

## Behavioral Interventions for Students with Autism: The ASSERT Model

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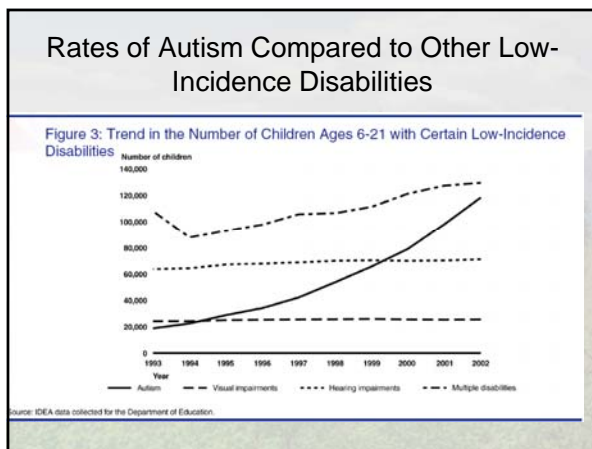
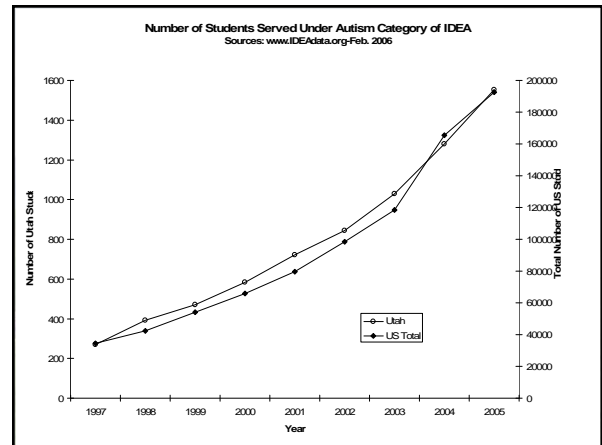

### What is ASSERT?

- The Autism Support Services: Education, Research, and Training (ASSERT) program is a collaborative effort between the Department of Special Education and Rehabilitation and the Center for Persons with Disabilities at Utah State University that was founded in 2003 to address the needs of students with ASD in Utah and the surrounding region.
- ASSERT staff:
  - Provide effective educational and behavioral early intervention to children with autism;
  - Conduct research to improve educational and behavioral interventions for children with autism;
  - Operate a model training classroom for education professionals throughout the intermountain region.

### Autism: Still The Fastest Growing Disability Category in the U.S.

- Autism is a severe developmental disability, marked by impairments of communication and social/emotional functioning that is often accompanied by significant behavior problems and restricted patterns of interest
  - 1 in 149 births (1 in 133 in Utah)
  - equally distributed across races
  - 4:1 ratio of males to females (7:1 in Utah)
  - It is the fastest growing disability category in the US
  - Since 1998, Utah's school enrollment of children with autism has jumped 900% to 1,799 students in 2005-2006.

Sources: Centers for Disease Control (CDC), 2007 (<http://www.cdc.gov/mmwr/>), Utah State Office of Education



### Autism: Prevalence

- There is considerable disagreement between researchers about whether the increase in the number of children diagnosed with autism represents a true "epidemic" of autism or whether improvements in diagnostic procedures and public awareness can account for the observed change in the numbers
- It is probable that the answer lies somewhere between the two extremes
- Irregardless of the answer to this question, the fact remains that more students with autistic characteristics are entering the public school system

### Levels of Scientific Evidence

- What constitutes “research”? What kinds of research must be done on a particular technique before it is considered “research-based”?
- Generally speaking, controlled, experimental research needs to be conducted multiple times in order for a technique to be considered “research-based”
- Case studies and anecdotal reports are not sufficient for establishing an approach as research-based
- Group design studies using control groups or multiple single-case experimental design studies are necessary

### Research on Early Intensive ABA

- While researchers have thus far been unsuccessful in identifying the cause of autism, they have developed effective methods for treating the disorder
- Research has shown that while children with autism do not learn readily from typical educational environments, they can learn a great deal when the environment is appropriately constructed
- Research has consistently demonstrated that successful treatments for children with autism are those based on principles of Applied Behavior Analysis (ABA)
- Research has also shown that behavioral interventions are most effective when they are intense (30-40 hours per week) and started at a young age (3-5 years of age)
- These same strategies, however, have been used successfully with older students as well

### What is “ABA”?

- Over the past 50 years, scientists have demonstrated through countless research studies that the environmental events that surround behavior directly impact on how likely that behavior is to be repeated in the future
- Behavior Analysis is the name of the scientific field that studies behavior and the environmental events that influence it
- Applied Behavior Analysis (ABA) is the branch of the field that takes basic behavioral principles learned in the research laboratory and applies them to improve the human condition

### Basic ABA Principles

- Research tells us that the consequences produced by behavior have a dramatic impact on future rates of behavior
- The behavioral process by which behavior is strengthened is called *reinforcement*
- *Positive Reinforcement* is the behavioral operation of providing a consequence following a behavior that results in that behavior being more likely to occur in the future
- In discrete trial teaching, we provide the student with repeated opportunities to receive positive reinforcement for engaging in desired behaviors, thus making these behaviors more likely to occur in the future
- Undesired behaviors are not followed by reinforcement, making these behaviors less likely to occur in the future.

### Research on Early Intensive ABA

- Over 550 studies published from 1960-1995 (Matson et al., 1996) document the effectiveness of ABA techniques for building skills in individuals with autism
- Documentation of the effectiveness of a comprehensive early intensive ABA program in a controlled study with long-term follow-up by Lovaas (1987) and McEachin, Smith, & Lovaas (1993)
- Multiple partial and systematic replications of Lovaas model have taken place since 1993
- Various state and federal agencies have acknowledged the proven effectiveness of EIBI (New York State Dept. of Health, Maine Administrators of Services for Children with Disabilities, U.S. Surgeon General Report on Mental Health, 1999)
- Additionally, review panels of professional associations such as the American Academy of Child and Adolescent Psychiatry, the American Academy of Neurology, and the American Academy of Pediatrics report that EIBI is highly effective in meeting the needs of children with autism

### Are other treatments effective?

- To date, no other treatment approaches have been demonstrated, through controlled research, to produce comparable student gains to early intensive ABA approaches
- This has not stopped the development of “fad” interventions (e.g., Secretin therapy, sensory integration therapy, megavitamin therapy, special diets, holding therapy, dolphin therapy, mercury detoxification, etc.) and,
- other systematically designed interventions (e.g., TEACCH, Floortime, etc.) that either have not been subjected to controlled research or have failed to produce comparable effects to ABA

### Characteristics of a “State of the Art” ABA Program for Children with Autism

- Curriculum-based assessments are used to create an individualized instructional and behavioral program for each student that addresses all behavioral deficits and excesses (e.g., social, communicative, academic, behavioral, etc.)
- Complex skills are broken down into their component parts and simple skills are built into more complex ones
- Students are provided with many learning trials to practice emerging skills and these skills are practiced in both structured and unstructured environments
- Multiple research-based instructional techniques are used to provide learning trials (e.g., discrete-trial teaching, incidental teaching, prompting and prompt fading procedures, social scripts and script fading procedures, naturalistic language techniques, etc.)

### Characteristics of a “State of the Art” ABA Program for Children with Autism

- Correct responses are followed by reinforcers that have been systematically identified and are appropriate for the individual at that time
- Over time, primary reinforcers (e.g., edibles) are faded and replaced with social reinforcers and access to age appropriate play materials
- Students are taught over time to tolerate delays before receiving reinforcement (e.g., using simple token systems to gain access to preferred toys/games)
- Emphasis is on making the learning process enjoyable for the child
- Curriculum decisions are based on objectively defined and measured student data

### Characteristics of a “State of the Art” ABA Program for Children with Autism

- Aberrant behavior is addressed through functional assessment and intervention techniques (i.e., aberrant behavior placed on extinction and replacement behavior taught and reinforced)
- There is no “down time”. Instruction is embedded into every activity during the day
- Steps are taken to promote generalization and maintenance of student skills including having the student regularly receive instruction from multiple instructors and in multiple environments
- Parents are taught how to address aberrant behavior and support emerging appropriate behavior in the home
- The program is directed by individuals with graduate training in behavior analysis and specific training and experience in behavioral interventions for students with autism (we now have international certification for behavior analysts: [www.bacb.com](http://www.bacb.com))

### Characteristics of a “State of the Art” ABA Program for Children with Autism

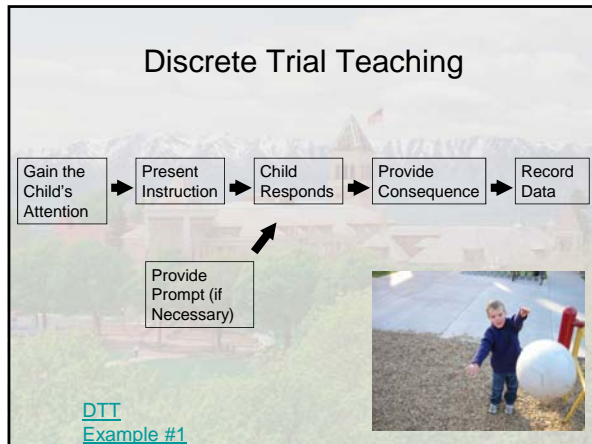
- The overall emphasis is on teaching the child to learn from his/her natural environment (like typical kids do)
- As the student develops the necessary skills, instruction is gradually changed from strict, intensive 1:1 instruction to settings and instructional styles that approximate typical educational environments (e.g., small- and large-group instruction, social and delayed reinforcement, fewer specific instructions)
- As the student develops the necessary skills, he/she engages in structured social/play activities with typically developing peers
- When students are transitioned out of intensive ABA programs into traditional regular or special education programs, the transition is planned, systematic, and takes place over time in response to the student’s needs

### ABA-Based Teaching Techniques

- Discrete Trial Teaching
- Social Scripting/Script Fading
- Activity Schedules
- Mand Training
- Video Modeling
- Naturalistic Teaching Techniques

### Discrete Trial Teaching

- Discrete Trial Teaching (DTT) is the most common ABA-based treatment approach for children with ASD
- In the DTT approach, students are provided with many repeated opportunities (called learning “trials”) to practice specific skills and receive direct feedback from an instructor
- Instruction is rapidly paced and each student usually has their own individual instructor
- When students need extra help to perform specific learning tasks, the instructor prompts, or cues, them to make the correct response and then provides a positive consequence
- These prompts are then removed over time so that the student can perform the skill independently
- DTT has been repeatedly shown to be an effective teaching technique for students with ASD and can be used to teach many different kinds of skills



### Appropriately Gaining the Child's Attention

- Before giving a child an instruction, it is important to gain the child's attention.
- The best indicator that a child is attending is when he/she is looking you in the eyes.
- The child's attention can be gained by doing a variety of things, including:
  - saying the child's name (however, it is important not to say the child's name on every trial or the child may stop paying attention when his/her name is called)
  - making some other sound that attracts the child's attention
  - by placing open hand at the side of their head to block visual stimuli
  - by gently touching the child
  - by waiting for the child to naturally make eye contact with you [Video example](#)

### Provide the Instruction (S<sup>D</sup>)

- After you have gained the child's attention (you have eye contact), the next step is to provide the instruction (e.g., "Touch your arm.", "What is your name?", "How do you spell 'bat'?").
- How you state the instruction can directly influence whether or not it will be followed.
- The instruction should be clear, concise, and given only once.
- It should be stated in a clear tone of voice without excess emotion or inflection.

### Provide the Instruction (S<sup>D</sup>)

- If the instruction contains too many words, the child may not attend to the ones that are important. Here is an example of a poor instruction: "John, will you please stop wiggling and come over here and sit down so that daddy can button up your shirt?" Here is an example of a good instruction: "John, sit down."
- When a child is first learning to respond to a particular instruction, it is important to keep the wording the same each time it is given.
- Once the child has learned the response and can reliably produce it when the instruction is given, the wording can be changed and varied from trial to trial to promote generalization.

### What an S<sup>D</sup> Might Look Like

- An S<sup>D</sup> can take many forms
  - Verbal statement for the child to do something (e.g., "do this," "put it in," "sit down," etc.)
  - Gesture (e.g., pointing to a chair, pointing to items on the floor that need to be picked up, head nod towards a person, etc.)
  - Visual (e.g., photos, drawings, objects, text, etc.)

### Prompting

- Sometimes, when a child is learning a new response, it may be necessary to give the child extra help in addition to the instruction in order for the child to correctly perform the response.
- This extra help is given in the form of *prompts*.
- A prompt is given *before* the child initiates his/her response.
- A prompt can be either verbal (e.g., saying the correct response so that the child can repeat it), physical (e.g., guiding the child's hand to the appropriate object), or gestural (pointing to the correct item).
- [Prompting video examples](#)

### Prompting

- A general rule is to provide the minimum amount of prompting that will allow the child to make the correct response.
- As the child begins to learn the response, prompting should be decreased so that the child will respond on his own rather than relying on help from the instructor.

### The Child's Response

- Following the instruction (and prompting, when necessary) the child will respond in one of three ways: correctly, incorrectly, or no response.
- The way that the child responds will dictate what type of consequence the instructor provides.
- As a general rule, the child should be allowed five seconds to initiate a response.

### Provide Appropriate Consequences

- Following the child's response (or lack of response) the instructor provides a consequence.
- If the response is correct, the instructor should immediately provide enthusiastic verbal praise in combination with other identified reinforcers (e.g., hugs, high-fives, candy, tickles, access to a preferred toy).
- Praise should always follow a correct response and the amount and type of other reinforcement provided will vary depending on the needs of each individual child.

### Positive Reinforcement: Our Primary Teaching Tool

- Positive reinforcement is our most powerful tool for changing behavior
- In addition to being highly effective, it has many advantages:
  - People like having their behavior changed via positive reinforcement
  - They also like the individuals that give them positive reinforcement
  - If children are receiving enough positive reinforcement for good behavior, problem behaviors will often decrease

### Guidelines for Using Positive Reinforcement Effectively

- Positive reinforcement is most effective when it is delivered immediately following the behavior we are trying to increase
- Use the most powerful reinforcers for the most important/difficult behaviors
- Praise/acknowledgement is only a positive reinforcer if it increases the behavior it follows
- Reinforcement is also most effective when it is varied-don't just deliver the same consequence (including praise) over and over again; mix things up!

### Taking Advantage of Motivation

- Restrict access to items/activities that you are going to use as reinforcers
- Rotate reinforcers so that motivation remains high
- Use token economies to allow students to access multiple reinforcers
- Don't "over-do it"



### Discrete Trial Teaching: Summary

- The techniques of Discrete Trial Teaching described here have been demonstrated to be effective in teaching children with autism and other developmental disabilities.
- A key feature of discrete trial methods is the many repetitions of learning trials.
- This provides the child with many opportunities for learning.
- As the children are taught skills that will allow them to interact effectively with their environment, they can come into contact with the natural reinforcers that maintain the behavior of normal-developing children.

### Social Scripting/Script Fading

- Social scripting involves creating “scripts” of appropriate language for students with ASD to use in specific social situations
- Has been shown to increase “spontaneous” social interactions
- Recent scripting studies at ASSERT:
  - Teaching [parents](#) to use scripts
  - Teaching children with ASD to initiate play using scripts

### Photographic Activity Schedules for Promoting Independence

“...a set of pictures or words that cues someone to engage in a sequence of activities.”

(McClannahan & Krantz, 1999, p.3)

- Beginning schedules are often comprised of a set of photos of stimuli that are presented sequentially in a small 3-ring binder
- The learner independently completes the sequence using the schedule to prompt him/her instead of adult instructions

### Why Activity Schedules?

- Promotes Independence
  - Decreases the need for adult prompting and guidance
  - Promotes increasingly longer response chains
- Choice
  - Individuals have increasing control in decision-making regarding type and sequence of daily activities
  - Provides framework for teaching choice making

### Activity Schedules Continued

- Social Interactions
  - Prompts initiations of social interactions and conversations
- Planning
  - A prompting and tracking sequence for tasks to be completed

### Schedule Formats

- Binder with pictures or words on each page
- To do lists containing pictures or words
- Written or typed
- Planners
- Pocket PCs
- Audio-taped schedules

### Types of Schedules

- Across Activities
  - Daily
    - Teaching lessons
    - Outdoor/exercise
    - Independent
      - Play, work, bedtime, morning
- Activity specific
  - Meal-time activities
  - Snack making
  - Setting table
  - Cooking meals
  - Household chores
  - Loading dishwasher
  - Self help
    - Dressing
    - Brushing teeth
  - Leisure
    - Model building

### Video Modeling

- Video modeling is when a peer video model, adult video model, or a video from the participant's perspective (videotaped as if the student was looking through the lens) is shown completing a task or sequence of behaviors which the learner is supposed to imitate.
- The use of the video is then discontinued or faded once the learner has mastered the task or sequence of behaviors.
- Some video models show both motor responses and verbal responses, such as with [play sequences](#) or an endeavor, such as purchasing items.
- Other video models may just show motor responses because they are teaching tasks such as setting the table which do not require language or social interactions.

### Recommended prerequisite skills for video modeling

- Imitate peers
- Follow adult directions
- Play appropriately with a number of toys
- Receptively and expressively identify a number of objects and people
- Low levels of stereotypy and or disruptive behavior
- Sustained on task behavior for the length of the video

### Mand Training

- Mand training is a technique to teach students to make requests or "mands"
- It takes advantage of naturally occurring student motivation to request preferred items/activities (often edibles in early stages of training).
- The student is prompted to make an appropriate communicative response via vocal speech, sign, or picture exchange (depending on the communication level of the student) and then the requested item is provided following the student's response.

### Mand Training

- Once the student reliably makes requests, the instructor can add an eye contact requirement in addition to the communicative response.
- Thus, in order to obtain the requested item, the student must provide eye contact while making the communicative response.
- Over time, prompts are faded until the student spontaneously requests preferred items in their presence and then later in their absence.

### Naturalistic Teaching

#### Purpose:

- To promote generalization across activities, settings, and people
- To contrive the motivation for responding
- To provide more learning opportunities
- To provide more learning opportunities similar to those of typical developing children
  - E.g. learning through observation and natural consequences

## Natural Environments

- Natural Environments are:
  - Any environment outside of the structured teaching areas (e.g. the student's cubby)
- Includes:
  - Play area
  - Playground
  - Lunch/snack time
  - Homes (parents' and other care-givers)
  - Schools, Parks
  - Shopping centers, stores, restaurants

## Naturalistic Teaching is not absolute:

- Naturalistic teaching does **not** mean haphazard teaching
- Naturalistic instruction
  - is carefully planned and intentional.
  - may include manipulation of the environment (in an unobtrusive manner) to increase the probability that the desired behavior will occur.
- So, "natural" should be seen as a range on a continuum from naturally occurring to contrived/sabotaged opportunities within an activity.

## Characteristics of Naturalistic Teaching:

- Location:
  - Teaching occurs in the natural environment or during already occurring activities.
- Density of interactions:
  - Individual teaching interactions are typically very brief may only occur a few time across the duration of the activity
- Initiation of interactions:
  - Instructional interactions are typically child-initiated.
- Consequences:
  - Instruction uses natural consequences (objects & events are highly salient and desired by the child).

## Incidental Teaching - Procedure

- Arrange environment to be interesting and fun for the child.
- Watch the child carefully to determine what he finds interesting and fun.
- Get the child to interact with (or act upon) interesting objects or persons.
- Intervene (prompt, model, or rearrange the environment) to encourage more complex behaviors.
- Focus on development of conventional (and functional) behavior.

## Time-Delay Prompts

Goal: To teach child to **initiate** an interaction and use a behavior without an additional prompt.

- Face child w/ expectant look and display desired object.
- Wait a specified amount of time for the child to request or label the desired object.
- Consequence
  - If child responds correctly
    - Provide desired object
  - If child does not respond or responds incorrectly
    - Provide verbal or physical prompt
    - Provide desired object

## Interrupted Routines & Chains

- Goal: Take advantage of the predictable steps in a routine/chain to **produce a need** for the child to engage in a behavior.
- Choose (or teach) a routine – must be well established.
- Interrupt the routine
  - Do not complete adult step.
  - Withhold some required materials.
  - Make "silly" mistake.
- Give Consequence/Correction
  - If correct: Provide materials or do correct behavior
  - If incorrect: Provide prompt or assist to complete the behavior.

For more information...

Download handouts and data sheets  
from this and other presentations  
at the ASSERT website:

<http://sped.usu.edu/ASSERT>

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