Research-Based Intervention, Translation to Practice, and Implementation for Learners with Autism Spectrum Disorders

Overview of Topics

• Introduction to National Professional Development Center on Autism Spectrum disorders (ASD)
• Research-Based Interventions: Identifying Evidence-Based Practices (EBP)
• Translation of EBP to Practice
• Implementation for Learners with ASD
• Impact of our Work
National Professional Development Center on Autism Spectrum Disorders

A multi-university center to promote use of evidence-based practice for children and adolescents with autism spectrum disorders

- FPG Child Development Institute, University of North Carolina at Chapel Hill
- M.I.N.D. Institute, University of California at Davis Medical Center
- Waisman Center, University of Wisconsin at Madison
# Center Staff

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<th>M.I.N.D. Institute Univ. of CA-Davis Medical Center</th>
<th>Waisman Center Univ. of WI-Madison</th>
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Goals of the National Center?

• Promote development, learning, and achievement of children with ASD and support families through use of evidence-based practices
• Increase state capacity to implement evidence-based practices
• Increase the number of highly qualified personnel serving children with ASD
Working in Partnership With States
State Involvement to Date

Cohort 1: CA, TX, NM
Cohort 2: MI, WI
Cohort 3: VA, KY, MN
Cohort 4: IN
Site Descriptions (since 2007)

• 9 states
• 48 model/expansion sites
  ▪ 10 preschools
  ▪ 17 elementary schools
  ▪ 11 middle schools
  ▪ 10 high schools
• Breakdown by type of program
  ▪ 51% are self-contained programs
  ▪ 49% are inclusive programs
Research-Based Intervention: Identifying Evidence-Based Practices (EBP)
What are EBP?

Focused interventions that:

• Produce specific behavioral and developmental outcomes for a child
• Have been demonstrated as effective in applied research literature
• Can be successfully implemented in educational settings

(Odom, Boyd, Hall, & Hume, 2009)
Process Used to Identify EBP

- Identified outcomes related to the core features of autism
- Reviewed literature related to outcomes and the key words autism, ASD, and autism spectrum, limited by age (birth – 21)
- Identified and grouped teaching interventions that addressed these outcomes/domains
- Determined criteria and whether an evidence base supported the practices
NPDC Criteria

To be considered an evidence-based practice:

• Two randomized or quasi-experimental design studies,
• Five single subject design studies by three different authors, OR
• A combination of evidence such a one group and three single-subject studies
Evidence-Based Practices

- Antecedent-based interventions
- Computer-aided instruction
- Differential reinforcement
- Discrete trial training
- Extinction
- Functional behavior assessment
- Functional communication training
- Naturalistic interventions
- Parent-implemented intervention
- Peer-mediated instruction/intervention
- Picture Exchange Communication System™

- Pivotal response training
- Prompting
- Reinforcement
- Response interruption/redirection
- Self-management
- Social narratives
- Social skills training groups
- Speech generating devices
- Structured work systems
- Task analysis
- Time delay
- Video modeling
- Visual supports
## Practices by Age and Domain

<table>
<thead>
<tr>
<th>Evidence-Based Practices</th>
<th>Academics &amp; Cognition</th>
<th>Behavior</th>
<th>Communication</th>
<th>Play</th>
<th>Social</th>
<th>Transition</th>
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Evidence-Based Practices are DELICIOUS!
Translation of Research to Practice

• Developing learning materials on EBP
  ▪ Briefs
  ▪ On-line modules

• Validating module/brief content

• Establishing fidelity of implementation
Bridge the Gap

Replicable practices in the classroom

Research-based practices
Resources Developed on EBP

- EBP Briefs (http://autismpdc.fpg.unc.edu)
  - Overview
  - Evidence Base
  - Steps for Implementing
  - Implementation Checklist
  - Sample Data Collection Forms (optional)
Resources Developed on EBP

• Online Modules (Collaboration with OCALI)
  ▪ Posted on AIM Website
    (www.autisminternetmodules.org)
  ▪ Narrative content with video examples of practices being implemented
  ▪ Includes downloadable EBP brief components
  ▪ Pre/ Post knowledge assessment
  ▪ Case study examples
  ▪ Learning activities, Discussion questions
EBP Content Validation

• Identified national experts on practices

• Experts reviewed modules and briefs and provided comment

• Modules/briefs revised and finalized
Implementation Fidelity

• Implementing an intervention in same manner in which it was done in the evidence-based research

• How is this achieved?
  ▪ Use self-learning modules on practices
  ▪ Offer training on the practice, as needed
  ▪ Use implementation checklists for the EBP to capture fidelity of implementation
  ▪ Coach on the practice until fidelity is attained
Sample Implementation Checklist

Implementation Checklist for Naturalistic Intervention

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<th>Observation</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<td>Observer’s Initials</td>
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**Step 1. Identifying a Target Act**

1. Teachers/practitioners select a specific target act/skill to be the focus of intervention that:
   a. focuses on prelinguistic or linguistic communication and/or
   b. social skills.

2. Teachers/practitioners confirm that the target act is in the learner’s IEP or IFSP.

**Step 2. Collecting Baseline Data**

1. Prior to intervention, teachers/practitioners determine the learner’s current use of the target skill.

2. Teachers/practitioners take data on the target skills a minimum of three times in more than one environment.

**Scoring Key:** 2 = implemented; 1 = partially implemented; 0 = did not implement; NA = not applicable
Implementation for Learners with ASD

- NPDC model
- Quality of the program
- Attainment of learner goals
- Coaching support
Assessment ➔ Implementation ➔ Outcomes

Program Quality (APERS)

Learner Goals and Present Levels (IEP)

Learner Strengths, Interests, and History

Teacher Experience and Knowledge

Selection and Implementation of Evidence Based Practices

Program Quality (APERS)

Student Progress (GAS)
Program Quality
Why is Quality Program Important?

• The quality of programs contributes to student outcomes.
• Quality programs provide the foundation upon which EBP can be successfully implemented.
• Quality indicators of programs can be captured through observation and interview.
• Program quality can be improved through training and technical assistance/coaching.
How Do We Assess for Indicators of Program Quality?

- **Autism Program Environment Rating Scale (APERS)**
  - Designed to assess quality indicators of programs for children and youth with ASD
  - Purposes of the APERS
    - Program evaluation
    - Consultation
    - Self-evaluation
    - Professional development
Features of APERS

- Two APERS formats: PE; MHS
- Organized by domains and subdomains
- Applicable in self-contained and inclusive programs
- Score obtained by
  - observing classroom(s) and
  - conducting interviews (teacher, team member, parent)
- Scored on a five-point scale with behavioral anchors at three points
- Results can be summarized by scores or graphs
Autism Program Environment Rating Scale

APERS Profile by Domain

- Classroom Environment: Adequate
- Class Structure/Schedule: Adequate
- Positive Classroom Climate: Adequate
- Assessment: Adequate
- Curriculum and Instruction: Adequate
- Communication: Inadequate
- Staff/Peer Relationships: Inadequate
- Personal Ind./Competence: Inadequate
- Functional Behavior: Adequate
- Family Involvement: Exemplary
- Teaming: Adequate
- Overall Score: Adequate
How Do We Use The APERS?

- Complete APERS at the start of the school year (baseline).
- Use baseline data to improve the quality of programs for learners with ASD through training and coaching.
- Repeat APERS at the end of school year to measure program improvement.
Student Goal Attainment
Selecting Learner Goals

• Review student’s IEP Goals with teacher/parents

• Identify 3 priority goals for each target student
  ▪ must be area of focus for entire school year
  ▪ must be observable and measurable
  ▪ must be agreed to by family and team

• Make modifications as needed
  ▪ case conference or making an addendum
Examining Learner’s IEP Goals: Goal Attainment Scale (GAS)

• Goal Attainment Scale (GAS) is designed to document progress on IEP goals, objectives, and benchmarks.
• Has a long history in fields of mental health, education, geriatric care
• Provides a summative rating to evaluate outcomes
Description of Scaling

• Establish a five point range of performance for students:
  ▪ Much less than expected *(present level of performance)*
  ▪ Somewhat less than expected *(benchmark)*
  ▪ Expected level of outcome *(annual goal)*
  ▪ Somewhat more than expected
  ▪ Much more than expected
| **Much less than expected**  
| (Present Level of Performance) | When he enters classroom EJ does not greet his peers or professionals |
| **Somewhat less than expected**  
| (Benchmark) | When entering the classroom in the morning and with a verbal prompt and picture cue, EJ will greet at least one peer by saying “hi” or waving for 4/5 mornings for a week |
| **Expected level of outcome**  
| (Annual Goal) | When entering the classroom in the morning and with a visual prompt, EJ will greet at least one peer by saying “hi” or waving for 4/5 mornings for 2 consecutive weeks. |
| **Somewhat more than expected**  
| (Exceeds annual goal) | When entering the classroom in the morning without a prompt, EJ will greet at least one peer by saying “hi” or waving for 4/5 mornings for 2 consecutive weeks. |
| **Much more than expected**  
| (Far exceeds annual goal) | When entering school in the morning and without a prompt, EJ will greet at least one peer and one non-classroom professional by saying “hi” or waving for 4/5 mornings for 2 consecutive weeks. |
How Do We Use GAS?

• Select learning objective/benchmark with a defined continuum of outcomes.
• Identify outcomes that reflect the five points on the continuum noted.
• Identify the current level of performance.
• Use the continuum to evaluate growth on a designated schedule (monthly, bimonthly).
• Use GAS to determine final outcome at end of learning period (end of the year).
Influencing EBP Implementation, Program Quality, and Student Goal Attainment Through . . .

COACHING
Coaching in the NPDC Model

- Process used to support how teachers/team assess, address, and implement strategies
- Coaches visit classrooms at least one day a month, sometimes more often
- Coach on areas for improvement in program quality
- Coach on EBP selection and implementation
What is Coaching?

• Form of embedded sustained professional development used to:
  ▪ Refine existing skills and/or acquire new teaching skills in EBP

• Coaching is a vehicle to develop:
  ▪ An ongoing, confidential relationship that encourages recognition of individual expertise and professional growth
Coaching – Promising Practice

Coaching leads to . . .

• Improvement in instructional capacity - increasing teachers’ ability to apply what they have learned to their work with students
• Improvement in the instructional culture of the school
• A focus on content which encourages the use of data to inform practice

The Annenberg Institute for School Reform, 2004
<table>
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<tr>
<th>Training Components</th>
<th>Training Outcomes</th>
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<tbody>
<tr>
<td></td>
<td>Knowledge of Content</td>
</tr>
<tr>
<td>Presentation/ Lecture</td>
<td>10%</td>
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<tr>
<td>Plus Demonstration in Training</td>
<td>30%</td>
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<tr>
<td>Plus Practice in Training</td>
<td>60%</td>
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<tr>
<td>Plus Coaching/ Admin Support Data Feedback</td>
<td>95%</td>
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Joyce & Showers, 2002
Two Types of Coaching

• Mentor: coach shares expertise and guidance with the professional; coach provides direction for interaction

• Peer: Each member of coaching dyad coaches the other, guiding collaboration
Coaching Process

• *Pre-observation conference*: to identify need, set up for observation, identify intended outcomes

• *Observation*: collect data about activity, teaching, strategy implementation

• *Post-observation conference*: share results of observation, identify areas for improvement, provide feedback and reinforcement, debrief
What is the impact of our work thusfar?
What do the data** tell us . . .

• about teacher use of evidence-based practices?
• about improvements in overall program quality?
• about student goal attainment?

**Data are presented from Cohort 1 (both years) and Cohort 2 (first year) states from Fall 2008 through Spring 2010.
Teacher Use of Evidence-based Practices
Use of Evidence-Based Practices

Number of EBPs used by Teachers Across All Year 1 Sites

Note: This data is inclusive of Cohort 1, Year 1 Sites
Use of Evidence-Based Practices

Percentage of Teachers Using Each Evidence-Based Practice

Note: This data is inclusive of Cohort 1, Year 1 Sites
Program Quality
Preschool/Elementary APERS Scores

Mean Total APERS Scores: Preschool and Elementary (n = 17)

Pre

Post

PE APERS effect size 1.13
Mean APERS Domain Scores:
Preschool and Elementary (n = 17)
Middle/High School APERS Scores

Mean Total APERS Scores:
Middle and High School (n = 16)

MHS APERS effect size .90
Mean APERS Domain Scores: Middle and High School (n = 16)
Attainment of Learner Goals
Goal Attainment Scaling Results and Graphs

GAS Outcomes (N = 236)

-2 Much less than expected: N = 4
-1 Less than expected: N = 49
0 Goal met: N = 76
+1 More than expected: N = 61
+2 Much more than expected: N = 46
Questions and Discussion