Effective Interventions for Students with ASD: Practical Applications for Classroom Success

Seminar One

Objectives

• Participants will understand the importance of evidence-based decision making & be able to determine if a practice is evidence-based
• Participants will be able to describe the important elements of choosing, implementing & evaluating the effectiveness of evidence-based practices to meet individual needs
• Participants will be able to use evidence-based decision making to develop exemplary antecedent based interventions for individuals with ASD

The Golden Circle

Simon Sinek
Evidence-Based Practice (EBP)

"evidence based practice is the integration of the best available research with clinical expertise in the context of patient characteristics, culture and preferences"
(American Psychological Association, 2005)
Isn’t this already being done?

Scurvy – A Case for EBP

• Described since 5th century BC
• Two million deaths from 1500-1800
• Attributed to lack of citrus fruit – 1593, 1601, 1614, 1636, 1747
• Scurvy “killed” by use of citrus fruit in 1795 and treatment was widely published
• Went on to kill thousands more - WHY?

SCURVY OBLITERATED IN 1795!!!

• Cases rose dramatically in next decades
  – Fleets used cheap and easy to obtain substitutes for fruits that had been identified as effective
  – Food was prepared in ways that decreased quality of Vitamin C
  – People began to doubt effectiveness of treatment and did not implement with fidelity
  – Steam engines resulted in shorter voyages and fewer deaths from scurvy which reduced urgency
Benefits of Adopting Routine Use of EBPs

- Contributes to informed decision making
- Increases likelihood of intended outcome
- Increases efficiency and effectiveness
- Long-term cost effectiveness
- It's the law

*EBPs increase the likelihood that students will experience positive, life-long growth*

Why Professionals May Not Routinely Use EBPs

- Information overload
- Inertial decision making
- Inconsistent adoption
- Tradition, expert opinion and/or culture
- Overreliance on informal observation
- Intentional or unintentional bias

Evidence-Based Decision Making: Considerations

- Best available evidence-based resources
- Practitioner expertise
- Knowledge of individual characteristics, needs, values and preferences
- Contextual considerations
- Meaningful data to monitor progress
Best Available Evidence-Based Resources

- Skills, strategies and programs that have resulted in consistent positive results when experimentally tested
- Describes core intervention components that have been shown to be reliable in producing desirable effects
- Research results are based on a specific population

Mesibov & Shea, 2011

What Makes a Practice Evidence-Based?

- Practices that have met
  - rigorous peer review
  - have been replicated multiple times by trustworthy groups
  - and when systematically, consistently and reliably applied with fidelity have a history of yielding positive results

Adapted from Simpson, LaCava & Grancer, 2004

EBPs and ASD

- No single Nationally accepted definition or set of EBPs for ASD
- Several projects have defined them
  - National Professional Development Center on ASD (2014)
  - National Standards Project (2009 with a new publication due in 2015)
  - National Research Council (2001)
National Professional Development Center on ASD

- Multi-university center to promote use of evidence-based practices for children with ASD
  - UC Davis/MIND Institute
  - FPG Child Development Institute/UNC at Chapel Hill
  - Waisman Center/UW at Madison

http://autismpdc.fpg.unc.edu/

Goals of NPDC-ASD

- Promote optimal learning for children with ASD and support families through EBPs
- Increase capacity to implement EBPs in early identification, intervention, and public education
- Increase number of highly qualified personnel to work with children with ASD

http://autismpdc.fpg.unc.edu/

NPDC-ASD Resources

- EBP Report – 2014
  - Developed in same timeframe as NSP with similar findings but categorized differently
  - Includes 24 evidence-based practices
- Autism Internet Modules (AIMS)
  - Online modules of EBPs
- Evidence-Based Practice Briefs (BRIEFS)
  - Detailed documents of each evidence-based practice

http://autismpdc.fpg.unc.edu/
The Autism – Evidence-Based Technology Relationship

- Portable
- Affordable and reduces workload of teacher and students
- Cool factor
- Multi-purpose
- Assists with communication, processing and executive functioning demands

Assistive Technology

“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…”

Types of Technology

- Indefinite or temporary
- Low tech
  - Do not require electricity or battery
  - Typically low cost and easy to use
- "Mid" tech
  - Battery operated or simple electronics
- High tech
  - Require complex support
Evidence-Based Assistive Technology (AT) and ASD

- Must distinguish between research of AT and research of AT and ASD
- Growing body of research that AT is effective
  - Area of strength for many individuals with ASD
    - Visual representation
    - Increased motivation
    - Reduced challenging behavior during task
    - Should be used with caution

Technology and ASD

Technology-Based Treatment

- Most promise shown with technology that supports:
  - Discrete skills
  - Prompting – auditory and tactile
  - Organization
  - Error correction
  - Modeling, Practice, Feedback
  - Reinforcement
Evidence-Based Technology
Computer-Aided Instruction

- The use of computers to teach academic skills and to promote communication and language development and skills
- Determined to be evidence-based by NPDC
- Determined to be emerging practice by NSP
- Evidence-based in domains of communication skills, academics and cognition
- Depending on target skill, can be used for any age

Evidence-Based Technology Sources

- VCU Autism Center for Excellence
  - Website resources, apps, fact sheets, videos and trainings
- Wisconsin Assistive Technology Initiative
  - Assessments, tools, guidance
- Autism Speaks
  - Technology guide, evidence-based apps
- Closing the Gap
  - Website resources, apps, fact sheets, buying guides

Evidence-Based Decision Making: Considerations

- Best available evidence-based resources
- Practitioner expertise
- Knowledge of individual characteristics, needs, values and preferences
- Contextual considerations
- Meaningful data to monitor progress
Evidence-Based Resources
Need Practitioner Expertise
• EBP is not a "cookbook method" of selecting treatment
• Utilizing resources and professional judgment are a critically important part of decision making
• Research is ongoing and best practices evolve beyond current findings

Evidence-Based Decision Making: Considerations
• Best available evidence-based resources
• Practitioner expertise
• Knowledge of individual characteristics, needs, values and preferences
• Contextual considerations
• Meaningful data to monitor progress

Choosing and Implementing Evidence-Based Interventions
1. Assess the student and create measurable goals
2. Select an appropriate intervention/strategy
3. Staff preparation
4. Implementation
5. Data collection
6. Monitor progress

Taken from Odom et al., 2010
Step 1: Assess the Student and Create Meaningful Goals

- What are student’s current characteristics?
- What skills need to be developed?
- What are areas of strength?
- Address considerations of instruction
- Collaborate with team members
- Include family input and values
- Create meaningful, measurable goals

Taken from Odom et al., 2010

Considerations for Instruction

National Research Council

- Functional spontaneous communication
- Social skills
- Play (leisure) skills
- Cognitive development
- Functional academic skills
- Proactive interventions to address challenging behavior

Meet Harry

- 13-year old male
- High-functioning ASD; above-average IQ
- Attends fully-integrated middle school
- Has frequent “melt downs” in class
  - Yelling, throwing materials, laying on floor while thrashing and kicking
**Step 1. Assess the Student**

- Bright, friendly, socially awkward
- Wants to be seen as smart and capable
- Is embarrassed by meltdowns
- Proud of academic success
- Excels in math and science
- Struggles some in social studies and often in English where writing is a challenge
- Loves cooking, cooking shows and wants to be a chef

**Step 1. Assess the Student, cont.**

- Team FBA suggests that “melt downs” have a two-fold function
  - Avoiding unanticipated class assignment
  - Seeking attention (comfort/assistance) from adults
- Happens mostly in English
- English teacher regularly asks class to do spontaneous writing
- Harry struggles with changes to routine and surprises, particularly in difficult subject areas

**Step 1. Create Meaningful Goal**

- Harry will remain in general education classes and participate in an age appropriate manner
  - First step – stay in class (no melt downs)
- Harry will express frustrations by speaking in a calm voice and using coping strategies
Step 2: Selecting an Appropriate Intervention

- Identify which EBPs address the skill targeted within the student's goal
- Some EBPs are more comprehensive
- Contextual variables have to be considered

Odom et al., 2010

National Standards Project
11 Established Treatments

- Antecedent Package
- Behavioral Package
- Comprehensive Behavioral Treatment for Young Children
- Joint Attention Intervention
- Modeling
- Naturalistic Teaching Strategies
- Peer Training Package
- Pivotal Response Treatment
- Schedules
- Self-Management
- Story-based Intervention Package

One Size Does NOT Fit All
Even if it is Evidence-Based
Evidence-Based Decision Making: Considerations

- Best available evidence-based resources
- Practitioner expertise
- Knowledge of individual characteristics, needs, values and preferences
- Contextual considerations
- Meaningful data to monitor progress

Contextual Considerations

- Student
- Promotion of practice
- Users
- Institutional context

Step 2. Select an Appropriate Intervention
Step 3. Staff Preparation

• All members of the team working with the child need training in the why and how to implement the intervention
  – Not just verbal instruction/explanation
  – Modeling
  – Practice
  – Feedback/correction
  – Coaching/monitoring

Step 3. Staff Preparation Resources

NPDC BRIEFS

• Developed for all 24 EBPs
• Includes:
  – Overview
  – Evidence-base
  – Step by step for implementation
  – Implementation checklist
  – Data collection forms
  – Evidence-based citations

Step 3. Prepare Staff Reinforcement Package

– Overview
– Evidence-base
– Positive Reinforcement Step for Implementation
– Token Economy Steps for Implementation
– Negative Reinforcement Steps for Implementation
– Implementation checklist
– Data collection forms
Step 3. Prepare Staff
Autism Internet Modules
Hosted by OCALI

• Registration required – no cost
• 45 online modules available related to evidence-based practices
• Case studies, videos, photos, assessments, and glossary of terms
• Certificates and professional credits available

More information available in the Resource Guide

Autism Internet Modules

1. Autism at Home
2. Autism in the Workplace
3. Autism in the Community
4. Autism in the Classroom
5. Autism in the Family
6. Autism in the Community
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42. Autism in the Community
43. Autism in the Classroom
44. Autism in the Family
45. Autism in the Community

Video Examples: Connection Procedure
Step 4: Implementation

• Goal-driven
• Make a written plan
• Practice
• Fidelity
• Social Validity
Step 4: Implementation

Evidence-Based Decision Making: Considerations

- Best available evidence-based resources
- Practitioner expertise
- Knowledge of individual characteristics, needs, values and preferences
- Contextual considerations
- Meaningful data to monitor progress

Step 5: Data Collection

- Essential piece to long-term positive change
- Make it useful to your process
  - It is not just recording observations, it provides valuable information
  - Frequency
  - Duration
  - Latency
  - Intensity
  - Function

Look for patterns!
Data Collection Methods

- Methods for establishing baseline and collecting intervention and post-intervention data:
  - Simple frequency count
  - Scatterplot
  - Behavior Rating Scale

Scatter Plots

Name: Greg
Description of behavior of interest: Fostering children

Directions: At the end of each time interval, use the code below to fill in the square. Indicate the time and date beneath.

Time:

<table>
<thead>
<tr>
<th>Time</th>
<th>Code</th>
<th>Code</th>
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<tbody>
<tr>
<td>8:20 - 9:00</td>
<td>☐</td>
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<td>9:00 - 9:45</td>
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<td>9:45 - 10:30</td>
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<td>11:20 - 12:00</td>
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Date: 1 2 3 4 5 6

Frequency Counts

Behavior: On task behavior
Behavior Definition: Looking at the teacher while she is talking, talking to the teacher, or looking at assignment

Total Observation Time: 45 minutes Length of interval: 1 minute

Summary: The student was on task 4 out of 45 intervals, or 8.9% of the time
### Step 5. Data Collection

**Behavior Rating Scale**

**Child:** Harry  
**Collection Period:** 10/21 – 11/25

**Challenging Behavior:** Yelling, throwing materials and/or progression to lying on the floor while throwing and kicking (multi-touch) in 40 minute English class.

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<thead>
<tr>
<th>Behavior</th>
<th>Dimensions Scale</th>
<th>10/21</th>
<th>10/22</th>
<th>10/23</th>
<th>10/24</th>
<th>10/25</th>
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</thead>
<tbody>
<tr>
<td>Positive</td>
<td>With Anchor Points</td>
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<td>2 min</td>
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### Step 6: Monitor Progress

- What does data collection show?  
  - Behavior change (+ or -)  
  - Fidelity  
  - Connection to goal
- Outcome drives decisions  
  - Adjust intervention  
  - Maintenance  
  - Generalization
Step 6. Monitor Progress

Behavior Rating Scale

Child: Harry
Collection Period: 10/21 – 11/25

Challenging Behavior: Yelling, throwing materials and/or progressive breaking on the floor while threatening and flicking [setbacks] to 40 minutes in class.

Pre-Social Behavior: Siting in-seat and writing independently, using his right hand and asking for assistance as needed.

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Dimensions Scale</th>
<th>With Anchor Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 minutes</td>
<td>5</td>
<td>5 5 5 5 5 5 5 5 5</td>
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<tr>
<td>1.5 minutes</td>
<td>4</td>
<td>4 4 4 4 4 4 4 4 4</td>
</tr>
<tr>
<td>1 minute</td>
<td>3</td>
<td>3 3 3 3 3 3 3 3 3</td>
</tr>
<tr>
<td>30 seconds</td>
<td>2</td>
<td>2 2 2 2 2 2 2 2 2</td>
</tr>
<tr>
<td>Not at all</td>
<td>1</td>
<td>1 1 1 1 1 1 1 1 1</td>
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</tbody>
</table>

Questions/Comments

• Best available evidence-based resources
• Practitioner expertise
• Knowledge of individual characteristics, needs, values and preferences
• Contextual considerations
• Meaningful data to monitor progress

The links and/or locations to find all resources mentioned are available in the Resource Guide found on the CARD website
Antecedent-Based Interventions

Definition:
• Arrangement of events that precede the occurrence of an interfering behavior and designed to lead to the reduction of the behavior

Antecedent-Based Interventions

Goal:
• To identify the environmental conditions that reinforce the interfering behavior, and then modify the activity or the environment accordingly

Antecedent-Based Interventions

Uses:
1) To reduce interfering behaviors, including self-injury, stereotypies, and self-stimulation
2) To increase classroom engagement and on-task behaviors
For whom is ABI effective?

Learners with ASD ranging in age from 3-16 years!

Common ABI Strategies

1) Using highly preferred activities to increase interest
2) Changing the schedule/routine
3) Pre-setting the child before transitions
4) Offering choices
5) Altering the manner of instruction
6) Enriching the environment with sensory stimuli that serve the same function as the interfering behavior

Examples of ABI Strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Functions Addressed</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use highly preferred activities</td>
<td>Escape/Avoid</td>
<td>• Use the iPad to teach math skills</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Allow the child to hold a stuffed animal during task</td>
</tr>
</tbody>
</table>
Antecedent-Based Intervention
Pudding – Highly Preferred

Preference Assessment Worksheet: Early Childhood
Date: __________________________ Activity: __________________________

Learner:

Directions: To identify the preferences of a learner with ASD, observe him/her for at least 30 minutes during a free-choice activity time. Every 2 to 5 minutes, circle the material or toy that the learner is interacting with or looking at. If the material is unattended for the following chart, identify which material the learner with ASD interacted with the most. Complete at least 3 observations to identify highly preferred materials or toys. Highly preferred materials/toys can then be incorporated into non-preferred activities to increase motivation and engagement.

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<thead>
<tr>
<th>Block</th>
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Examples of ABI Strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Functions Addressed</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modifying the schedule/routine</td>
<td>Escape/Avoidance</td>
<td>• Use visual activity schedules</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Review assignment with a student before class starts</td>
</tr>
</tbody>
</table>
### Examples of ABI Strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Functions Addressed</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-setting the child</td>
<td>Escape/ Avoid</td>
<td>• Place a visual schedule at the child’s desk</td>
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<td></td>
<td></td>
<td>• Provide a ten minute warning before transitions</td>
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</table>

NPDC, 2014

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Functions Addressed</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offering Choices</td>
<td>Escape/ Avoidance</td>
<td>• Allow child to choose his seat during a non-preferred activity</td>
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<tr>
<td></td>
<td></td>
<td>• Choosing which activity to do first</td>
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<tr>
<td></td>
<td></td>
<td>• Choosing which writing utensil to use</td>
</tr>
</tbody>
</table>

NPDC, 2014

### Offering Choices

- Insufficient
- Exemplary
### Examples of ABI Strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Functions Addressed</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Altering manner of instruction | Escape/ Avoid      | • Providing written instructions  
• Providing instructions in a checklist, not paragraph |

### Enriching the environment

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Functions Addressed</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Enriching the environment | Get/ obtain         | • Allowing quiet play with clay or silly putty during class  
• Allowing child to pick at an eraser top instead of his nose |

### Antecedent-Based Intervention

Change in Instructional Structure

Antecedent-Based Intervention

...
ABIs: Steps for Implementation

**Step 1:** Identify the interfering behavior, and set an intervention goal

**Step 2:** Collect baseline data

**Step 3:** Choose and implement an ABI

**Step 4:** Monitor Learner Progress

How to Implement ABIs

**Step 1: Identify the Interfering Behavior**

- **What, Where, When, How, With Whom**
- Create a hypothesis statement

"Leah flaps her hands, rocks back and forth, and yells loudly each time the bell rings to switch classes because she does not like the noise, and she then needs help from a staff member to calm down and leave the room. This often results in Leah missing part of or the entire next class."

**Identify an Overall Goal of the Intervention**

1) Leah will engage in minimal hand-flapping and body rocking when the bell rings at the end of each class period
2) Leah will remain calm and quiet when the bell rings at the end of each class period
3) Leah will walk to class independently when the bell rings at the end of each class period
How to Implement ABIs

Step 2: Collect Baseline Data

Event Sampling

<table>
<thead>
<tr>
<th>Date</th>
<th>Yelling</th>
<th>Total</th>
<th>Setting Event</th>
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<tbody>
<tr>
<td>7/01/2014</td>
<td>XXXXXXX</td>
<td>13</td>
<td>Routine disrupted</td>
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<tr>
<td>7/02/2014</td>
<td>XXXXXX</td>
<td>16</td>
<td>Routine disrupted</td>
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<tr>
<td>7/03/2014</td>
<td>XXXXXXX</td>
<td>14</td>
<td>Routine disrupted</td>
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<td>7/04/2014</td>
<td>XXXXXXX</td>
<td>11</td>
<td>Change in teacher</td>
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<td>7/05/2014</td>
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<td>9</td>
<td>Absence of teacher</td>
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<td>7/06/2014</td>
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NPDC, 2014

How to Implement ABIs

Step 3: Implementing the ABI

- Choose a strategy that directly addresses the function of the interfering behavior
- Create a lesson plan that is followed consistently and with fidelity
  i. Weekly objectives
  ii. Statement of ABI strategy
  iii. Materials needed

Example Lesson Plan

Sample ABI Lesson Plan

Date: Week of 11/17/08 - 11/21/08  Classroom: Math class
Teacher: Mrs. Bontz

Interfering behavior: Inappropriate behavior when asked for completion of assignments

Objectives for this week:
1. Student will complete homework assignments with minimal hand-holding; i.e., less than three times.

Strategy: Offer feedback on completion of tasks

1. Provide clear instructions for assignments, rather than providing them verbally.
2. Write and provide instructions to the student, such as a checklist for completing the tasks.
3. Ignore inappropriate behavior when asked for completion of assignments.
4. Limit instruction time; minutes of computer time after completing assignments with minimal hand-holding; i.e., less than three times.

Materials needed:
1. Sentence strips: "Complete these math problems..." "Finish your work..."
2. Checklists for all students that need to be completed daily needs.
Example Checklist

- Kenny’s Language Arts Checklist
  - Share one homework answer with the class during homework review
  - Check the lesson board for today’s language arts topic
  - Raise your hand one time during the lesson to answer a question
  - Pick up your new assignment from the desk at the end of class

How to Implement ABIs

Step 4: Monitor Learner Progress

- Continue Event Sampling Data Collection

ABI Not Working?

TROUBLESHOOT!

- Is the interfering behavior well-defined? (observable and measurable?)
- Are the strategies being implemented consistently and with fidelity?
- Does the strategy directly address the identified function of the behavior?
Let's try an example!

The Process

• Charlie is a third grade student with difficulty adjusting to changes in his routine.
• If met with an unanticipated event, Charlie will become verbally and physically aggressive toward staff.
• After he aggresses, teachers allow him to choose his next activity.

Step 1: Identify the interfering behavior, and set an intervention goal

Behavior: Charlie’s teacher conducts an FBA and determines that Charlie’s behavior only occurs immediately following unanticipated changes in his schedule.

Immediate Goal: Charlie will reduce his hitting of staff members from 8x/week to < 3x/week within 2 weeks.
The Process

Step 2: Collect Baseline Data

<table>
<thead>
<tr>
<th>Date</th>
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<td>7/04/2014</td>
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<td>Routine Disrupted</td>
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<tr>
<td>7/05/2014</td>
<td>XXX</td>
<td>3</td>
<td>Routine Disrupted</td>
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</table>

Step 3: Implement the ABI

Charlie's Lesson Plan

Interfering Behavior: Hitting staff members.

Objectives for this week:
1. Charlie will reduce the number of times he hits staff from 4x/week to < 1x/week.

Strategy: Pre-set Charlie before changes in his routine.

To Implement this Strategy, I will:
1. Reintroduce Charlie's visual schedule each morning.
2. Remind Charlie that changes may occur to his schedule, and that he will be given notice.
3. Provide as much warning as possible to Charlie, both verbally and visually, that a change will occur in his schedule.
4. Allow Charlie to have 5 minutes of free time when he behaves appropriately after a change in his schedule.

Materials Needed:
1. A laminated visual schedule
2. Cue card to hand Charlie when a change is going to occur

Sample Visual Schedule
The Process

Step 4: Monitor Learner Progress

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Let’s Practice

Matt is a fourth-grader with autism who engages in hand-flapping behavior during class, which routinely disrupts his fellow classmates.

What should we do first?

Let’s Practice

Step 1: Identify the behavior and set an intervention goal

What comes next?
Let’s Practice

Step 2: Collect Baseline Data

Now what do we do?

Let’s Practice

Step 3: Choose and Implement an ABI Strategy

What’s the final step?

Let’s Practice

Step 4: Monitor Learner Progress

Don’t forget to troubleshoot!
Using Technology

Evidence-based Apps
Free of Charge
1) Tantrum-Tracker Lite (Data collection software)
2) Words and Blocks (highly preferred activity)

Using Technology

Evidence-based Apps
Paid
1) Visual Routine (Pre-setting)
2) Visules (Pre-setting, altering instruction)
3) Week Planner for Kids (Pre-setting)
4) Word Magic (highly preferred activity)

CARD Albany is now on Facebook
https://www.facebook.com/cardalbany

Required Coursework for Special Education professionals now online – “Responding to the Needs of Students with ASD”
http://www.albany.edu/autism/nysed_autism_training.php
Online Distance Learning Training
http://www.albany.edu/autism/33452.php
New York State Regional Centers for Autism Spectrum Disorders

http://www.albany.edu/autism/nysrcasd.php

Questions?

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Email: card@albany.edu
Website: www.albany.edu/autism

NYS