

## Behavioral Intervention for Students with Autism

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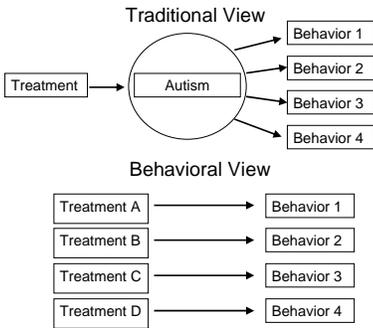

### Autism: What is it?

- Autism is a severe developmental disability, marked by impairments of communication, social, emotional functioning
- Autism is defined in by the Individuals with Disabilities Education Act (IDEA) as:
  - A developmental disability affecting verbal and nonverbal communication and social interaction, generally evident before age three, that affects a child performance .
  - Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to an article change or changing daily routines, and unusual responses to sensory experiences .
  - The term does not apply if the child's educational performance is adversely affect it primarily because the child has a serious emotional disturbance

### Autism: How is it diagnosed?

- Autism is diagnosed behaviorally-we observe the child and record behavioral excesses (e.g., self-stimulatory behaviors, echolalic speech, aggression or self injury, rigid adherence to routines) and behavioral deficits (lack of normal speech, lack of normal social skills, unresponsiveness to social contact)
- If a child meets a predetermined criteria that is based on the previous experiences of diagnosticians, then he/she is diagnosed with autism
- While it is commonly agreed that it is a neurological disorder and there is some evidence for its heritability, there is no blood test, genetic test, or neurological test that can detect autism

### Medical vs. Behavioral Views of Autism

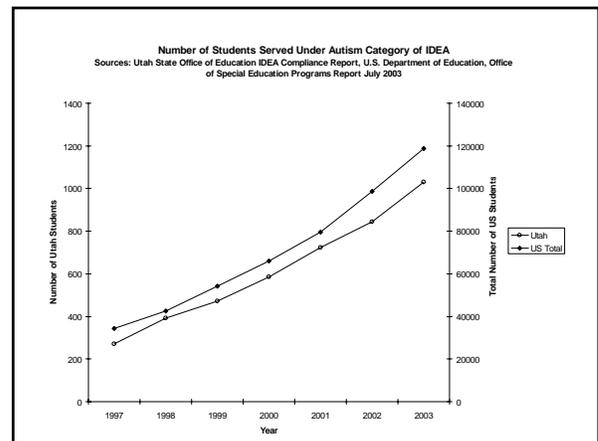


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        subgraph Traditional_View [Traditional View]
            T1[Treatment] --> A((Autism))
            A --> B1[Behavior 1]
            A --> B2[Behavior 2]
            A --> B3[Behavior 3]
            A --> B4[Behavior 4]
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        subgraph Behavioral_View [Behavioral View]
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            TB[Treatment B] --> B2
            TC[Treatment C] --> B3
            TD[Treatment D] --> B4
        end
    
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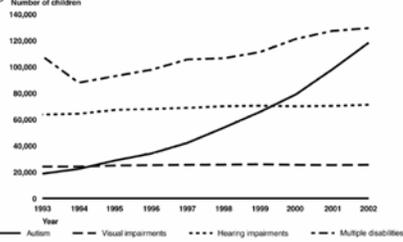
### Autism: Prevalence

- 3.4 per 1000 births (this estimate is much higher than previously thought)
- equally distributed across races
- 4:1 ratio of males to females
- Source:* Journal of the American Medical Association, January 2003



### Rates of Autism Compared to Other Low-Incidence Disabilities

Figure 3: Trend in the Number of Children Ages 6-21 with Certain Low-Incidence Disabilities



Source: IDEA data collected by the Department 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

### Autism: Causes

- While over the years there have been a variety of claims about what causes autism (bad parenting, MMR vaccine, mercury, etc.), to this point, researchers have not identified a reliable cause
- Bottom line: While recent research has confirmed that autism is organic/biological in origin, **we don’t know what causes autism**

### Autism: Education and Treatment

- 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

### 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
- 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

### Why are there so many fad and untested treatments for autism?

1. Physical characteristics:
  - In terms of physical appearance, children with autism tend to look just like their typically developing peers
  - This makes it easier to believe that there is a magical switch somewhere that can be flipped with some type of “miracle cure” to make these kids act just like their peers
  - Unfortunately, no such magical switch exists and there is no “miracle cure” for autism

### Why are there so many fad and untested treatments for autism?

2. The general public (including parents) do not apply scientific standards when evaluating treatment options
  - If it was on Primetime Live, it must be true
  - If it is posted on the internet, it must be true
  - If it “worked” for one individual, it will work with my child
  - If I try everything, then something is bound to work
  - Unfortunately, there are individuals, including professionals, who advocate for specific treatments to get financial gain or based on a philosophical position rather than a scientific one

### Why are there so many fad and untested treatments for autism?

3. Perceived cost and availability of EIBI programs
  - EIBI is no “miracle cure”. It involves hours, days, weeks, and years of intensive instruction in order to be effective.
  - EIBI requires more financial resources (primarily because of 1:1 staffing) at the preschool level than traditional special education preschool programs
  - EIBI programs are in short supply and are often funded by parents or third-party payers
  - School districts do not employ professionals with specific EIBI training and are resistant to starting EIBI programs because of the perceived cost
  - Other programs (e.g., TEACCH) do not require intense staffing or additional resources making them attractive to budget conscious administrators

### 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

### Autism Support Services: Education, Research, and Training (ASSERT)

- **Background Information:**
  - Started in the summer of 2003 as a 10-week summer program for four students with autism
  - Financial support provided by the USU Center for Persons with Disabilities (CPD) and Dept. of Special Education and Rehab.
  - Has an advisory board which consists of interested university professionals as well as representatives from local school districts and the USOE

### ASSERT Program Aims

1. **Education:** Provide effective educational and behavioral early intervention through our model classroom using research-based best practices
2. **Research:** Conduct research to improve educational and behavioral interventions for children with autism
3. **Training:** Serve as a model training classroom for USU preservice special education teachers and other educational professionals throughout the state of Utah who are interested in learning to work effectively with children diagnosed with autism spectrum disorders



### Autism Research and Development Activities at ASSERT

Our research and development efforts are currently focused in two primary areas:

1. Designing and testing training and consultation models to build school district capacity for providing early intensive behavioral intervention
2. Improving/refining specific instructional techniques

### Building School District Capacity for the Provision of Intensive Behavioral Intervention for Students with Autism

- Early intensive behavioral intervention (EIBI) programs for students with autism have traditionally been administered either within individual families' homes, at private schools, or at university centers
- While behavioral techniques are commonly employed, along with a variety of other techniques, within school district special education programs for students with autism, student to teacher ratios are often higher and the intensity of instruction (e.g., # of daily learning trials) are typically lower than in dedicated EIBI programs

### Our first efforts at improving services for students with autism in public schools

- In the summer of 2004, we conducted a 2-week intensive training program with seven Utah special education professionals through a grant from the USOE
- This past year, through a second grant from the USOE, we provided follow-up consultation to these individuals in their classrooms
- While we documented that these professionals were able to learn behavioral intervention techniques and demonstrate both knowledge of behavior principles and the ability to apply them, these individuals were not able to make a major impact in their school districts due to a variety of systemic problems and roadblocks
- Even the best teachers could not be successful when the service delivery model did not allow them to do so
- This convinced us that system-wide intervention with administrative support is necessary to improve outcomes for students with autism

### Why create EIBI programs within local school districts?

- There are more of them than there are of us: more students with autism than there are EIBI programs
- Serve the needs of students with autism living in rural environments who are unable to attend specialized private programs
- School districts have the primary responsibility for providing these students with a free and appropriate public education, not parents or third-party providers

### Can it be done?

- This is the primary question that we are attempting to address: Can school district personnel successfully operate an EIBI preschool program and produce comparable student progress to what would be seen in a private EIBI program?
- Secondary questions include:
  1. Assuming that question #1 is answered affirmatively, how much support is needed from the university program to ensure that the district program continues to operate with fidelity and is able to adapt to serve the individual needs of new students as they enter the program?
  2. Can university support be decreased over time and, if so, to what level can it be decreased?

### ASSERT Collaborative School District Programs

- Washington County School District (Fall 2004-present)
- Weber School District (Beginning in Fall '05)

### ASSERT Training Model for Collaborative School District Programs

- System-wide change is needed with support from "the top" (i.e., Special Education Director)
- Expectations from both parties, ASSERT and the school district, are made clear and agreed upon at the beginning of the relationship
- District appoints an on-site coordinator to have primary oversight of the classroom and be the primary liaison with ASSERT staff
- A doctoral student from ASSERT is designated as the project consultant and, under the direction of the ASSERT Director, provides primary support to the district program

### ASSERT Training Model for Collaborative School District Programs

- ASSERT staff work with district coordinator to:
  - Select teacher and paraprofessional staff (core ratio= 1:1)
  - Choose a location for the classroom and order necessary furniture and curriculum supplies
  - Select students who will participate in program and conduct initial intake assessments (psychological testing with student and parents as well as curriculum-based assessments)
  - Design individualized instructional program based on results of initial curriculum-based assessments

### ASSERT Training Model for Collaborative School District Programs

- 1-week EIBI "boot camp" training provided by ASSERT staff (on-site training+ visit to ASSERT USU classroom when possible) before the classroom opens
- Site visits by ASSERT consultant 4 days per month to provide ongoing staff training and curriculum support
- Site visits by ASSERT director 4 times per year to evaluate program, provide ongoing staff training, and meet with district Special Ed. Director site coordinator to ensure that all parties involved are satisfied with the current status of the program
- Communication between ASSERT consultant and district site coordinator is frequent and ongoing (email, phone calls, videoconferencing)

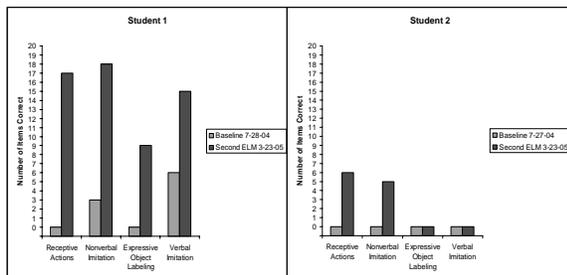
**ASSERT Collaborative School District Program Description**

- 30 hour/week program: 6 hours/day, 5 days/week
- Regular academic year plus an 8-week summer session
- Staffing: 1 teacher plus enough paraprofessionals to make the core ratio 1:1
- Classroom set up with individual work areas for each student, a small group instruction area, and play areas
- Ideally, the classroom is located at a site where typically developing peers are available for programmed social activities
- Start with four students and add students as classroom staff members' skills develop

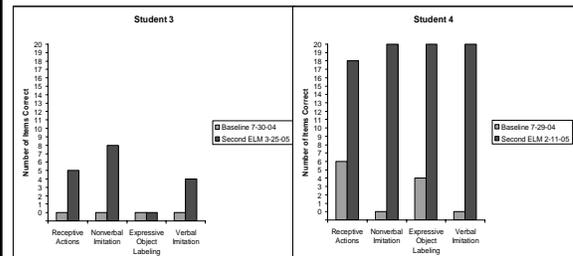
**ASSERT Collaborative School District Program Description**

- Parent training seminars are held at least once per month on strategies that parents can use at home to support things that the students are learning at school
- Parents are strongly encouraged to spend 2 hours per month in the classroom observing their child and interacting with and receiving instruction from classroom staff
- We are working on ways to include periodic in-home parent consultation as part of the program as we believe this to be important

**Preliminary Outcome Data-Intake and 8-Month Early Learning Measure (ELM) Scores**



**Preliminary Outcome Data-Intake and 8-Month Early Learning Measure (ELM) Scores**



**Are we having an impact?**

- Preliminary classroom data and ELM assessments indicate that all students have made significant gains during the first 8 months of the program (Mean % change=46%)
- Parent satisfaction surveys indicate that, overall, parents are very pleased with the services their children are receiving and the progress that they are making
- Anecdotal reports from school district personnel also indicate that they are pleased with the program
- Based on the levels of success we have produced, we are opening a second classroom in Washington Co. and have received a grant from the USOE to open a classroom in Weber school district this fall

**Questions still needing to be addressed**

- Best method of documenting fidelity of implementation
- Best method of documenting student progress
- Practicality and ethics of conducting a true experiment in this context
- Systemization of our curriculum and training procedures
- What exactly with the support fading program look like?

### Improving Instructional Techniques for Students with Autism

- Error correction procedures
- Video modeling
- Video-based instruction

### An Analysis of the Effects of Response Repetition on Teaching Language to Children with Autism

Katie Endicott  
Kara Reagon  
Thomas S. Higbee  
*Utah State University*

#### Introduction

- Error correction procedures are commonly used when teaching students with autism and other severe disabilities.
- However, few empirical studies have been conducted examining the efficiency of error correction procedures in teaching children with autism.
- A notable exception is a study by Worsdell (2002) in which she examined the impact of various error correction procedures on sight word instruction for adults with developmental delays.

#### Worsdell (2002)

- Three different experiments were conducted to in a comprehensive analysis to examine elements of error correction:
  - How many repetitions are most effective in maintaining behavior?
  - Which particular schedule of correction is most effective?
  - Which correction is most effective: topographically similar corrective procedures or dissimilar corrective responses? (When a participant is corrected, should the correction relate to the item missed, or should it be an entirely different task?)

#### Purpose of the Present Study

- Results from Worsdell indicate that a procedure in which a correction was repeated multiple times following an initial error was more effective in the acquisition and maintenance of skills than
- The current study represents a replication and extension of one of the analyses conducted by Worsdell (2002)
- Specifically, we examined the effects of single-repetition and multiple-repetition error correction procedures on language acquisition in preschool students with autism.

#### Methods

##### Participants:

- Four males with diagnosis of autism
  - Braden, age 3.5
  - Sawyer, age 4.5
  - Stewart, age 3.9
  - Garrett, age 4.9

##### Setting:

- University-based preschool for children with autism
- Six to thirty individual sessions were conducted, averaging five minutes in each condition
- Sessions were fast-paced and conducted in the student's individual educational environment

### Methods

#### Materials:

- 3 x 5 inch photos of various community helpers and community locations (printed from Picture This software) for three of the subjects
- Community occupations and locations were chosen because three learners already had a substantial receptive vocabulary of objects, colors, shapes, and actions
- Action pictures were used for Garrett because his receptive vocabulary consisted of a wide variety of nouns

#### Dependent variable:

- Number of mastered items (photos)

#### Independent variable:

- Number of response repetitions (corrections) when error occurred

#### Design:

- Two error correction conditions randomly alternated in a multi-element design (the same condition was never run more than two times consecutively)

#### Procedure:

- Baseline: 75 photos presented in an array of three in a basic receptive selection format (e.g., "Give me firefighter.") Participants were given 5 seconds to respond; no systematic consequences were provided. Known items were omitted from pool of stimuli. The same procedure was used with photos of common actions for Garrett (e.g., "Give me kicking.")

### Methods

- Intervention: two error correction conditions involving a single response (SR) and multiple responses (MR) were randomly alternated for each participant.
- Five photos randomly assigned to each condition, presented 3 times per session, resulting in 15 trials per session

### Methods

#### • Response definition:

- Language instruction was presented as receptive or expressive task (for Stewart); participant was asked to select photo from array of three stimuli or label photo.
- Response was defined as handing photo to instructor or pushing photo forward from the array for receptive trials; for Stewart the response was defined as labeling the correct picture.
- If the participant did not engage in the desired response, a physical prompt was provided for the receptive task (the instructor would physically guide the child's hand to the correct photo and prompt the child to push the photo forward, one or five times depending on the condition. For the expressive trials with Stewart, an echoic prompt was provided once in the SR condition or five times in the MR condition.

### Methods

- In the single-repetition condition (SR), if error occurred, discriminative stimulus was represented once.
- In the multiple-repetition condition (MR), if error occurred, discriminative stimulus was represented five times.
- Correct responses were followed by verbal praise and physical interaction (tickles, pats on the back) or an edible reward.
- Mastery criterion: if correct stimulus was selected correctly three times across the session, the photo was considered mastered and a new photo chosen as a replacement

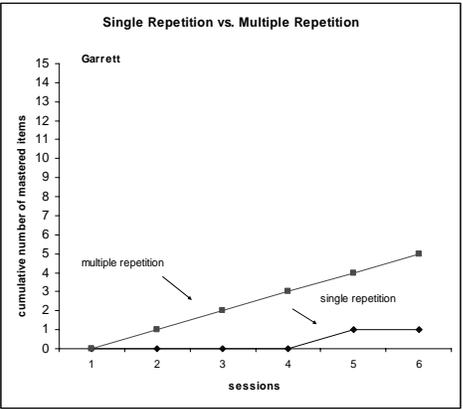
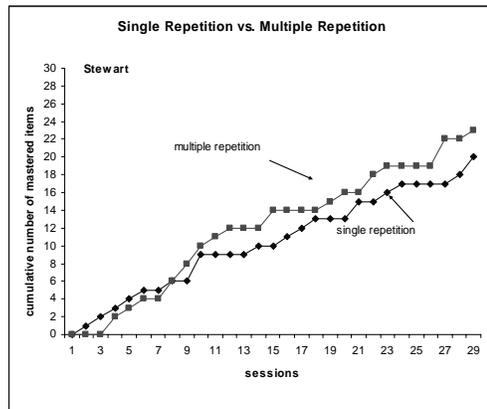
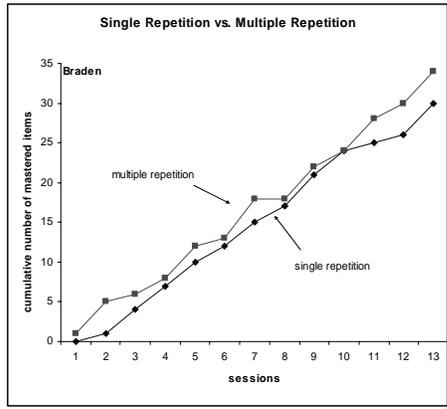
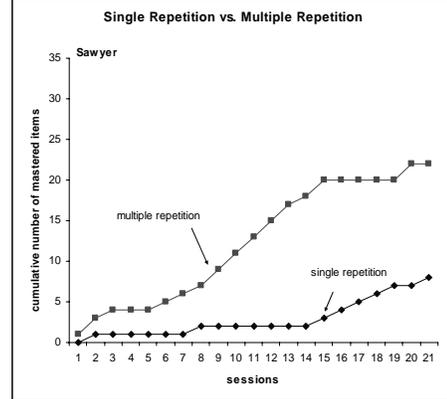
### Methods

#### Data collection:

- Recorded by undergraduate and graduate students on a trial by trial basis
- IOA: a second trained observer independently recorded performance in 62% of Braden's sessions, 30% of Sawyer's sessions, 42 % of Stewart's sessions, and 25% of Garrett's sessions. Interobserver agreement for data for all participants was 100%.

### Error Correction Example

- Error correction video clip



### Results and Discussion

- All participants have mastered a greater number of items in the multiple-repetition condition, although the difference was fairly small in 2/4 participants.
- This finding is consistent with that reported by Worsdell (2002).
- Braden mastered 33 items in the MR condition and 28 items in the SR condition; Sawyer mastered 22 items in the MR condition and 8 items in the SR condition. Stewart has mastered 23 items in the MR condition, and 20 in the SR. Garrett has mastered 5 items in the MR condition and 1 in the SR.
- The performance of the participants could be attributed to the possible negative reinforcement element of the multiple-repetition correction procedure, or to the fact that participants came in contact with a greater number of opportunities to respond to the stimuli in the multiple-repetition condition.

### Results and Discussion

- Data reported by Worsdell (2002) suggest that the increased number of response opportunities was the reason for the difference in acquisition rates.
- Although all participants did master more items in the multiple response condition, individual performance differed. This could be attributed to differences in the instructional histories of the learners, as well as previously established receptive and expressive language repertoires.
- Preliminary data suggest that further research and more data is required to clarify the effects of both response correction procedures.

### Using Siblings as Video Models to Teach Pretend Play to a Preschooler with Autism

Kara Reagon  
Thomas S. Higbee  
Katie Endicott

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### Introduction

- 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 a sequence of behaviors which the student is then supposed to imitate.
- The use of the video model is then discontinued or faded once the student has mastered the task or sequence of behaviors.
- An advantage to using video models to teach children with autism is the systematic repetition that can be provided by showing the video model numerous times.
- Children with autism have responded positively to video modeling, possibly due to the fact that some children with autism have a tendency to imitate and echo back the contents of videos

### Video Modeling Research

- Charlop-Christy, Le and Freeman (2000) compared the use of video modeling with in vivo modeling to teach children with autism various new tasks.
- They found that the children had faster acquisition of new tasks in the video modeling condition than in the in vivo condition and that video modeling was effective in promoting generalization across different stimuli, persons, and settings.
- Furthermore, Charlop-Christy et al. assessed the amount of time and cost it took to train all models and the amount of time each model was used.
- Overall, results suggested that video modeling procedures were both time and cost effective for 4 out of the 5 participants.

### Video Modeling Research

- Since many children with autism have deficits in the areas of play and language, researchers implementing video modeling technology have focused primarily on teaching appropriate play skills, including motor and verbal responses (Taylor, Levin & Jasper, 1999; and D'Ateno, Mangiapanello, & Taylor, 2003), conversational language (Charlop and Milstein, 1989), social initiations (Nikopoulos & Keenan, 2003; Nikopoulos & Keenan, 2004), and perspective taking (LeBlanc et al., 2003 and Charlop-Christy & Daneshvar, 2003).
- In addition, the use of video models has been successful in teaching individuals with autism daily living skills (Haring, Kennedy, Adams, & Pitts-Conway, 1987; and Shipley-Benamou, Lutzker & Taubman, 2002).

### Purpose

- While researchers have previously demonstrated that siblings of children with autism can be trained to effectively implement behavioral interventions (e.g., Celiberti & Harris, 1993; Schreibman, O'Neill and Koegel, 1983), only one of the previous studies on video modeling used siblings both as model and conversational partner (Taylor, Levin & Jasper, 1999).
- Thus, the purpose of the present case study was to explore the effectiveness of using a video modeling intervention where a typically developing older sibling both acted as a video model and later served as a play/conversation partner to teach pretend play to a four year old boy diagnosed with autism.

### Methods

#### Participant:

- One male with a diagnosis of autism  
– Sawyer, age 4.5

#### Setting and Materials:

- University based preschool for children with autism
- Typical peers were used to make the video model DVD
- A set of materials appropriate for each play scenario was provided

### Methods

- Dependent Variables:
  - Total number of play actions performed
  - Total number of scripted statements
  - Total number of contextually-related spontaneous words
- Design:
  - An A-B design replicated across four play scenarios

### Methods

#### Procedure:

- Baseline: The student was instructed to play. The student and the typical peer were provided with the appropriate costumes. The baseline session lasted 3 minutes for each scenario. No systematic consequences were delivered following responses.
- Intervention Phases:
  - Video Modeling-in the classroom
  - Follow-up in the participant's home without viewing the video model

### Methods

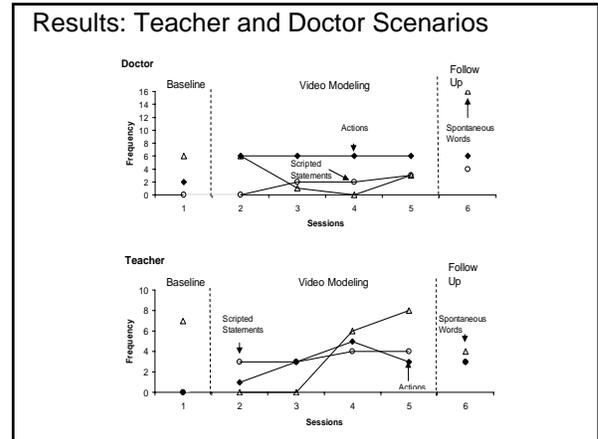
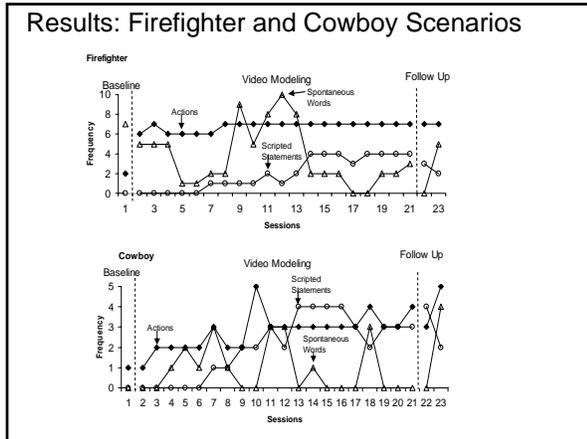
- Play Scenarios:
  - Firefighter
  - Cowboy
  - Teacher
  - Doctor
- Response Definitions:
  - Actions: performance of the behavior that was modeled in the video at the appropriate time
  - Scripted statements: verbally stating all of the words in the script at the appropriate time
  - Spontaneous words: verbally stating a word related to the scenario

### Methods

- Data Collection: Graduate students observed the play sequence and scored the occurrences of the target behaviors.
- A second trained observer independently recorded 30% of all sessions:
- Interobserver agreement (IOA) for modeled behaviors ranged from 86-100%,
- IOA for scripted statements and spontaneous words was 100.

### Video Modeling Examples

- Firefighter/Cowboy
- Teacher/Doctor



- ### Results
- The video model intervention successfully taught the participant to consistently engage in all 7 of the firefighter actions and between 3-5 out of the 7 actions in the cowboy scenario
  - He consistently performed all 6 of the doctor actions and varied between 1-5 out of the 6 teacher target actions during the video model intervention
  - During the video model condition the participant said up to 16 spontaneous words related to the firefighter and doctor scenarios, and up to 8 spontaneous words in the teacher scenario and 6 spontaneous words related to the cowboy scenario

- ### Results
- During baseline, the participant spontaneously said 7 words thematically related to the firefighter and teacher scenarios, 6 words for the doctor scenario, and 0 words for the cowboy scenario
  - During the video model condition the participant said up to 16 spontaneous words related to the firefighter and doctor scenarios, and up to 8 spontaneous words in the teacher scenario and 6 spontaneous words related to the cowboy scenario

- ### Results
- During the video modeling intervention, the participant's scripted statements ranged from 0-4 out of 4 for the firefighter and the cowboy, and 3-4 out of 6 for the teacher and 2-4 out of 5 for the doctor scenario.
  - The participant performed equally well during maintenance and generalization at home.
  - In separate parent and sibling satisfaction surveys, both the parent and sibling of the target student indicated that they were very satisfied with the video modeling intervention
  - Anecdotally, the parent noted that relations between the two siblings had improved dramatically and that they were engaging in more cooperative play together
  - This case study suggests that further, more controlled, research is warranted to verify the effectiveness of these procedures

## Video Instruction With and Without Embedded Text to Teach Tacts to Children with Autism

**Kara Reagon**  
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**Katie Endicott**

*Utah State University*

### Introduction

- Researchers have shown that children with ASD can learn conversational language by watching a video tape of another child or adult performing the behavior. This technique is called video modeling (D'Ateno, Mangiapanello, & Taylor, 2003; and Charlop and Milstein, 1989).
- A parallel video-based teaching technique is called video instruction where discriminative stimuli are presented on a video tape
- A separate procedure, utilizing textual scripts and script fading procedures, has also been used to teach conversational speech (Sarokoff, Taylor, & Poulson, 2001, Krantz & McClannahan, 1993).
- The purpose of the present study is to determine the impact of combining these two techniques by embedding textual prompts within a video-based instruction procedure

### Methods

#### Participants:

- Two males with diagnoses of autism
  - Braden, age 3.5
  - Sawyer, age 4.5
  - Stewart, age 3.9

#### Setting and Materials:

- University based preschool for children with autism
- Customized instructional DVDs were created for each student using the following software packages: Picture This ... Professional Edition V3.0, Sonic Vegas, and DVD Architect software.
- All pictures were displayed against a white background

### Methods

#### Dependent Variables:

- Total number of correct responses and approximations

#### Independent Variables:

- Pictures with and without embedded text

#### Design:

- Alternating treatment design

#### Procedure:

- Twenty unknown food items (2-syllable words) were used in the study for each participant and were randomly assigned to the two treatment conditions.

### Methods

- Sessions consisted of all twenty items being presented by the videotape one after the other in random order
- In each condition a stimulus was presented and the participant was asked via the video "What is it?"
- After a five second delay, the video verbally prompted the correct response.
- For those stimuli assigned to the embedded text group, the correct response was also displayed on the screen with a textual prompt

### Methods

- If the student responded correctly or gave an approximation, the observer delivered praise ("Way to go!") and brief physical reinforcement such as a pat on the back.
- At the conclusion of the video, a probe was conducted where all 20 stimuli were presented again without verbal or textual prompts and the participant's verbal response to each stimulus was scored.
- No feedback was given by the video or the observer during probes.

### Methods

- Response Definitions:
  - Correct Response: If the student produced each phoneme in the target response the response was scored correct.
- Mastery Criteria: Three consecutive correct responses per target item.

**Methods**

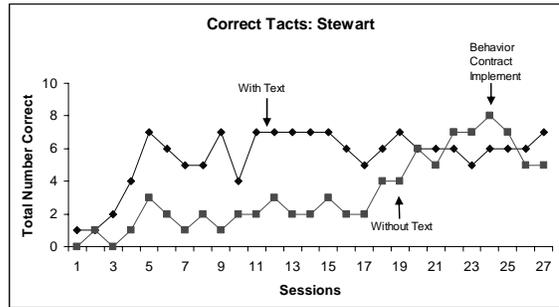
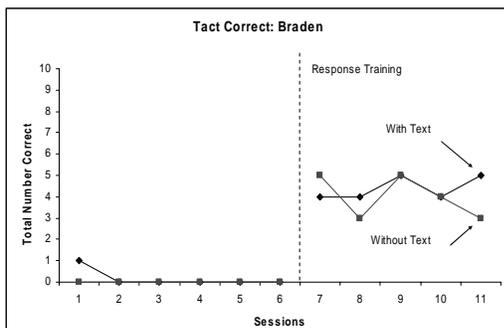
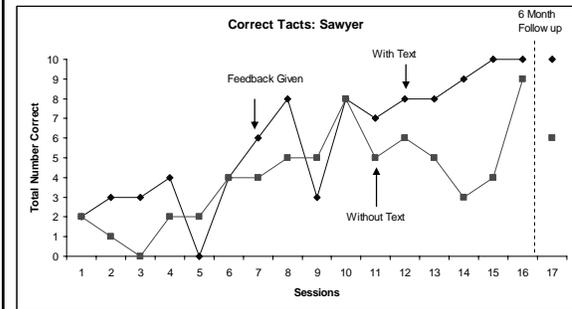
- Data Collection:
  - Undergraduate and graduate students observed the student viewing the instructional video and scored correct responses and approximations.
- IOA: a second trained observer independently recorded the participants performance for 10 sessions: IOA data ranged from 90-100% agreement.

**Methods**

- Sawyer received feedback after the 6<sup>th</sup> session in order to help maintain on task behavior.
- Due to Braden's lack of correct responding during the first 7 probes response training was then implemented.
- Response training was used to teach Braden to respond to the DVD instruction. A separate DVD consisting of 5 known tacts was shown prior to the DVD instruction using the same probe procedure.

**Video-Based Instruction Example**

- Video-based instruction example



### Results

- During probes Sawyer responded correctly more to stimuli that were assigned to the condition with text.
- In the probe sessions Sawyer had a range of 0-4 correct tacts in both conditions prior to feedback and a range of 3-10 correct tacts from the with text condition and a range of 3-9 correct tacts from the without text condition after feedback was implemented.
- Braden provided a greater number of correct tacts after response training was introduced.

### Results

- During probes Stewart initially responded correctly more to stimuli that were assigned to the condition with text
- In the probe sessions Stewart had a range of 0-7 correct tacts in the with text conditions and a range of 0-8 correct tacts from the without text condition
- Stewart provided a greater number of correct tacts in the without text condition after a contract for responding was introduced.

### Discussion

- None of the participants had a prior history of responding to video instruction. As an anecdotal note, Braden often engaged in laughter when watching the instructional video and therefore response training was introduced prior to the session in which a DVD comprised of 5 known tacts was shown.
- Sawyer never responded incorrectly but did however not respond to trials due to distractions within the classroom and or the length of the DVD.
- Stewart, also did not respond to trials due to distractions within the classroom and or the length of the DVD. Some of his incorrect responses were due to the fact that he tacted the item but did so using another tact that was not taught to such as "pop" instead of "soda" or he would say "tree" instead of "lettuce" because of the green leaves.

### Discussion

- Preteaching participants to respond to video instruction may be necessary at first.
- The number of trials presented and the length of the DVD should also be considered when developing video technology for children with autism.
- DVD instruction should occur in an environment with minimal distractions.
- DVD instruction may be a valuable teaching strategy to teach young children with autism language. Both of the participants acquired tacts regardless of the assigned condition.
- Future research and more data is required to clarify the effects of using video instruction to teach tacts with and without embedded text.

### Other Research Areas we are Investigating at ASSERT

- The use of social scripts and script fading procedures to teach social behavior
- Reinforcer identification procedures
- Strategies for addressing food selectivity
- And several others still on the drawing board

### For more information...

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