Also, many schools have policies and procedures regarding visitations and volunteering, which should be consulted.

Other program features that may greatly contribute to the success of a child's early childhood program, are the following:

- **Frequent staffings: Frequent staffings** for each child by the early childhood teaching staff ensure consistency in programming. It is critical that decisions regarding a child's individualized program are made by the entire teaching staff as a **team**.

- **Team teaching approach:** A successful staffing approach to meeting the unique and individualized needs of children with autism is utilization of a team teaching concept. In this approach staff members combine their specialized skill areas to team teach the students in the program. Various professionals and para-professionals can be part of this teaching team (e.g., speech/language pathologist, occupational therapist, early childhood teacher, certified occupational therapy assistant, and classroom aides). Although each member will contribute greatly to the team regarding his specialty area, in an ideal team teaching environment, it should be difficult for visitors to distinguish the various specialty areas of the teachers in the classroom. Utilization of team teaching provides the child with on-going, consistent and individualized focus in all skill areas.

- **Individualized program:** The individualized education plan (IEP) is the blueprint for successfully meeting the needs of the child with autism. Each child's **daily program** is based on his specific needs (IEP goals and objectives), and will be different from every other child in the classroom.

- **Data driven:** On-going data collection should take place to support progress towards each child's IEP goals and objectives, to assist in determining daily programming, and to substantiate the overall efficacy of the child's IEP.

- **Typically developing peers:** It is critical for an early childhood program to have ready access to typically developing peers to provide models and support for the child with autism. Individualized mainstreaming can take place in various ways (e.g. For a particular child with autism, 1-2 peers can come into the early childhood classroom to act as peer models when focusing on structured play skills, such as turn-taking or imitating actions on objects). Also, the child may be participating in daycare or another preschool setting, or even kindergarten. A variety of options are available to accomplish this objective.

Conclusion:

This article has addressed some of the fundamental features to be considered for children with autism. Well-planned and-implemented early childhood programs are cost effective, in the long term; children with autism who have benefited from such programs will require less intensive services later on. Most importantly, appropriate autism early childhood programs help children acquire the independent functioning skills that will benefit every aspect of their lives.

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(2) Division TEACCH. Division TEACCH Training Manual. revised January, 1998. Chapel Hill, NC

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Structured Teaching: Strategies for Supporting Students with Autism

Structured teaching is an intervention philosophy developed by the University of North Carolina Division TEACCH (**T**reatment and **E**ducation of **A**utistic and related **C**ommunication Handicapped Children). Structured teaching is an approach in instructing children with autism. It allows for implementation of a variety of instructional methods (e.g., visual support strategies, Picture Exchange Communication System – PECS, sensory integration strategies, discrete trial, music/rhythm intervention strategies, Greenspan's Floortime, etc.). The following information outlines some important considerations for structured teaching to occur. It is one of many approaches to consider in working with children with autism.

Eric Schopler, founder of Division TEACCH in the early 1970's, established the foundation for structured teaching in his doctoral dissertation (2) by demonstrating that people with autism process **visual information** more easily than **verbal information**.

What is Structured Teaching ? (1)

Structured teaching is based upon an **understanding** of the unique features and characteristics associated with the nature of autism.

Structured teaching describes the conditions under which a person should be taught rather than "where" or "what" (i.e., "learning how to learn").

Structured teaching is a system for organizing environments, developing appropriate activities, and helping people with autism **understand** what is expected of them.

Structured teaching utilizes visual cues which help children with autism focus on the relevant information which can, at times, be difficult for the person with autism to distinguish from the non-relevant information.

Structured teaching addresses challenging behaviors in a proactive manner by creating appropriate and meaningful environments that reduce the stress, anxiety and frustration which may be experienced by children with autism. Challenging behaviors may occur, due to the following characteristics of autism:

- Language comprehension difficulties
- Expressive language difficulties
- Social relations difficulties
- Sensory processing difficulties
- Resistance to change
- Preference for familiar routines and consistency

- Organizational difficulties
- difficulty attending to relevant stimuli
- distractibility

Structured teaching greatly increases a child's independent functioning (i.e., without adult prompting or cueing) which will assist him throughout life.

This article will address the features of a structured teaching approach. It is important to remember that to effectively use the features of this approach, the individual's strengths and needs must be taken into consideration.

Primary Components of Structured Teaching:

Physical structure

Visual Schedules

Teaching method

Physical Structure

Definition: Physical structure refers to the way in which we **set up** and **organize** the person's **physical environment**: It emphasizes where/how we place the furniture and materials (1) in the various environments including classrooms, playground, workshop/work area, bedroom, hallways, locker/cubby areas, etc.

Close attention to physical structure is essential for a number of reasons:

- ✓ Physical structure provides **environmental** organization for people with autism.
- ✓ Clear physical and visual boundaries help the person to understand where each area begins and ends.
- ✓ The physical structure minimizes visual and auditory distractions.

The amount of physical structure needed is dependent on the level of self-control demonstrated by the child, not his cognitive functioning level. As students learn to function more independently, the physical structure can be gradually lessened (5).

Example: A high functioning child with autism may display limited self control. He will need a more highly structured environment than a lower functioning child displaying better self control.

Physical structure consists of a number of components:

- **Location:** Physical structure should be considered in any environment in which the person with autism interacts, including classrooms, playground, workshop/work area, bedroom, hallways, locker/cubby areas, etc.

▪ Design/Layout.

✓ **Clear visual and physical boundaries:** Each area of the classroom (or environment) should be clearly, visually defined through the arrangement of **furniture** (e.g., bookcases, room, dividers, office panels, shelving units, file cabinets, tables, rugs, etc.) and use of boundary markers, such as carpet squares or colored floor tape. Children with autism typically do not automatically segment their environments like typically developing children. Large, wide-open areas can be extremely difficult for children with autism to understand:

What is to occur in each area;
Where each area begins and ends, and
How to get to a specific area by the most direct route.

By strategically placing furniture to clearly visually define specific areas, it will decrease the child's tendency to randomly wander/run from area to area. Visual physical boundaries can also be further defined within a specific area.

Example: During group story time, a carpet square or taped-off square can provide the child with autism clear visual cues as to the physical boundaries of that activity. Floor tape can also be used in gym class to indicate to the child with autism the area in which he should stay to perform certain motor skills, like warm-up exercises.

Example: Color coded placements (according to each child's assigned color) can be used for snack or mealtimes. The placements will visually and physically define each child's "space" (and food items) on the table.

These visual cues will help children with autism better understand their environment, as well as increase their ability to become more independent in their environment and less reliant on an adult for direction.

✓ **Minimize visual and auditory distractions:** Visual distractions can be minimized:

By painting the entire environment (walls, ceilings, bulletin boards, etc.) a muted color (e.g., off-white);

By limiting the amount of visual **"clutter"** which is typically present in most classrooms, in the form of art projects, seasonal decorations and classroom materials;
By placing sheets/curtains to cover shelves of classroom materials, as well as other visually distracting equipment (e.g., computer, copy machine, TV/VCR, etc.);

By storing unnecessary equipment/materials in another area.

Example: In the play area, limit the number of appropriate toys which the children can use and then, on a weekly basis, rotate in "new" toys, while putting away the "old" ones.

Through the use of natural lighting from windows to reduce visually distracting fluorescent lighting;

By **controlling** the **amount of light** through the use of blinds, curtains, or shades, thus creating a warm and calm environment;

By placing **study carrells** and individual student work areas, bordered by a wall or corner of the classroom, away from group work tables can also reduce environmental visual distractions;

By carefully considering where the child with autism will sit in the regular education classroom.

Example: Tony, a student with autism, was seated in the front of the class, facing away from the door or windows and away from shelves with instructional materials in order to minimize visual distractions.

Auditory distractions can be reduced through the use of carpeting, lowered ceilings, acoustical tiles, P.A. system turned off (or covered with foam to mute the sound) and headphones for appropriate equipment, such as the computer or tape players.

✓ **Develop appropriate instructional, independent, recreation and leisure areas in each physically structured environment.**

In a **classroom setting**, these areas may include:
Small group work area;
Independent work area;
1:1 work area;
Play/recreation/leisure area;
Sensory motor area;
Crash/quiet area.

At **home**, these areas may include:
An independent work area;
Play area;
Crash/quiet area.

Again, these **specific area**s should have **clear visual boundaries** to define each area for the child with autism. It is also important to keep in mind the various distractions which may be present in each area, and make accommodations accordingly.

- **Organization:** A physically structured environment must be extremely organized to effectively implement a structured teaching approach. Adequate storage of various materials (not in view of the students), which can also be easily accessed by the adults in the environment, is critical.

Example: A sectioned-off storage area (with high dividing units to keep materials out of sight of the students) **within** the classroom can be very helpful to keep the environment "clutter and distraction-free", yet provide easy access to needed materials.

Students with autism can also be taught to keep the physical environment structured and organized through the use of pictures, color-coding, numbers, symbols, etc.

Example: In the play area, pictures of the toys can be placed on the shelves to provide structure when putting things away.

Visual Schedules

Definition: A daily **visual schedule** is a critical component in a structured environment. A visual schedule will tell the student with autism what activities will occur and in what sequence.

- **Visual schedules are important for children with autism because they:**

  - ✓ Help address the child's difficulty with sequential memory and organization of time.

  - ✓ Assist children with language comprehension problems to understand what is expected of them (5).

  - ✓ Lessen the anxiety level of children with autism, and thus reduce the possible occurrence of challenging behaviors, by providing the structure for the student to organize and predict daily and weekly events. Schedules clarify that activities happen within a specific time period (e.g., understanding that "break time" is coming, but **after** "work time"), and also alert the student to any **changes** that might occur.

  - ✓ Assist the student in **transitioning independently** between activities and environments by telling them where they are to go next (5). Visual schedules can be used in all environments (e.g., classroom, gym, Occupational Therapy, Speech/Language Therapy, home, Sunday School, etc.).

- ✓ Are based on a "first-then" strategy; that is, "**first** you do ___, **then** you do ___", rather than an "if-then" approach (i.e., "**if** you do ___, **then** you can do___"). This **first–then** strategy allows the "first" expectation (whether a task, activity or assignment) to be modified as needed. The modification is in terms of task completion and amount of prompting, in order to accommodate the student's daily fluctuations in his ability to process in-coming information. **Then** he can move on to his next visually scheduled task/activity.

Example: A student is having particular difficulty completing a math worksheet, due to anxiety, sensory processing difficulties, communication, difficulty generalizing, internal/external distracters, change, etc. The assignment can be modified so that the child only has to complete three math problems **first,** and **then** he has a sensory break, as indicated on his visual schedule.

- ✓ Can incorporate various **social interactions** into the student's daily schedule (e.g., showing completed work to a teacher/parent for social reinforcement, requiring appropriate social greetings).

- ✓ Can increase a student's motivation to complete less desired activities by strategically alternating more preferred with less-preferred activities on the student's individual visual schedule.

Example: By placing a "computer" time after "math", the student may be more motivated to complete math, knowing that "computer" time will be next.

A **visual schedule** for a student with autism must be directly **taught** and **consistently** used**. Visual schedules** should not be considered as "crutches" for students with autism, from which they should gradually be "weaned". Instead, these individual visual schedules should be considered as "prosthetic" or "assistive tech" devices. For the student with autism, the consistent use of a visual schedule is an extremely important skill. It has the potential to increase independent functioning throughout his life - at school, home and community.

- ■ **Developing Visual Schedules:** In general, schedules should be arranged from a "top-to-bottom" or "left-to-right" format, including a method for the student to manipulate the schedule to indicate that an activity is finished or "all done" .

Example: Cross/mark off with a dry erase marker, place the item in an "all done" envelope/box, check off the item, draw a line through the scheduled activity, etc.

- ✓ A minimum of two scheduled items should be presented at a time so that the student begins to understand that events and activities happen in a sequential manner, not in isolation.

- ✓ Schedules can be designed using a variety of formats, depending upon the needs of the individual student.

  Example: Object schedule, 3 ring binder schedule, clipboard schedule, manila file folder schedules, dry erase board schedules, Velcro strip across the top of the desk, etc.

- ✓ Various visual representation systems can be used for an individual visual schedule including:
  Real objects;
  Photographs (e.g., "Picture This" software program or own photos);
  Realistic drawings;
  Commercial picture system (e.g., "Boardmaker" software program);
  Written words/lists.

- **Individual Schedule:** It is necessary to develop an **individual** schedule for the child with autism in addition to the general classroom schedule.

  - ✓ An individual schedule will give the child with autism important information in a visual form that he can readily understand.

  - ✓ Another consideration when individualizing a schedule for a student with autism is the length of the schedule (number of activities). The length of the schedule may need to be modified due to the student becoming increasingly obsessed and/or anxious regarding an up-coming scheduled activity, or due to difficulty in processing "too much" information presented at once.

    Example: A particular student "obsesses" over recess. If at the beginning of his day he sees "recess" scheduled later in the morning, he will continue to be obsessed with "going out for recess", resulting in increased anxiety and distractibility for the rest of the morning activities, until recess. The student's schedule could be created with a few activity items at a time, up until recess. Again, individualization is the key to success.

  - ✓ **Check Schedule**. Some students may need a "check schedule" visual physical prompt to teach them to **independently** check their schedule, as well as learn the importance of their schedule.

    Example: "Check schedule" visual prompts can be made by writing the student's name on laminated colored paper strips, or using Popsicle sticks or poker chips with a large check printed on the chip, etc.

    The "check schedule" prompts are visual and physical cues (as opposed to adult prompts) given to the student for any transition in his daily activities, to cue him to check his schedules.

A child who relies too heavily on adult prompts, rather than using "check schedule" prompts in his schedule, may have more difficulty understanding the importance of his schedule and have limited success in using it.

- **Transitions.** Some students may need to transition to the next scheduled activity by taking their scheduled item (card or object) off their individual schedule and carrying this with them to the next activity/location. This may be due to the child's increased distractibility in maneuvering through the environment. The distractibility, or inability to sustain attention throughout the transition, is independent of the child's cognitive functioning level or verbal skills.

> **Example:** Some non-verbal students with autism, who function at a younger cognitive level, do not require transition schedule cards to get to the next scheduled activity. On the other hand certain higher functioning students with autism require a transition card to get to the next scheduled activity, due to their increased distractibility.

The Teaching Components :

The Teaching components include **Work System**s and **Visual Structure**.

- **Work Systems,** refers to the systematic and organized presentation of tasks/materials in order for students to learn to work independently, without adult directions/prompts. It is important to note that "work systems" can reflect **any** type of task(s) or activities (e.g., academic, daily living skills, recreation and leisure, etc.). Each "work system", regardless of the nature of the specific task or activity, should address the following four questions:

  - ✓ **What is the work to be done? What is the nature of the task?** (e.g., sorting by colors; adding/subtracting 2 digit numbers, making a sandwich, brushing teeth, etc.).

  - ✓ **How much work? Visually represent to the student exactly how much work is to be done**. If the student is to cut out only 10 soup can labels, don't give him a whole stack, and expect him to independently count and/or understand that he is to cut out only 10 soup can labels, for the task to be considered complete. Seeing the whole stack of labels - even if told that he is going to cut only ten - can cause a child with autism a great deal of frustration and anxiety in not being able to understand exactly how much work to complete.

> Remember, students with autism rely upon their **visual** channel to process information; therefore, seeing a whole stack of work to complete can prove overwhelming. Provide only the materials the student will need for the specific task/activity in order to decrease his possible confusion in understanding exactly how much and what work is to be done.

- ✓ **When am I finished?** The student needs to independently recognize when he is finished with a task/activity. The task itself may define this, or the use of timers or visual cues, such as a red dot, to indicate where to stop on a particular worksheet, has proven effective.

- ✓ **What comes next?** Items such as physical reinforcers, highly desired activities, break times or free choice are highly motivating toward task completion. In some cases, being "all done" with the task motivates the child enough to complete it.

Experience with structured teaching and the use of "work systems" has shown that a student's overall productivity increases when the student has a way of knowing how much work there is to do, as well as when it is to be finished (1). Use of a "work system" helps to organize the child with autism through use of a structured and systematic approach to completing various tasks independently.

Examples of various types of work systems, from easiest to most difficult, include:

Left to right sequence - finished box/basket/folder to the far right. This is the most concrete level of "work systems" and involves placing items to be completed to the left of the person's workspace (e.g., a shelf, folder, basket/tub, etc.). The student is taught to take the items from the left, complete them at his work space in front of him, and then place the completed work to the right in an "all done" box, folder, basket, etc.

Matching - color, shape, alphabet, number. This would be a higher level skill in that the person must complete his "work jobs" in a sequential order by matching color, shape, alphabet letter or number coding system.

Example. The student has a sequence strip of individual numbers 1-10 velcroed on their desk/work space. He also has multiple "work jobs" located on his left. To complete tasks in this work system (matching), he takes the number "1" off his number strip and matches it to the number "1" located on one of the work jobs. This is the job/task/activity he must complete first. He continues matching numbers to tasks in order to complete those tasks (work jobs) in a specified sequential order.

Written system. This is the highest level of the work system. It would involve a written list of "work jobs" to be completed in sequential order.

- **Visual Structure** is the process of incorporating concrete visual cues into the task/activity itself. By doing so, the student will **not** have to rely on the teacher's verbal or physical prompts in order to understand what to do (2). The student can use his strong visual skills to get **meaning** from the task/activity without adult assistance.

Thus, these visual cues increase the student's ability to work **successfully** and **independently**.

Students with autism tend to have difficulty processing the most obvious information in their environments and at times they may become overly focused or attentive to insignificant or irrelevant details. In order to help students with autism identify and focus on the significant and relevant details of a task/activity, their daily activities/tasks need to be modified to incorporate the following:

- ✓ **Visual Instructions:** A student should be able to sequentially complete a task/activity by looking at the visual instructions given. Visual instructions will help the student to combine and organize a series of steps to obtain a desired outcome (2). Visual instructions may include the following forms:

  The materials of the task define the task (e.g., putting rings on a stick with the rings located in a container on the left, and the stick standing upright on the right - again following the left to right sequence).

  A cut-out or outline jig (e.g., an outline of a plate and silverware to direct the person where to place the silverware on a placemat).

  A picture jig (e.g., a picture of various toys or clothing items in specific locations for the child to match the real object, in order to learn to put away his belongings).

  Written instruction (e.g., written steps to complete a task or sequenced activity, such as the morning routine or spelling work.).

  Product sample or model (e.g., a completed art project).

- ✓ **Visual Organization:** Visual organization refers to the task of presenting the materials and space in an organized manner so that the sensory input or extra stimulation are reduced. Visual organization can be achieved through the following adaptations:

  Use containers to organize materials (e.g., placing the various materials of an activity into separate containers, or arranging alphabet letters to be matched by standing them upright in a foam tray, rather than having them bunched together in a single container).

  Limit the area (e.g., use masking tape to enclose specific areas for a student to vacuum).

- ✓ **Visual Clarity:** The purpose of visual clarity is to highlight the important information, concepts, specific parts of the instruction and key materials (1). The nature of the task is designed to prompt the student to focus on the important

details of the "work job" (task/activity/assignment). These details are highlighted through colors, pictures, numbers or words. Providing visual clarity promotes student independence rather than relying upon adult guidance (2). The most concrete level of visual clarity is achieved by limiting the materials needed to complete the task successfully (e.g., removing unnecessary, irrelevant or extra materials) (2). Examples of visual clarity include:

Color coding (e.g., assign each student a specific color and consistently use this color to teach the child to identify his environmental belongings more readily, including work areas, cubby space/locker, small group chair, snack/lunch seat, communication books, etc.

Labeling (e.g., for sorting tasks, highlighting openings on containers to make them more visually obvious).

Through the use of a **visually structured teaching method**, a student with autism can learn to complete various tasks/activities independently, i.e., without an adult's physical or verbal prompt. Therefore many students with autism can engage in "independent work sessions" for various periods of time throughout their day, in **any** environment (home, school, work), and on **any** skill area, such as academic/curricular, daily living skills, recreation and leisure, etc.).

Conclusion

The **structured teaching approach** allows the student with autism to learn a process of focusing upon and following visual cues in various situations and environments, in order to increase his overall independent functioning. It is important to note that various instructional interventions, such as sensory integration, Picture Exchange Communication System-PECS, Greenspan's Floortime, discrete trial, etc., can easily be incorporated into the structured teaching approach.

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Increasing Expressive Skills for Verbal Children with Autism

What is Communication?

Communication is a range of **purposeful** behavior which is used with **intent** within the structure of **social exchanges** to **transmit** information, observations, or internal states, or to bring about changes in the immediate environment. Verbal as well as nonverbal behaviors are included, as long as some **intent, evidenced by anticipation of outcome,** can be inferred. Therefore, not all vocalization or even speech can qualify as **intentional** communicative behavior (9).

This definition emphasizes that communication takes place within a social context. **Speech/verbalization becomes communication when there is a desire or intent to convey a message to someone else.** Therefore these two areas, communication and social skills, are tightly interwoven and interdependent. Unfortunately for children with autism, these are also two primary areas of difficulty. Therefore children with autism, even those who are considered "verbal", usually experience significant communication difficulties.

When referring to **verbal** children with autism, we are considering a broad spectrum of verbal behaviors, from minimally verbal to quite verbose, with the common area of difficulty being in how the child **uses** his language to communicate. As stated earlier, because communication and social skills are interdependent, the characteristics and features of autism regarding social relations contribute to the child's significant difficulty in **using** verbal language skills to effectively communicate (11). That is, the child's general lack of knowledge concerning other people, especially in understanding that other people have thoughts, ideas and beliefs different from his own (11), significantly interferes with his ability to communicate. If a child does not understand the general "give and take" of social relationships", he is unlikely to engage in the purposeful and intentional exchange of information that defines communication.

Language intervention programs for verbal children with autism often focus on improving the child's language form or structure skills (e.g., sentence length, vocabulary skills, and sentence structure). However, for verbal children with autism, the language intervention programs' focus should be increasing the child's knowledge and understanding of **social communication skills.**

It is important to note that focus on communication is not the sole responsibility of the speech/language pathologist but should be addressed on a continual and on-going basis by everyone who comes in contact with the child. Therefore, the two-fold purpose of this article is to provide:

I Key questions to consider in order to determine the child's current communication abilities

II The development of a communication intervention program for the child with autism that is based on his communication needs.

I **Questions to Consider.** In order to develop an appropriate communication intervention program for the verbal child with autism, the following questions should be considered to determine his current communication abilities/needs.

- **Does the child exhibit any Unconventional Verbal Behaviors (UVBs)? If so, does the child use these UVBs for communicative purposes?** Unconventional verbal behaviors may be produced for communicative as well as non-communicative purposes. Unconventional verbal behaviors include **echolalia**, **perseverant speech and incessant question asking**.

Echolalia - Definition and characteristics:

- ✓ The most common form of unconventional verbal behaviors is echolalia (9). Echolalia is when the child repeats verbal information stated by others (e.g., people's conversational exchanges, videos, books read aloud, songs, etc.).

- ✓ Echolalia can include repetition of part of the utterance as well as an identical repetition of the entire spoken utterance, sometimes including an exact replication of the inflectional pattern used by the speaker.

- ✓ Echolalia can be both immediate (a repetition of something they have <u>just</u> heard) or delayed (a repetition of information heard previously - minutes, hours, days, weeks, months, years!).

- ✓ Echolalia occurs in normal language development yet decreases as the typically developing child gains more spontaneous generative language. In children with autism, echolalia occurs with greater frequency and lasts for a longer period of time as the child with autism typically experiences significant difficulty developing spontaneous, generative language skills (9).

- ✓ Echolalia is reflective of how the child processes information. The child with autism processes information as a whole "chunk" without processing the individual words that comprise the utterance. In processing these unanalyzed "chunks" of verbal information, many children with autism also process part of the **context** in which these words were stated, including sensory and emotional details. Some common element from this original situation is then triggered in the current situation, which elicits the child's echolalic utterance.

Example: A student with autism became upset with his teacher over completing a task. He then verbalized loudly, "Go to hell lieutenant!" His parents reported

that he had been watching the movie "A Few Good Men" quite frequently. This movie contains this exact same utterance in the **emotional context of anger**. This child with autism was unable to spontaneously generate language to communicate "I'm upset and I don't want to complete this assignment", but could pull forth an echolalic utterance which he had processed in the context of the emotional state of anger.

The presence of echolalia in children with autism can be a positive indicator for future meaningful language development (8). It indicates that the child is at least processing language, although at a "surface" level.

Use of echolalia for Non-Communicative and Communicative Purposes:

It is important to consider how the child is using echolalic utterances, for non-communicative and/or communicative purposes. In either case, it is important to note that, although he may be using sophisticated utterances (e.g., lengthy sentences, advanced vocabulary and grammatical forms), **these echolalic utterances are generally being repeated without a clear or complete understanding of the meaning of the utterance (8).**

Non-Communicative Purposes: Echolalia used without communicative intent occurs when the child does not anticipate a response to his verbalization (8). Some examples include:

- ✓ Echolalic utterances which do not appear relevant to the situation or context (e.g., a child repeats utterances from a Disney video during a group calendar activity);

- ✓ Utterances that may be triggered by something in the situation or context (e.g., a child walks into the lunchroom and begins to engage in echolalic utterances which have been heard in this context: "Everyone find a seat and start eating.")

- ✓ Utterances that may be used as self-direction for his own actions (e.g., a child produces echolalic utterances to engage in a previously taught verbal routine to wash his hands: "Turn on the water. Get some soap. Rinse hands. Turn the water off. Get a towel and dry hands.").

Sometimes, children with autism engage in echolalia when they are feeling stressed or anxious. It is important to determine whether the child's arousal level could be a precipitating factor for the presence of his echolalia.

Example: A child walks into a classroom that he attended the previous school year. He begins to engage in a variety of delayed echolalic utterances spoken by the teacher from the previous school year. This child may be exhibiting an increase in stress and anxiety because he does not understand why he is in this environment again.

Communicative Purposes: As the child's cognitive and language skills develop, his use of echolalia may become more functional and communicative (8). When echolalia is used more communicatively, the child will generally exhibit an increase in spontaneous, appropriate eye gaze and/or body orientation. Echolalia can be used communicatively for the following functions:

- ✓ **Conversational turn taking**: The child recognizes when he is to take a conversational turn and that some sort of response is required. However, the child lacks the spontaneous generative language to engage in the conversation, so he relies upon an echolalic utterance to take his "turn" in the conversation.

> **Example:** A person says, "What did you do in gym?" The child with autism responds with "Everyone line up in your gym spots." The child takes his conversational turn by using an echolalic utterance from the gym teacher.

- ✓ **Initiation of communicative interactions:** The child is beginning to recognize and notice others. Because he lacks the spontaneous generative language skills to initiate a communicative interaction with someone, he uses an echolalic utterance.

> **Example:** A child with autism approaches an adult, spontaneously engages in direct eye contact and says, "Susan, I think I'm going to die tonight". Upon further investigation, it is discovered that the child has been watching the movie "Charlotte's Web". In order to initiate a communicative interaction, he uses an echolalic utterance obtained from the movie.

- ✓ **Requesting :** The child uses echolalia to request a desired object, action or event.

> **Example:** The child says: "Do you want a snack?" to indicate that he wants a snack.

- ✓ **Protesting:** The child uses echolalia to protest the actions of others.

> **Example**: A child who does not want to watch the current T.V. program uses the utterance he has learned from T.V., "Stay tuned for back-to-back episodes of Gilligan's Island", to communicate his dislike of the current program.

- ✓ **Indicating affirmation in response to a previous utterance:** The child uses echolalia to respond affirmatively to the previous utterance.

> **Example:** Another person says, "Want to go swing?" The child responds with the echolalic response, "Want to swing?"

Perseverative speech/incessant question asking – Definition: Perseverative speech and incessant question asking are persistent repetitions of speech or questions which can be used both communicatively or non-communicatively.

Perseverative speech/incessant question asking -Communicative purposes. This occurs when perseverative speech or incessant questions are used to initiate or maintain a communicative interaction, and the child anticipates a response. However it is perseverative, because the child repeats the speech act either immediately or shortly thereafter, even after receiving a response.

Example: A child with autism repeatedly says, "Watch Goof Troop", and becomes increasingly anxious and repetitive until someone responds to his perseverative utterance. Even though a response is given, the child continues to repeat the utterance.

Perseverative speech and incessant question asking may be related to the child's processing difficulties and/or his emotional state.

Example: A child with autism is very anxious about where he will be going after school as the destination changes frequently. He says repetitively throughout the day, "Go to grandmas? "

Perseverative speech/incessant question asking - Non-communicative purposes: Perseverative speech and incessant question asking may also be non-communicative in that the child repeats the utterances/questions without anticipating a response from someone. In this case the verbal repetitions may be calming or pleasurable to the child.

Example: A child says the words, "New Haven Coliseum", repeatedly throughout the day for no communicative purpose, yet exhibits a big smile. He also engages in repetitive motor movements while saying the word.

- **Does the child understand and/or use the following nonverbal social communication (discourse) behaviors?**

  - ✓ **Gestures:** Uses gestures such as pointing, "come here", gesturing for size and distance, etc.

  - ✓ **Eye gaze:** Establishes eye contact prior to initiating communication, looks at the speaker when listening, or uses "gaze checks" to signal attention to the speaker.

  - ✓ **Facial expression:** Understands and uses a variety of facial expressions for communication of emotions and feelings (e.g., reads and comprehends a look of

confusion on the face of a listener, and makes adjustments in his expressive communication to assist the person in clearly understanding his message).

- ✓ **Body language/posture:** Understands and uses appropriate body posture (i.e., faces the communicative partner) and body language to communicate various emotions and feelings (e.g., understands that a listener who has his arms crossed might be upset or anxious).

- ✓ **Physical space:** Understands and uses appropriate physical space when communicating (e.g., does not stand too close to the communicative partner, thus invading his personal space).

- ✓ **Vocal features:**

  Vocal volume: Some children with autism may have difficulty modulating their own vocal volume, either speaking too loudly or too softly. Additionally, they may not understand that volume can be part of a communicative message.(i.e. may not understand that "anger" may be expressed through vocal loudness).

  Inflection: Some children with autism speak in a monotone, rather than using varied inflectional patterns to communicate questions, emotions, feelings, etc.

  Rate: Some children with autism may speak very rapidly, thus decreasing the overall intelligibility of their speech.

- ■ **Does the child exhibit an understanding and/or use of the following verbal- social communication (discourse) skills?**

  - ✓ **Attending:** Does the child attend to the communicative partner? This is demonstrated by the child's ability to secure the attention of the listener prior to communicating.

    Example: A verbal child with autism begins talking to his teacher who is across the classroom, not realizing that he needs to call or secure the teacher's attention prior to communicating.

  - ✓ **Conversational turn taking:** The child can/cannot take part in communicative exchanges across several conversational turns as both speaker and listener. He asks contingent questions, allows the communicative partner to complete a conversational turn without interrupting, follows the communicative partner's turn with an appropriate utterance, and allows the communicative partner to take a turn in the conversation.

    Example: Some verbal children with autism engage in one-sided conversations. They speak at length about a specific high interest topic and do not engage in

actual conversational turn taking because they don't allow anyone else to speak. The listener never has a conversational turn.

- ✓ **Initiating conversations:** Is the child able to introduce or establish varied and appropriate conversations or topics with others?

Example: A child with autism uses the same joke when initiating conversations with others. Another verbal child with autism grabs toys away from other children and runs away, or pushes peers on the playground, because he is not able to appropriately initiate a conversation.

- ✓ **Maintaining conversations: The child** acknowledges comments made by others, questions appropriately, gives appropriate amounts of information, signals a topic shift, requests clarification, and responds to clarification requests. Some verbal children with autism have difficulty maintaining topics initiated by others, unless it pertains to a high interest area of theirs.

- ✓ **Terminating conversations:** Does the child end conversations appropriately? Often a child with autism will walk away when he is finished speaking, without terminating the conversation appropriately for the benefit of his communicative partner. The communicative partner is therefore unaware that the conversation has ended.

- ✓ **Seeking information from others:** Does the child ask questions of others to seek personal information such as, "Did you do anything fun over the weekend?" This can be a very difficult social communication skill for the verbal child with autism, because he does not understand that other people have different experiences from his own.

- ✓ **Breakdown and repair:** Due to their significant difficulties in successfully communicating, children with autism may experience frequent occurrences of communication breakdowns as both listeners (when asked to respond) and speakers (expressively communicating). For instance, some verbal children with autism have difficulty recognizing and interpreting nonverbal social communication behaviors such as looks of confusion or inattentiveness. Thus they do not communicatively "readjust", which can lead to a breakdown in communication. Therefore it is important to determine if the child has developed, or is able to use any communication repair strategies for both receiving and expressing communicative messages.

Example: The child says, "I don't understand", or, "Please say that again", when a breakdown occurs in receiving information.

Because verbal children with autism have some expressive communication skills, it is often assumed that they have adequate comprehension skills. Frequently this

is not the case. Poor understanding of verbal messages is a common source for communication breakdowns in verbal children with autism.

- ✓ **Figurative language:** Does the child understand metaphors, idioms, jokes, teasing and multiple-meaning words?

> **Example:** A verbal child with autism is told by his mother to "Stop back-talking me". The child responds, "I'm sorry Mom, I'll talk to your front." A middle school child with autism does not understand when students on the bus tell jokes and tease others. He interprets the teasing very literally, and thus becomes quite upset.

- ✓ **Social-language sensitivity:** This refers to the child's ability to regulate his communication relative to the particular listener. This includes the child's ability to:

  Adjust his speaking style or information to be shared, according either to the listener's age or familiarity. For example, a child with autism might give very complex information on the solar system to a 3 year old.

  Use appropriate politeness markers and forms such as "Please", "Thank you" "Excuse me", etc.

  Avoid socially inappropriate topics and remarks (i.e. "You have a big pimple on your face!").

- **Does the child communicate about past and future events?** An indicator of more advanced communication skills is the ability to use language to refer to past and future events (9). It is much easier for the child with autism to communicate about events in the immediate environment, because he can use the environment's visual context. Communication about past or future events places more symbolic and representational requirements upon the child, as he cannot use the immediate contextual environment for support (9). It is important to consider if there are discrepancies in the child's communicative abilities due to difficulties in relating information about past and future events as compared to relative ease when communicating about current events.

- **Does the child use his language to express and/or regulate varied emotional states? :** Although children with autism experience varied emotions, they may have difficulty identifying (understanding and labeling) these emotional states both in themselves and in others. Therefore verbal regulation of these emotional states can also be extremely challenging.

> **Example:** When experiencing great distress, a verbal child with autism continually asks others for monitoring of his emotional state "Am I under control yet?" He has limited awareness of when he is calm versus extremely upset. In another instance,

the child is laughing, inappropriately, when others are hurt, embarrassed, etc. Another child, with Asperger's Syndrome, physically manipulates his face when requested to exhibit various emotional states.

- **Does the child exhibit verbal reasoning skills?** Many verbal children with autism have difficulty using their language to **verbally problem-solve**, as this is a more abstract skill. Verbal reasoning skills can include:

  - ✓ **Making and explaining inferences:** The child is, or is not able to make inferences and explain them.

    Example: While looking out the window watching the rain fall, a child with autism is asked, "How do you know it's raining outside today?" The child responds, "Because I came on the bus", which the child rides everyday, rain or shine.

  - ✓ **Identifying problem situations: Can the child identify specific problems in his environment?**

    Example: The child with autism wants to swing on the playground, but the swings are broken. The child cannot recognize or identify the problem situation (broken swings). As a result, he becomes quite upset because he cannot swing.

  - ✓ **Identifying solutions for problem situations: Can the child resolve problems effectively in his environment?**

    Example: A middle school child with autism breaks his pencil in a regular education class. Instead of asking the teacher if he can sharpen his pencil, or asking a classmate if he can borrow a pencil, the child asks if he can return to his resource program classroom to get a different pencil. The child is able to tell the resource program teacher, "I broke my pencil", but still is not able to solve the problem effectively.

  - ✓ **Identifying causes for problem situations: Cause and effect is a difficult concept for children with autism. Therefore they are often unable to identify even relatively simple causes when problems arise.**

    Example: A child with autism has a flat tire on his bicycle from riding over broken glass. He is not able to identify what might have caused this problem situation (flat tire).

- **Can the child use his language to engage in narrative discourse skills?** Many children with autism have difficulty using their language to **retell** movies, books, T.V. shows, etc. in a **coherent** and **sequential manner**. Due to the features and characteristics of their autism, they may have overly focused on the

insignificant details, and missed the general theme of the story. Therefore when retelling the story, they tend to relate this trivial information, which makes it very difficult for the listener to understand the narration. They may also not understand and use basic language concepts, such as beginning, middle and end, needed to appropriately sequence information. In addition, the verbal child with autism may not yet be able to consider another person's perspective as different from his own. The child may leave out relevant background information when relating a story, because he does not understand that the listener needs that information for the story to make sense. The child will relate the story solely from his perspective, leaving out information which he already knows, but that the listener does not.

II Developing an Intervention Program for the Verbal Child with Autism:

After considering the above questions, an intervention program can then be developed to address the child's verbal communicative needs.

- **Addressing Unconventional Verbal Behaviors (UVBs):** After determining if the child is using UVBs for non-communicative and/or communicative purposes, the following intervention strategies can then be tried:

Non-Communicative Purposes:

- ✓ **Modify situations that might be stressful or anxiety producing for the child, thus resulting in the occurrence of UVBs.**

> **Example:** A child consistently exhibits an increase in UVBs during gym class, possibly because gym is a less structured environment with unclear expectations. The use of **visual support strategies** such as a gym class schedule, visual boundaries marked off with floor tape, etc., can increase the child's comprehension of this environment and thus reduce overall feelings of stress/anxiety. This may result in a decrease in the occurrence of UVBs).

- ✓ **Simplify verbal messages given to the child.** It is easy to overestimate a child's language comprehension abilities when considering the length and complexity of some echolalic utterances used by the child. Although the child may echo 8-10-word grammatically complex sentences, this is not a true reflection of the child's overall language abilities. In fact, the child's ability to comprehend language may be significantly impaired. Without realizing it, many people may use language too complex for the child with autism to understand. As a result, some children may show an increase in the occurrence of UVBs due to stress/anxiety associated with auditory information overload. Avoiding excessive talking and using simple, concrete sentences can assist the child in more readily understanding verbal messages, and thus decrease the occurrence of UVBs.

Communicative purposes:

- ✓ **Replace the UVB with a more appropriate <u>form</u> to express the same language function.** This could be accomplished in two ways: through providing a more appropriate verbal model, and by using visual support strategies, such as pairing a visual symbol with written words that the child can use.

> **Example:** A child uses this echolalic utterance to request to go to the bathroom: "Do you have to go to the bathroom, Mark?". The teacher provides a more appropriate verbal model for the child to echo, such as "I have to go to the bathroom", in order to demonstrate a more appropriate phrase. For another child, a picture symbol of a toilet with the written words, "I have to go to the bathroom," is positioned in close proximity to the child. Initially the child is physically prompted to pick up this card and "read" the words/picture to assist in making an appropriate verbal request.

- ✓ **Always respond to UVBs which are produced with communicative intent;** that is, when the child anticipates a response to his UVB utterance. If the communicative partner responds verbally, he should use language skills comparable to the child's true language level (i.e., a simplified verbal response) as well as emphasize a relationship between the child's UVB and environmental referents, such as objects, actions people (9).

> **Example:** A child uses the echolalic utterance, "Are you ready for some football?" (from the Monday Night Football theme song) to request to play football. The adult responds by saying, "Let's play football!" and hands the child a football.

Sometimes the communicative partner may need to respond to the child, using **a visual support strategy** that the child readily understands, rather than using only a verbal response.

> **Example:** A child with autism goes to different locations after school. He perseverates, stating "Go to Grandma's?" to ask about that day's location. The school staff develops a daily visual schedule representing the locations the child is scheduled to go to after school. When the child perseverates, "Go to Grandma?", he is referred to his visual schedule, which he readily comprehends.

- ✓ **Use alternative communication strategies to facilitate expressive communication.** The use of alternative communication strategies, such as picture communication symbols or written words, may help the child, who primarily uses UVBs for expressive communication, to communicate in a more appropriate manner. These visual alternatives also provide a "backup" in more stressful, anxiety-producing situations (9).

Example: A child uses "Want a snack?", throughout snacktime to indicate that he wants more to eat or drink. A picture exchange communication system is implemented to teach the child how to request specific snack items, rather than relying upon the generic echolalic utterance of, "Want a snack?".

- **Developing/Increasing nonverbal social communication (discourse) skills:** The child's ability to both understand and use various nonverbal social communication (discourse) behaviors should be addressed (See previous listing of various **nonverbal social communication behaviors)**. The following interventions strategies are suggested.

  - ✓ **Understanding nonverbal social communication behaviors:** Various strategies such as audio-taping, video-taping, role-playing, etc. can be used to increase the child's ability to understand nonverbal social communication behaviors. For example an audio-tape can be used to teach the child to initially recognize varied vocal volumes, rates of speech and inflectional patterns both in his own speech and in that of others. Once the child is able to recognize these vocal features auditorilly, a video-tape might be used as the next step to teach the child to understand what these vocal features might mean in different contexts. This would be helpful in teaching the child that he needs to use multiple cues to appropriately understand and respond to these behaviors. For instance a raised vocal volume can indicate anger, a warning for danger, a call for attention, etc. Additional contextual features, such as the immediate environment and the person's facial expression or body language, must also be taken into consideration to appropriately interpret the raised vocal volume.

  - ✓ **Using nonverbal social communication skills:** Strategies such as modeling, role playing, audio-taping, video-taping, Social Stories (5), Comic Strip Stories (4), etc., can be used to teach the child to use nonverbal social communication behaviors.

    Example: A child is taught to gesture, "come here", through modeling, role playing and video-taping. Another child is taught to identify and monitor different vocal inflections, both in his own speech and in others', through the use of an audio-tape. A Social Story (5) and video-taping can be used to teach a child to maintain acceptable physical space and exhibit appropriate body language when communicating with others.

    Visual support strategies can also be effective in teaching the child to use appropriate nonverbal social communication skills. One such strategy is to print nonverbal social rules on a card the size of a business card. The child keeps the card in his pocket for an easy visual-prompt reference in social situations: "Look at the person who I am communicating with"; "Stand about 2 feet away from the person"; "Am I talking too loudly or not loudly enough? ", etc.

- **Developing/Increasing verbal social communication (discourse) skills:** Typically children develop social communication skills with relative ease. However children with autism need specific and direct instructions in this area, as they do not usually exhibit a natural tendency to engage in social communicative interactions (11). Strategies to focus on increasing a child's verbal discourse skills should be implemented through specially designed activities, particularly those which are highly motivating to the child, as well as through feedback during naturally occurring conversational exchanges (9) & (11). For example if the child is highly interested in "Pokeman", set up activities to focus on social communicative interactions revolving around this theme. When teaching verbal social communication skills, it is important to consider the discourse skills of, and interests of typically developing peers, including topics of discussion. While " Pokeman" might be a high interest topic for a middle school student with autism, this would not be an appropriate theme to use to teach social communication skills with middle school peers. The following strategies can be used to **address various verbal social communication (discourse) skills:**

  - ✓ **Develop dialogue scripts (11):** Dialogue scripts are used to visually script for the child each communicative partner's "lines" for a communicative exchange

    Example: Partner 1: "Did you see the movie Chicken Run?" Partner 2: "Yeah, it was really funny. I liked the part when the chickens got in a big fight. What part did you like?" Partner 1: "I liked the part where the chickens were trying to learn how to fly".

    Depending on the individual child, dialogue scripts can be visually represented by written words, pictures, picture symbols, etc., Dialogue scripts can be used regarding normally occurring routines/activities, as well as in contrived situations designed to increase the child's social communication skills in a structured context (11).

  - ✓ **Engage in joint activity routines:** Joint activity routines are familiar highly predictable routines established with the child through repetition. These may include food-making routines, such as making Kool-Aid or chocolate milk; symbolic play routines involving play themes, such as eating in a restaurant, sports activities, etc. These routines also incorporate **familiar, repetitive communicative interactions,** providing an effective language learning strategy for children with autism (a strength feature of autism is a preference for routines (11)). Joint activity routines allow for the child and adult to engage in meaningful, natural social communicative interactions within the routine of an activity. An additional positive outcome in using joint activity routines is that they teach the child that he can share experiences with others through communication (2).

  - ✓ **Use of visual support strategies:** Various visual support strategies can be used to teach the child verbal social communication skills, as exemplified by the following:

Turn-taking cards: A visual turn-taking card is a card with "my turn" printed on it (a graphic symbol can also be used depending on the child's ability to understand various visual representation systems). The turn-taking card is passed back and forth between communication partners to visually represent each conversational partner's turn in the conversation.

Games: Social communication games can be created involving various social communicative directives printed on cards, such as, "Initiate a new topic", "End the current topic", "Ask someone a question related to the current topic", etc. The cards are then placed face down on the table and the students take turns drawing cards and following the communicative direction.

Topic ring: Various appropriate topics to initiate are printed with either graphics, or written words, on a collection of cards (approximately 3" by 2") attached by a metal ring (e.g., "What have you been doing this summer?"; "Have you seen any good movies lately?"). The child can keep these cards in his pocket or attached to his belt loop for a visual prompt regarding appropriate topics to initiate with others. Typically these topics have first been taught in a small group setting, prior to having the child use this visual support strategy in less structured settings.

"Conversational rules" business cards: Conversational rules, such as "Get the person's attention before speaking to him"; "Let the other person have a turn to talk", etc., can be written on small cards for the child to keep in his pocket. These cards serve as visual prompts to help the child engage in appropriate verbal social interactions.

- ✓ **Act out children's stories (11):** Familiar stories can be acted out using manipulatives such as puppets, flannel board props, etc. Initially the adult can teach the familiar story using the props. The child can then be encouraged to "act out" certain characters of the story, beginning with a character that has repetitive lines, if possible, such as the Big Bad Wolf in the "Three Little Pigs". Use of this strategy teaches the child verbal conversational turn-taking skills through an easily understood, visually motivating activity.

- ✓ **Encourage replica play (11):** Miniature toys such as dollhouses, farm sets, airport sets, etc. can be used to act out social communicative interactions. Initially repetitive and familiar communicative routines are taught. Gradually the familiar routine dialogues can be altered, to allow for more spontaneous, generative communicative interactions to occur.

- ✓ **Use of videos:** Videotaping social communicative interactions can be a very effective strategy to address social communication difficulties. The child can view videos of peers or others engaging in appropriate social communicative

interactions, as well as videos of himself in similar situations. Videos of the child with autism engaging in social communicative interactions are beneficial for increasing the child's self-awareness and self-monitoring skills.

- **Developing/Increasing communication about past and future events:**

  - ✓ **Establish familiar and recurring routines:** A child's ability to refer to past and future events occurs first within the context of familiar and recurring routines (9). The child is able to rely upon the support of the immediate, familiar, and highly predictable context to internally represent and recall events (9).

    Example: A routine is established in music: the group first plays instruments and then blows bubbles. At the end of the class, the teacher asks the child, "What did we do in music class?"

  - ✓ **Visual support strategies:** Various visual support strategies can be used to assist the child in discussing past and future events. The visual information which is required to communicate about past and future events provides support and assistance for the child when he may be experiencing difficulty recalling or representing events internally. The following visual support strategies can be used to provide assistance in relating past and future events:

    Schedules can represent daily activities and events.

    Calendars are used to represent special events or recurring events, such as swimming lessons, holidays, etc.

    Sequential representation of activities is a visual sequence of activities or steps within an activity. For example, the steps to complete "making Kool-Aid" can be visually represented to provide assistance in recalling what steps just took place (past event) and what steps are about to take place (future event).

    An exchange of information between home and school to visually represent past activities which took place at home or school.

- **Developing/increasing the ability to understand and express varied emotions and use of self-regulation:** The following strategies may be helpful for focusing on the expression and regulation of various emotional states in the verbal child with autism:

  - ✓ **Development of vocabulary to share emotional states and experiences with others:** The child must first learn the vocabulary for varied emotional states in order to be able to exhibit emotional self-regulation skills. Vocabulary focus should begin with basic emotions (happy, sad, mad, scared) and progress to more abstract emotions, such as embarrassed or proud. The child can be taught in a

variety of ways how to identify (recognize) and appropriately label varied emotional states first in others, and then in themselves. Photos, mirrors, video-taping and role playing are tools which can be used to teach the child these skills. For example a child looks at various photos of people expressing emotional states, and labels the emotions.

- ✓ **Using contextual information to assist in determining the emotional state of others, and why those emotions are being expressed.** After learning to label various emotional states, the child will need to be taught to use contextual information to assist in determining the emotional states being expressed by others, as well as why that emotional state is being expressed. For instance a child is running across the street without looking, and a parent yells in a loud voice, "Stop!" Due to the context, the parent is probably expressing the emotional state of being **scared,** rather than being **angry,** because she fears her child will get hurt. Video-taped clips of various movies or T.V. shows can also be used quite successfully in teaching the child these skills.

  Example: A 3-5 minute emotionally laden clip from the T.V. show, "Little House on the Prairie", is shown to the child. A discussion can then arise regarding what emotions are being exhibited by the characters, and the reasons why they are exhibiting those emotional states.

  Social Stories (4) and Comic Strip Conversations (4) have also proven quite successful in teaching the verbal child with autism these skills.

- ✓ **Teaching the child to identify why he is feeling various emotional states and the use of self-regulation strategies:** Difficult skills for the verbal child with autism is to understand (a) why he is feeling a certain way, and (b) how to use self-regulation strategies to help control the escalation of certain emotional states. It is important for the child to learn verbal strategies, which might prevent the escalation of negative emotions. For instance if the child is feeling anxious because he doesn't understand something, he should be taught to verbalize, "I don't understand". It is important to note that, although the child may be verbal, he may not possess the **language skills** necessary to spontaneously communicate emotional states. Strategies such as Social Stories (5), Comic Strip Conversations (4), role-playing and videotaping have been used quite successful in teaching children these skills.

- **Verbal reasoning:** To address any of the verbal reasoning difficulties listed under question number six in "Questions to Consider", the following teaching strategies can be used:

  - ✓ **Role-Playing:** Various problem situations, which the child has experienced, can be acted out through role-playing, or using puppets/dolls.

- ✓ **Visual support strategies:** Photos, pictures, and/or written information depicting problem situations can be used to teach the child to identify problem situations, possible causes and possible solutions.

  Example: A problem situation is depicted by a picture of a boy's bike with a flat tire lying on the ground, or with a large piece of glass lying on the road. A discussion then revolves around identification of the problem - a flat tire; causation for the problem - the piece of glass; and possible solutions.

- ✓ **Video-taping:** Videotaped clips of various movies or T.V. shows can be used quite successfully in teaching the child verbal reasoning skills.

  Example: A 3-5 minute clip from a movie is shown to the child. A discussion then arises regarding what problem situations were shown, possible causes for the problems and possible solutions.

- ▪ **Narrative discourse skills:** Use of visual support strategies, such as story mapping, can be used to focus on the child's narrative discourse skills. Even if the child is able to read (decode) at an advanced level, when initially teaching narrative discourse skills (retelling), it is better to use very simplified stories.

Conclusion: Although the verbal child with autism has acquired some verbal language skills, this does not always mean that he can effectively communicate at all times and in all situations. There are many factors which can adversely affect the child's ability to effectively communicate, including the immediate context or environment, feelings of stress or anxiety, unfamiliar communicative partners, etc. It is important for anyone who frequently communicates with the child to have a good understanding of the child's communicative strengths and weaknesses.

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Developing Expressive Communication Skills for Non-verbal Children With Autism

What is Communication?

Communication is a range of **purposeful** behavior which is used with intent within the structure of **social exchanges,** to **transmit** information, observations, or internal states, or to bring about changes in the immediate environment. Verbal as well as nonverbal behaviors are included, as long as **some intent, evidenced by anticipation of outcome** can be inferred. Therefore not all vocalization, or even speech, can qualify as **intentional** communicative behavior (7). This definition emphasizes that communication takes place within a social context. Speech/verbalization becomes communication when there is a desire or intent, to convey a message to someone else. Because social relations are a primary area of difficulty for children with autism, it is not surprising that effective communication is significantly impaired for these children. These two areas, communication and social skills, are tightly interwoven and interdependent. Therefore the development of communication skills cannot be the sole responsibility of the speech/language pathologist. While she may provide the "guide posts" and strategies, communication must be addressed continually by everyone who comes in contact with the child.

The two-fold purpose of this article is to provide:

I Key questions to consider in order to determine the child's current communication abilities;

II Information regarding the development of a communication intervention program based on the child's communication needs.

I Key questions to consider in order to determine the child's current communication abilities.

In order to develop an appropriate communication intervention program for the non-verbal child with autism, it is essential to determine the child's current communication abilities. The following are important questions to consider in order to make this determination:

- **Does the child exhibit intentional communication?**
  It is important to determine if the child is exhibiting communicative **intent.** Intent to convey a message distinguishes communication from non-communicative speech, verbalizations and gestures. When the child **anticipates an outcome** from his communication, regardless of the form (i.e.: speech, gesture, etc.), he demonstrates intent.

Example: A parent responds to a crying child. At this point, the child has not exhibited communicative intent. However if the child continues crying, looks at the parent, and then looks at a desired object, **intent to communicate** has been demonstrated. Through crying, looking at the adult and looking at the object, the child is anticipating that she will obtain the wanted item.

Communicative intent is indicative of the child's **desire to communicate**. In turn, the desire to communicate is inextricably tied to the development of social relationships, an area of significant difficulty for children with autism. Because these children are often unaware of, or may be uninterested in, others, communicative desire or intent is often absent. They do not understand that they can use communication to get something, or to get someone to do something for them. They attempt to get their needs and wants met by themselves in any way possible, and may exhibit distress when unsuccessful. When interacting with a child with autism, it is important to be able to distinguish this distress from a desire to communicate, in order to determine if the child is exhibiting communicative intent.

- **In what way does the child communicate?** A child with autism, who demonstrates intentional communication, can do so using various forms or modes. It is important to consider which of the following communication forms are used by the child:

  - ✓ **Motoric:** Direct physical manipulation of a person or object (e.g., taking a person's hand and pushing it towards a desired item; giving a cup to a caregiver to indicate, "Want milk").

  - ✓ **Gestural:** Pointing, showing, gaze shift (e.g., a child looks or points to a desired object and then shifts his gaze to another person, thereby requesting that object (i.e. the communicative act of requesting).

  - ✓ **Vocalization:** Use of sounds, including crying, to communicate (e.g., a child says "ah-ah-ah", to draw another person's attention to him).

  - ✓ **Sign language:** Communication with a conventional sign language system.

  - ✓ **Using objects:** The child hands an object to another person to communicate (e.g., the child hands a cup to his parent to indicate "drink").

  - ✓ **Using photo:** Use of two-dimensional photographs to communicate (e.g., the child points to or hands photographs of various objects, actions or events to communicate his desires).

  - ✓ **Pictorial:** Use of two-dimensional drawings which represent objects, actions or events (e.g., a child hands a line drawing of a "swing" to his parent to indicate that he wants to swing).

- ✓ **Written:** Use of printed words or phrases to communicate (e.g., the child writes, "too loud" to indicate that the noise level in the environment is bothering him).

In addition, it is important to determine if the form of communication used by the child varies, depending upon the context and situation or the type of communication desired. For example, the child may use a motoric mode of communication (taking a person's hand and pushing it towards a desired item) to request an object. However, the same child may use a vocalization (crying) to reject an item, or to protest.

- **How does the child <u>use</u> his language to communicate?** Research has shown that the child with autism uses his language to communicate for a narrow or restricted range of purposes or functions (7). There are three primary functions or purposes of language: **behavioral regulation**, **social interaction** and **joint attention** (7). It is important to note that all three communicative functions are developed by approximately age 12 months in typically developing children, and are listed in hierarchical order from least social to most social (6):

  - ✓ **Behavioral Regulation:** This is the easiest and earliest emerging communicative function (6). The child uses communication to request / protest, or satisfy his immediate physical needs. Behavioral regulations include:

    Requesting objects
    Requesting actions
    Requesting assistance
    Protest/reject object
    Protest/reject action

  - ✓ **Social Interaction:** Types of communicative behaviors that are used to initiate, respond to, maintain, or terminate social interactions. These social communicative interactions include:

    Requesting social routines (e.g., <u>requesting</u> to play "peek-a-boo" and "patty-cake" games);

    Requesting comfort (e.g., <u>requesting</u> to be held when distressed);

    Greetings (e.g., "Hi" / "Bye");

    Calling attention: (e.g., child calls attention to self through calling others);

    Showing off (e.g., child exhibits "show off" behaviors during games, such as peek-a-boo, dress up, etc.).

- **Joint Attention**: This is the most difficult communicative function for children with autism spectrum disorder to develop (6). These communicative acts are used to

direct another's attention to an object, event, or topic of a communicative act. Joint attention communication acts include:

- ✓ **Commenting** (e.g., a baby looking at his parent and pointing to the sky at an airplane overhead. The child is **not requesting** the airplane but **commenting** about it, drawing another person's attention to this object);

- ✓ **Requesting information from others** (e.g., the child asks another "Where did you go?").

- ✓ **Giving information to others** (e.g., the child gives information about something that is not obvious or known to another person: "I went to the fair last night");

- **Is there a reason for the child to communicate?** It is important to determine what motivates the child before developing a language intervention plan. As in typical child language development, children with autism will generally not engage in communicative interactions unless they are motivated to do so. Therefore, if the child loves swinging, or jumping or playing with string or particular foods, then these are the actions/objects that should be part of an intervention plan. Incorporating motivating activities and objects is vital when helping children develop **communicative intent / desire**. Teaching a core of early developing vocabulary words is merely teaching the child with autism to label and does not constitute teaching him to **communicate.** By initially using motivating actions and objects, the child will truly learn the purposes or functions of communication. Once the child has learned this, vocabulary can then be expanded through a variety of teaching strategies.

- **Does the child initiate and/or respond to communicative interactions?** Communication implies being both an **initiator** of, and a **responder** to information while engaged in a **social situation** (4). Therefore it is important to determine if the child with autism is able to understand, as well participate in, **both** roles in communicative interactions.

Example: A non-verbal child might **initiate** a communicative interaction with his parent by vocalizing to call attention, and then pointing to request a desired item. The same child might respond by pointing to a picture of a desired food item when his parent asks, "What do you want to eat?"

Children with autism typically have difficulty initiating communicative interactions with others, and tend to be better at learning to respond (4). When determining if the child initiates or responds to any communicative interactions, it is important to ascertain the particular contexts/settings, the manner or form of communication and the communicative purpose or function.

Example: A child finds his mother in another room, takes her hand and leads her into the kitchen, where he places her hand on the refrigerator handle. The mother opens

the refrigerator and begins taking items out one by one until the child indicates by facial and body expression which item he wants. In this example the child **initiated** communication in the kitchen (context) to **request desired food** (purpose), by using a **motoric and gestural form of communication.**

- **Is the child able to use "repair" strategies when communication breakdowns occur?** Due to their significant difficulties in successfully communicating, children with autism may experience frequent occurrences of communication breakdowns as both speakers (expressively communicating) and listeners (when asked to respond). Therefore it is important to determine if the child has developed, or is able to use, any communication repair strategies for both receiving and expressing communicative messages**.**

  - ✓ **Communication breakdowns as a listener (receiving information):** Because children with autism have significant language comprehension difficulties, many communication breakdowns as listeners may occur. These breakdowns transpire when the child does not understand, or responds inappropriately to verbal information. A **communication repair strategy** that can be used in these situations is to present the misunderstood information **visually** (children with autism generally process visual information more easily than verbal information. In this way one can determine if the child is not responding appropriately (communication breakdown), either because the information is given verbally, or he doesn't understand the information whether verbally or visually presented. Many children with autism can easily be mislabeled as being **non compliant** when they do not respond to verbal information. Careful consideration should always be given to the child's ability to comprehend and respond to verbal information (as opposed to visual information) in determining the reason for the breakdown in the communication.

  - ✓ **Repair strategies for communication breakdowns as a speaker (expressing information):** When breakdowns in expressive communication occur, it is important to understand whether the child exhibits any of the following repair strategies:

    Repeating the same communicative attempt: Being persistent. For example the child repeatedly points to a shelf out of reach, as the adult takes each item off of the shelf and shows it to the child to see if it is the desired item.

    Showing the person what they are trying to communicate: a child might take an adult to the refrigerator, for example, open the door and reach towards a shelf where the milk is located, demonstrating that he wants milk.

Use of an alternative way to communicate the same message: In the above example, if the child points to the shelf several times, but the adult still does not understand (a breakdown in communication), the child might then choose a picture from his communication book to clarify his communicative request, thus repairing the breakdown in communication.

II Developing an Intervention Program for the Non-Verbal Child with Autism:

After considering the previous questions, an intervention program can then be developed to address the child's communicative needs at this preverbal level. It should include the following essential communication elements:

- **Developing communicative intent:** Following the establishment of such pre-linguistic skills as attending and maintaining eye contact, a non-verbal child with autism can be taught communicative intent in several ways:

  - ✓ **Cause/effect reasoning:** Cause/effect reasoning helps develop communicative intent, because it teaches the child that doing one action can cause another to happen. It is important for the child to develop an understanding of cause/effect reasoning through a variety of experiences, such as playing with pop-up/musical toys that are activated by the push of a button, climbing up on a chair to get a cookie off of the counter, being rewarded for specific desired behaviors, etc.

  - ✓ **Joint activity routines:** Highly predictable routines including **movement routines**, such as blowing bubbles, blowing up a balloon and letting it go, "Here Comes the Spider" tickle game**, food making routines**, such as making Kool-Aid or chocolate milk, **play routines** with simple toys, can establish **anticipatory behaviors** in the child. The child's ability to **anticipate** the outcome of these **highly predictable** joint activity routines ensures an understanding of cause/effect. Joint activity routines are a highly effective teaching strategy for children with autism, as they provide learning through a strength feature of autism, a preference for routines. Joint activity routines allow for the child and adult to engage in meaningful, natural social communicative interactions within the routine of an activity. Another positive outcome in using joint activity routines is that they teach the child that he can share experiences with others through the communication embedded in these routines (2).

  - ✓ **Delay responses to anticipated wants/needs:** At times it may be easy to anticipate and respond to the wants and needs of the non-verbal child, even though the child may not exhibit <u>intentional</u> communication. However, because the goal of the intervention program is to develop meaningful communication skills (i.e. purpose, intent, and desire), it is important to remember to **expect** the child to communicate. Even though the adult may know what the child wants, it is important to delay meeting the child's wants and needs so that he is placed in situations which require him to interact with others to get his wants and needs met.

- **Establishing an efficient and appropriate way (form) to communicate:** After determining the child's form of communication, (i.e. motoric, gestural, etc.) it is important to consider if a more efficient form can be used to express the same functions (uses) of language. For example: if the child jumps up and down excitedly in the general area of a desired item, a more efficient way to "request" desired items should be considered. This piece of the intervention process is two-fold: a) determining which visual representation system is best understood by the child (i.e.: objects, photographs, realistic drawing, line drawings, written words); and b) using this information to determine an appropriate alternative communication system for the child. The following visual representation systems are listed in hierarchical order, from concrete to more abstract.

  - ✓ **Visual Representation Systems:**

    Real objects: The child uses various real objects to communicate (e.g., gives his parent shoes to indicate that he wants to go outside).

    Miniature real objects: The child understands that a miniature object represents the full-sized object (e.g., a miniature cup is representative of a real cup).

    True Object Based Icons (T.O.B.I.s): A T.O.B.I. can be a line drawing, scanned photograph, etc., which is cut out in the actual **shape** or outline of the item it represents. Symbol **shape,** which the child can both <u>see</u> and <u>feel</u>, appears to assist the child in more readily understanding a 2-dimensional representation system (1). T.O.B.I.s tend to be somewhat larger than typical 2-dimensional visual representation systems and when initially introduced, may be 3 inches in size or larger (1).

    Photos: The child understands that a photograph of an action or object is representative of the real object, action or event.

    Real drawings: The child understands that a real drawing of an action or object is representative of the real object, action or event.

    Line drawings: The child understands that a simple line drawing of an action or object is representative of the real object, action or event.

    Written word: The child understands that the written word is representative of the real object, action or event. The written word should accompany all visual representation systems, as many children with autism, even at the non-verbal level, exhibit emerging literacy skills.

- ✓ **Alternative Communication System:** The following are various alternative communication systems that may be tried with the non-verbal child with autism. (list does not represent any type of hierarchy):

  Gestural: This is an alternative communication system that is important to establish in the non-verbal child with autism. It does not require any type of visual representation system. A gestural system can include pointing and/or looking to desired items: the child shaking his head "no"; pushing something away to protest or reject; and hand-waving for greetings.

  Object exchange: An object exchange system is based on the child giving an object to another person to indicate that he wants something. That is, the child exchanges objects **to request**, one of the functions of communication. For example if the child wants more milk, he gives his cup to someone to indicate this request.

  Picture point system: This system requires the child to point to various visual representation systems to communicate. **Visual representation systems that can be used:** photos, real drawings, line drawings, written words.

  Picture Exchange Communication System (PECS): PECS allow the child to spontaneously initiate a communicative interaction by actually exchanging, or giving a visual representation system to another person (3). In this alternative communication system, the child quickly learns the cause and effect of communication. In addition, by physically exchanging a visual representation system with another person, the child develops a concrete understanding that communication is an actual exchange of information between two or more people (e.g., the child hands a picture of a swing to an adult to indicate that he would like to swing). The PECS program is composed of various phases or levels, starting with simple, concrete communicative exchanges and moving to more abstract communication. For example, the beginning child starts very concretely exchanging one item to make a request. As he advances, his exchanges become more communicatively complex, developing higher level social communication functions, such as commenting. **Visual representation systems which can be used:** miniature objects, T.O.B.I.s, photos, real drawings, line drawings, written words.

  Electronic/alternative keyboards or computers: Some non-verbal children with autism exhibit reading and writing skills to effectively communicate as both speaker (expressively) and listener (receptively). They can use various electronic or alternative keyboards for communication (e.g., a child can type out a communicative request to

"listen to music" on an AlphaSmart, an electronic keyboard). **Visual representation system which can be used:** written words.

Voice Output Communication Aids (VOCAs): Using VOCAs, non-verbal children with autism can express themselves by pushing a button, which plays a pre- recorded message on a communication device A visual representation system, which the child understands, should be positioned on the "button(s)" of the voice output communication aid/device. Many children with autism spectrum disorder are motivated to communicate by use of these devices, particularly by the auditory feedback immediately given as their communicative message. Use of VOCAs have proven effective in teaching children the cause/effect of language through activities which are stimulating to them (e.g., Use of the Big Mack for a child to request highly desired sensory activities such as "chase me"; "tickle me"; "hug me"; "listen to music").

While VOCAs have many positive qualities, caution should be taken when using them to **initially** teach communication functions / purposes. VOCAs can be overly motivating and stimulating for some children. In these cases, the VOCAs tend to function as repetitive and stimulating high interest item rather than as communication devices. The child will repeatedly push down the button(s) on the device for the self-motivation that he receives from the auditory feedback, rather than for the cause/effect of the **communicative** message. When this occurs, a different alternative communication system is suggested to **initially** teach the child the purpose of communication. After the child learns the purpose of communication, use of a VOCA might then be explored. **Visual representation system which can be used:** real objects, miniature real objects, T.O.B.I.s, photos, real drawings, line drawings, written words.

- **Expanding the range of communicative functions or purposes:** It is important to teach the child to communicate for a **variety** of purposes. After determining how the child is **using** his language to communicate, intervention activities can be developed to expand the child's communicative purposes. Joint activity routines, as well as play activities, provide natural language-learning opportunities to expand how a child **uses** his language to communicate. These activities should be developed, based on the individualized motivations, needs, and learning strengths of the child (7). The following list describes communication opportunities that should be made available for the child with autism to develop and expand in relation to the three primary language functions: behavioral regulation, social interaction and joint attention(7):

  - ✓ **Behavioral Regulation:** This is the earliest emerging language function where the child uses communication to regulate his physical needs. To develop communicative behavioral regulations, the intervention program includes:

Opportunities to request food or objects;
Opportunities to make choices among alternatives;
Opportunities to protest actions or to reject objects;
Opportunities to request cessation of an activity;
Opportunities or needs to request assistance.

- ✓ **Social Interaction:** These are communicative behaviors used to initiate, respond to, maintain or terminate social interactions. To develop this communicative function, intervention should include:

  Opportunities to request social games or routines, or continuation of games or routines;

  Opportunities to practice greeting behaviors verbally or non-verbally;

  Opportunities (or needs) to bring attention to self, either verbally or non-verbally, through calling others or requesting comfort;

  Opportunities to "show off" during games (e.g., hide-and- seek, peekaboo, dressing up, etc.).

- ✓ **Joint Attention:** This is the most difficult communicative function for children with autism to develop. It refers to the child's ability to direct the attention of another person to the object, event or topic of communication acts, including commenting, requesting information and giving information. Intervention programs should include:

  Opportunities (or needs) to give or transfer objects, or to follow another person's focus of attention;

  Opportunities (or needs) to use gestures or vocalizations to bring attention to objects or events (e.g., looking at books, going to the zoo, looking out a window, etc.);

  Opportunities to comment on events introducing novelty and change (e.g., taking new toys out of a cloth bag, performing interesting actions on objects);

  Opportunities or needs to request information or clarification (for children with high-level abilities).

- ▪ **Motivation to communicate:** Children with autism are not always motivated by the elements that motivate typically developing children, such as intrinsic satisfaction or social praise. Therefore, we need to assess on a regular basis what is motivating to the child through "reinforcement assessments". Parents can provide much of this

critical information. Motivating activities, objects, etc. can serve as a starting point in teaching the child the functions of communication.

Example: It is determined that a child is highly motivated by being bounced on a therapy ball. The therapy ball is then used to establish a familiar joint activity routine, the purpose of which is to teach the child communicative intent, using any form of communication - gestures, physical manipulations, pictures/line drawings, etc.

- **Developing the ability to both respond to and initiate communication:**

  - ✓ **Responding to information**: How the child processes information must be considered prior to teaching him to respond to communication. If the child's ability to process auditory information is poor, he will have significant difficulty learning to respond to verbal communication. In turn, if the child's ability to process visual information is strong, this processing mode should be used in teaching him to respond appropriately to communicative interactions. The child should be taught to respond in natural occurring situations through a processing channel which he easily understands.

    Example: During free play, a communication partner presents a visual choice card to the child that shows two pictures. The partner then verbally prompts with "What do you want to do?". The child can appropriately respond to the question by pointing to or selecting his visual choice).

  - ✓ **Initiating communication:** Communicative situations should be created, using things which are motivating to the child in an established familiar joint activity routine (6). Once the child anticipates a predictable pattern of response in the familiar joint activity routine, the routine is disrupted to create an incentive for the child to initiate a communicative interaction, in order to re-establish the routine.

    Example: A familiar joint activity routine of blowing bubbles has been established. The communication partner disrupts the routine by closing the bubble lid very tightly and placing the bubbles in front of the child. An incentive is created for the child to initiate a communicative interaction for "more bubbles".

    The Picture Exchange Communication System (PECS), which was developed to teach the child to **initiate** spontaneous communicative interactions with others, is another method for teaching the child this communication skill.

- **Developing strategies to repair breakdowns in communication:** Communication breakdowns can occur for the non-verbal child with autism in both receiving and expressing communicative messages.

- ✓ **Breakdowns in receiving communication:** The following strategies can be used to prevent breakdowns, or assist the child in repairing breakdowns in communication when receiving information (6):

  Secure the child's **attention prior to communicating** by calling his name, or by physically prompting (for example, touching his shoulder);

  Monitor signs of comprehension (child performs appropriate action or attempts to respond expressively);

  Use simple, short sentences;

  Reduce the amount of auditory information given;

  Give the child **time to respond** before repeating, due to the possibility of delayed auditory processing;

  Use of **various visual support strategies** to ensure that the child understands the message given.

- ✓ **Breakdowns in expressive communication:** The child with autism can be taught "repair strategies", which will assist him in successfully repairing breakdowns in expressive communication. The child must first demonstrate intentional communication prior to teaching repair strategies (6). Strategies for repairing breakdowns in expressive communication include:

  Persistence: teaching the child to repeat his communicative attempt, if the communicative partner does not initially understand. This skill must be taught through the use of highly motivating activities, which will keep the child's interest in pursuing the communicative interaction, even though a breakdown has occurred. (For example, if the child is not overly motivated to communicate that he wants to go to the bathroom, he will not be motivated to persist in repeating this message once a breakdown in communication occurs). After the child communicates an unclear message, the communicative partner can respond with, "I don't understand", or, "Tell me again" accompanied by an appropriate gesture (shoulder shrug). The child should be encouraged to repeat the message, given minimal prompting if necessary.

  "Show me": after the child learns to be persistent, he should then learn to respond to "show me" and then be given an appropriate language model if this is successful.

  Example: A child approaches an adult, jumps up an down, vocalizes loudly and looks at a specific area of the classroom. The adult verbalizes "Show me", points to the area of the classroom indicated by the child, and

then leads the child over to that area to encourage them to "show".

Alternative communication systems: the child should be encouraged to use alternative communication systems if appropriate

Example: A child approaches an adult, vocalizes loudly and points to a shelf out of reach. The adult encourages the child to "use your words" which is a verbal prompt for the child to use his PECS communication book to communicate.

Conclusion: Having a good understanding of a child's current level of communicative competence is the first step in developing an appropriate communication intervention program for the non-verbal child with autism. Alternative communication systems for these children must also be considered. At this preverbal level of communicative competence, it is critical for the child to have some way to effectively communicate, rather than focusing solely on the development of verbal skills. These skills (i.e. learning to speak) may develop in conjunction with the use of alternative communication systems.

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