



8th Annual Autism/Asperger's Conference  
**LIFE-LONG STRATEGIES  
FOR SUCCESS**

SCHOOL ★ HOME ★ COMMUNITY ★ WORK

**June 22, 2010**

Cleveland, Ohio  
Executive Caterers at Landerhaven

*Made possible with support from the  
Albert B. and Audrey G. Ratner Family Foundation  
and  
Forest City Charitable Foundation*



# KEYNOTE

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## **DIFFERENT STROKES FOR DIFFERENT FOLKS: CREATING COMPREHENSIVE INDIVIDUALIZED INTERVENTION**

*(All Ages track, BCBA track)*

### **ABSTRACT:**

Learners with autism are often more different from each other than they are similar to each other. There is tremendous variability in how they learn and behave. Individualization is essential in developing goals and in creating programs to teach critical skills. Furthermore, there are many teaching strategies available to address the needs of learners with autism. Some of those strategies increase responsiveness (e.g., discrete trial teaching), others build initiation skills (e.g., naturalistic instruction), and others target speed of response (e.g., rate-building for fluency). A comprehensive program uses a variety of instructional strategies to address a learner's needs. How we individualize a learner's program is the art of our science. We need to use state-of-the-art assessment techniques to understand learner needs and best practice strategies in teaching skills. Furthermore, we need to use our science to objectively evaluate the extent to which any intervention is benefiting the individuals we serve. This presentation will focus on the themes of individualization, efficiency, and effectiveness of intervention in meeting the needs of every learner with ASD.

### **OBJECTIVES:**

1. Participants will identify the unique contributions that commonly used teaching procedures make to a comprehensive program.
2. Participants will identify skills and contexts in which certain procedures best match a learner's needs.
3. Participants will be introduced to ways we can track the impact of any intervention to ensure accountability and efficiency of instruction.

**Dr. Mary Jane Weiss** has written numerous articles and four books on autism, *Right from the Start: Behavioral Intervention for Young Children with Autism* (co-authored with Sandra Harris), *Reaching Out, Joining In: Teaching Social Skills to Young Children with Autism* (co-authored with Sandra Harris), *Sibling Stories: Reflections on Life with a Brother or Sister on the Autism Spectrum* (co-authored with Lynne Stern Feiges) and *Practical Solutions for Educating Young Children with High-Functioning Autism and Asperger's Syndrome*. Dr. Weiss is an expert at promoting successful inclusive experiences; building social skills; evaluating the efficacy of autism treatments; maximizing family members' practical skills; and evaluating the impact of ABA in learners with autism.

## Different Strokes for Different Folks: Creating Comprehensive Individualized Interventions

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Keynote Presentation at Milestones Conference  
Cleveland, Ohio  
June, 2010

## Our Goals for Today

- To introduce you to a variety of useful teaching strategies within the field of ABA, including discrete trial instruction and naturalistic strategies
- To focus on the use of the Verbal Behavior language classification system and to describe the benefits of this system for analyzing communication and for building the spontaneous use and generalization of skills
- To focus on the use of Rate-building to achieve fluency and to address the functional use of skills
- To identify the utility of different ABA instructional methodologies to teach a variety of goals

## ABA: A Definition

- Applied Behavior Analysis is the science in which tactics derived from the principles of behavior are applied systematically to improve socially significant behavior and experimentation is used to identify the variables responsible for behavior change.”
- Cooper, Heron, & Heward, 2007

## What are the core characteristics of ABA?

- Interventions based on empirically validated research
- Highly individualized instruction
- Ongoing assessment and data collection
- Data-driven decision making

## What are the core characteristics of ABA?

- Assessment of outcome is based on skill acquisition, maintenance over time, and generalization to real-life settings
- Significant role for significant others
- A humanistic approach focused on quality of life and meaningful change

## What makes ABA so effective?

- Specificity of goals
  - Linked to a thorough assessment
- Data based decision making
  - Dynamic programming
- Intensity
  - Ratio
  - Hours
  - Number of learning opportunities

### What teaching methods are under the ABA umbrella?

- Shaping
- Task Analysis/Chaining
- Discrete Trial Instruction
- Incidental Teaching
- Pivotal Response Training
- Natural Environment Training
- Rate-building for Fluency

## Discrete Trial Instruction

### What is Discrete Trial Instruction?

- Discrete Trial Instruction is a special form of teaching used to maximize learning for students who struggle with more traditional teaching methods, and who require repetition to learn.
- Discrete Trial Instruction relies heavily on the antecedents and consequences of behavior.
- Discrete Trial Instruction involves very carefully manipulated sequences of antecedents and consequences to enhance skill acquisition.
- Discrete Trial Instruction differs from other instructional methods because it relies heavily on intensity and structure.

### DTI- An Historical Perspective

- Based on the principles of Applied Behavior Analysis and operant learning/conditioning (Skinner, Bear, Bijou, Lovaas, Long...)
  1. Understanding behavior by analyzing environmental factors.
  2. Systematically manipulating antecedents/consequences to modify adaptive/maladaptive behavior.
- Specifically “coined” Discrete Trial Instruction by Koegel, Russo, and Rincover, *Journal of Applied Behavior Analysis*, 1977
- Designed to be a formal, exact unit of teaching which is:
  - a single teaching moment
  - a systematic shaping process to build complex behaviors
  - a “step by step upward progression”

### The DTI Model

- The term “Discrete” stresses the need to recognize each individual teaching moment as separate and distinct. Each trial has a definite beginning and end.
- Discrete Trial Instruction breaks down tasks into specific, focused instructional demands.
- The format of Discrete Trial Instruction is very conducive to systematic data collection and tracking of student performance.
- Highly effective
- Has been in use for 30 years
- Very successful in teaching a wide variety of skills

### What is a Discrete Trial?

- A sequenced form of instruction
  - SD (instruction)
  - Response
  - Consequence

### How has DTI changed?

- Not just blocks of trials
- Interspersals
- Shorter inter-trial intervals
- Using errorless learning

### What is errorless learning?

- Errors are prevented
  - Use a most to least prompt hierarchy
- Errors are interrupted

### What is task interspersal?

- Presentations of previously learned maintenance tasks are co-mingled with the presentation of acquisition tasks

### What do we know about the effectiveness of interspersal?

- Higher percentages of correct responding on acquisition tasks when maintenance tasks are interspersed (vs. when only a single acquisition task is presented) (Dunlap & Koegel, 1980)
- Interspersal must include maintenance tasks. Merely interspersing several acquisition tasks does not facilitate learning (Dunlap, 1984)
- Benefits of interspersal have been demonstrated across populations (Koegel & Koegel, 1996)

### Why else should we consider interspersal?

- More naturalistic, as one can not predict questions to be posed in everyday interactions
- It prevents “automatic” responding, based on repetitive trials of a single item or a particular program
- It reduces frustration for the learner
- Facilitates response, as behavioral momentum is built

### Why do we need DTI?

- Many skills require repetition
- Many students will easily learn new skills in this format
- It is conducive to teaching skills that are not intrinsically motivating

### What are the *potential* drawbacks or limitations of DTI?

- Difficult to generalize skills (requires special consideration in planning)
- May lead to overemphasis of the SD-R format of programming

### What are other ABA methods used to teach skills?

- There are a variety of ABA methods which are naturalistic in approach
- Naturalistic ABA strategies have been emphasized for many years, and have evolved and become more sophisticated over time
- Incidental Teaching, the Natural Language Paradigm, and Pivotal Response Training all are naturalistic ABA strategies
- Natural Environment Training is a naturalistic strategy that uses the VB classification system

### Naturalistic ABA Strategies

- Incidental Teaching has been an ABA method in use for over 25 years
- “Incidental teaching is used to get elaborated language by waiting for a person to initiate a conversation about a topic and then responding in ways that ask for more language from that person (Hart & Risley, 1982).

### Incidental Teaching.....

- A natural environment is arranged to attract the student to desired materials
- The student initiates the teaching by indicating an interest (gesturally or verbally)
- The teacher prompts an elaboration
- The correct response to the prompt provides access

### Incidental Teaching.....

- Part of best practice ABA
- Includes many “communicative temptations”
  - eating a desired food in front of student
  - playing with a desired toy
  - putting an object out of reach
  - set up situations requiring “help”

### What does incidental teaching do?

- Makes use of the natural environment
- Capitalizes on periods of high motivation to facilitate learning
- Makes use of naturally occurring reinforcers
- Reinforces an important class of behaviors (initiations)

### Naturalistic ABA Teaching Strategies

- Natural Language Training and Pivotal Response Training are ABA methodologies which have emphasized naturalistic teaching for over 20 years
- Associated with a number of researchers
  - Koegel, O'Dell, & Koegel, 1987
  - Laski, Charlop, & Schreibman, 1988
  - Koegel, Koegel, & Surrat, 1992

### Natural Language Paradigm and Pivotal Response Training

- Natural Language Paradigm and Pivotal Response Training have emphasized
  - the use of intrinsically motivating materials
  - teaching in natural contexts
  - focusing on the child's interests to guide language instruction

### Natural Language Paradigm

- Involves
  - items chosen by the child
  - variations in instructional targets every few trials
  - loose shaping contingencies
  - natural reinforcers
  - playful interactions

### Natural Environment Training

- Conducted in child's typical environment
- Uses Skinner's analysis of Verbal Behavior to develop an instructional model and curricular progression
- Was developed by Sundberg & Partington
- Described in their book, *Teaching Language to Children with Autism or Other Developmental Disabilities*

### How do Discrete Trial Instruction and Naturalistic Strategies differ?

	<u>Discrete Trial Instruction</u>	<u>Naturalistic ABA Instruction</u>
Who initiates learning opportunity?	Instructor	Student
Where does it occur?	Structured Setting	Natural Setting
Is it planned?	Definitely	To varying extents
Does it involve repetition?	Yes	Sometimes
What is the nature of the reward?	Extrinsic Rewards	Natural Rewards

### Question

How do you use naturalistic strategies to teach

- shoe tying
- answering social questions
- playing with a toy garage

What are the advantages and disadvantages to teaching these skills naturalistically?

### Why should we learn about Verbal Behavior classifications?

- It teaches us about the functions of language
- All of the functions need to be addressed long-term
- When all functions are addressed, language programming is more comprehensive
- Research has indicated that skills do not transfer across functions (i.e. a child may be able to label but not request)

### What is “Verbal Behavior?”

- Verbal Behavior = Behavior
- Verbal Behavior that is learned via the same mechanisms as other behavior
  - Reinforcement
  - Punishment
  - A-B-C

### How is it different?

- In Verbal Behavior, reinforcement is *mediated* by another person
- It is social
- It involves more than one person, not just the person and the environment

### “Behavior” versus “Verbal Behavior”

A	B	C
Thirst	Get water from faucet	Drink water
Thirst	Ask mom for water	Drink water

### What about this example?

A	B	C
Thirst	Pull mom to sink and cry	Drink water

### Skinner’s Focus

- Skinner focused on the development of expressive behaviors
- Expressive behaviors involve the individual as SPEAKER

### Why is it important in autism?

- Theory
  - Tool for analysis
    - What's working
    - What's not working
- Implications for teaching
  - Related to core deficits
  - Emphasis on environment
  - Focus on function

### What do we mean by function?

- What determines or controls the response or behavior?
  - What is the antecedent?
  - What is the consequence?
- What is the form of the response?

### Briefest Descriptions of Skinner's Expressive Behaviors

- Mand: request
- Tact: label
- Intraverbal: to and fro conversational exchange
- Echoic: verbal imitation

### What is the most important element?

- What controls the speaker's response
  - Echoic – matches what the person hears
  - Mand – specifies what the person wants
  - Tact – communicates what the person sees, hears, tastes, smells
  - Intraverbal – responds to what person hears & does not match

### Teaching Language by Function

- Teaching within a verbal behavior model addresses EACH verbal operant specifically
- Research has shown that for children with autism, skills do not necessarily transfer across function
- Prompts are introduced and faded systematically to try to achieve "pure" operants

### Why is this important in autism?

- Deficits in all functions of language are common
- Manding is important to increase spontaneity and balance other teacher-directed ABA teaching methods
- Intraverbals build reciprocity and the foundation of social interactions
- Echoics can address issues of articulation, intelligibility, and pacing
- Tacting can increase commenting skills

### How is this new and different?

- Skinner's organization of language is based on function rather than form
- Teaching addresses function specifically
- Highlights need to teach each function separately

### Other Categories of Language Important in Natural Environment Training

- Receptive: following instructions or complying with the mands of others
- Imitation: copying someone's motor movements
- RFFC: identifying items when given some description (its features, function, or class)

### Expressive and Receptive Skills

- Expressive
  - Echoic
  - Mand
  - Tact
  - Intraverbal
- Receptive
  - Motor imitation
  - Receptive identification
  - RFFC
    - Receptive by
      - Feature
      - Function
      - Class

### The Importance of Manding

- Mand training enables the instructor to know what functions as reinforcement
- Mand training enables the instructor to establish oneself as an agent of reinforcement

### Mands

- Mands can be vocal or nonvocal
- All Mands are verbal behavior

### Benefits of Mand Training

- Teaches requesting skills
- Increases learner initiation
- Builds spontaneity
- Balances the programmatic focus on responding to SD's
- Pairs instructor and instructional setting with reinforcement

### Benefits of Mand Training

- Instructor always knows what will function as a reinforcer
- Decreases challenging behaviors
  - Appropriate requesting skills reduce the need to request through disruptive behaviors
  - Appropriate requesting skills reduce learner frustration (They provide a means of influencing the environment!)

### Manding can always be part of the curriculum.

- Manding should be incorporated into work sessions
- More complex forms of manding should be included in goals and objectives
- An analysis of effective manding should be ongoing

### What about the other elements of Verbal Behavior?

- Echoic skills
  - echoing sounds, words, and phrases
  - without prompts or strong reinforcers
- Tacting
  - the ability to label common items and actions
  - involves child as speaker vs. child as listener
  - involves coming up with the correct word and pronouncing it correctly

### What about the other elements of Verbal Behavior?

- Intraverbals
  - Allows the speaker to talk about objects and events even though those events are not physically present
  - Includes conversations (answering questions, participating in reciprocal conversation)
  - Early intraverbals include filling in the blanks and finishing song lines and association pairs

### Other Teaching Methods Associated with the Use of the VB Classification System (and in NET)

- Errorless learning
- Task interspersal
- Short inter-trial intervals/rapid pacing/fluency
- Child directed selection of materials
- Probe data collection
- Sign language as a nonverbal communication system

### How is interspersal done?

- Most often, the initial mix of new to mastered material is 20% to 80%
  - Modified over time!!!!
  - Should be a starting point.....
- Teachers often find it useful to post charts of mastered material in the work space
  - Can devise a system for checking off the items included in interspersals
- Data are usually collected on targets only
  - Repeated errors on mastered items flag them for re-teaching

### What is “fluency”?

- “The fluid combination of accuracy plus speed that characterizes competent performance.” – Binder, 1996
- “True mastery” – Binder, 1987

### Descriptive Characteristics of Fluent Behaviors

- Automatic
- Low response effort
- Functional
- Expert

### A skill is fluent when:

- A high rate of accurate responding is demonstrated (Lindsley, 1972)
- Response rate and accuracy are maintained over time (Haughton, 1972; Binder, 1987, 1988)
- Responses are readily available to the selecting environment for linking and combining with other skills (Johnson, Layng, 1992)

### How are problems in fluency manifested?

- Effortful, laborious motor responses
- Long durations of responses
- Long latencies to respond

### Results Associated with Rate-building

- Stability- the ability to engage in the skill easily in the presence of distraction
- Endurance: related to longer durations
- Application - transfer of training (generalization; **combination of components to composite skills**)
- Retention (maintenance)

### How to Put It All Together

- When does each of these strategies come into play?
- What skills are best suited to the use of these strategies?

### What defines DTI?

- Sequenced trials
- Antecedent – Behavior –Consequence
  - SD
  - Response
    - Clarity of response
    - Absence of other behaviors
  - Consequence
    - Reinforcement
    - Correction
    - Every trial is a learning opportunity

### What defines NET?

- Setting (natural)
- Learner choice
- Guided by learner interests
- The use of the VB classification system to teach language

### NET and DTI Both Should Use

- Fast pacing
  - Maximize learning opportunities
- Errorless procedures
  - Prevention of errors
  - Interruption of errors
- Task interspersal
  - Previously mastered material interspersed with targets

### Applications of DTI

- DTI can be used to teach a wide variety of skills
- Especially useful for echoics, tacting, receptive skills, and matching
- Also very useful for teaching a wide variety of pre-academic and academic skills
  - Letter and number identification
  - Vocabulary building
  - Sentence structure

### Applications of NET

- NET can be used to teach a wide variety of skills at all stages of instruction
- Compliance is increased as learners pair the instructional context and instructors with reinforcement
- Manding is best taught within NET
- Intraverbals may be best taught through NET

### What defines Rate-building?

- Rate-based assessment of progress
- The Standard Celeration Chart (usually)
- The assessment of component skills
- The use of performance aims
- The inclusion of the learner in efforts to increase rate
- The use of coaching

### Applications of Rate-building

- Teaching motor component skills
- Building speed of response with mastered material
  - Scanning and matching
  - Imitation
  - Receptive skills
  - Tacting
  - Intraverbals

### Applications of Rate-building

- Social skills
  - Responses to peers
    - Greetings
    - Replying to questions
    - Conversations
  - Group participation
    - Responses to questions
    - Attending
    - Work completion

### What are the advantages of DTI? (Sundberg & Partington, 1999)

- A high number of training trials
- A solid way to develop tact, receptive, imitative, and echoic skills
- Ease of staff training
- Clarity of target response
- Simplicity of data collection
- Ease of assessment (of progress)
- Clearly defined curricular steps

### Advantages of NET (Sundberg & Partington, 1999)

- Optimal conditions to teach Manding
- The use of stimuli in the natural environment as target SD's
- The reduced need for elaborate generalization procedures
- Ease of teaching intraverbal behavior
- Increased compliance

### What are the advantages to using the VB classification system?

- A focus on the learner as speaker
- A focus on the learner as initiator (Manding)
- A comprehensive focus on functions of language
- A focus on the development of conversational skills
- A focus on the development of Manding skills, initially and long-term

### What are the advantages to teaching skills to Fluency and to addressing Pacing?

- Rate based measures are more sensitive
- Long latencies to respond and slow response rates lead to missed opportunities for interaction and participation
- Missing component skills prevent progress on composite skills

### When to Consider Mand Training

- Always!!
- And especially
  - When working with a new student
  - When working with a student who does not spontaneously request
  - When working with a student with limited requests
    - Objects
    - Functions

### Thoughts on Mand Training

- Consider mand sessions, particularly in the beginning
- Consider collecting data on independent and prompted mands
- Remember to alter instructional objectives as skills improve
  - Length of utterance and other qualitative aspects of manding
  - Other functions of manding

### When to Consider NET

- Always!!
- And especially for
  - Building manding skills
  - Building intraverbals
  - Working with learners who are responsive to more naturalistic instruction
  - Working with learners who are responsive to choice and variability

### Thoughts on Implementing NET

- Consider probe data collection (as opposed to trial-by trial data collection)
- Consider NET sessions (vs. discrete trial sessions)
- Consider treatment integrity checks for elements of instruction
  - Learner initiated?
  - Elaboration?
  - Novelty?

### When to Consider DTI

- Always!!
- And especially
  - For skills requiring a great deal of repetition
  - For items/skills that are not intrinsically interesting to the child
  - For building receptive and tacting skills
  - For learners who respond well to structured teaching

### Thoughts on Implementing DTI

- Use errorless procedures
- Use task interspersal
- Consider treatment integrity checks for elements of instruction
  - Interspersal
  - Number of learning opportunities

### When to Consider Teaching to Fluency

- Always!!
- And especially
  - When skill demonstration is effortful, laborious, time-consuming (even though technically correct)
  - When missing component skills are interfering with the acquisition or functional demonstration of composite skills
  - When long latencies to respond are interfering with or preventing access to social opportunities

### Thoughts on Implementing Rate-building/ Fluency-based Instruction

- Consider the use of the Standard Celeration Chart
- Assess core component skills
- Consider whether certain programs might move to fluency after acquisition (to ensure appropriate rate and availability of response)

### Additional Components

- Social skills interventions
  - Social initiations
  - Social responses
  - Complex social behaviors
- Interventions for challenging behaviors
  - Antecedent interventions
  - Replacement skills

### Art of the Science

- Individual assessment
- Tailored intervention
- Comprehensive program
  - Targets of instruction
  - METHODS OF INSTRUCTION
  - EVALUATION OF OUTCOME
  - FOCUS ON QUALITY OF LIFE