Promoting Use of Evidence-Based Practices for Learners with Autism Spectrum Disorders

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The National Professional Development Center on Autism Spectrum Disorders

Cooperative Agreement H 35G 070004
U.S. Department of Education, Office of Special Education Programs
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
National Professional Development Center on Autism Spectrum Disorders: Sites

• FPG Child Development Institute, University of North Carolina at Chapel Hill
  ▪ FPG : Sam Odom and Ann Cox

• Waisman Center, University of Wisconsin at Madison
  ▪ Len Abbeduto and Linda Tuchman-Ginsberg

• M.I.N.D. Institute, University of California at Davis Medical School
  ▪ Sally Rogers and Sally Ozonoff
Need for Professional Development Related to ASD Pushed By

- Rapidly increasing numbers of children identified as having ASD
- Emerging base of evidence about effective practices
- Responsibility of public school system to provide a free and appropriate public education
Need for Professional Development Related to ASD

- Prevalence rates increased from 2/10,000 in 1980s to 1/150 in 2009
- Dramatic increase in numbers of children with ASD in public schools
- Numbers served in 1991
  - 5415 children from 6-22
- Numbers Served in 2004
  - 166,424 children from 6-22
  - 25,929 children from 3-5
Growing Agreement on Efficacious Practices

• National Academy of Sciences Committee
• National Standards Project
• Range of reviews and syntheses
• Evidence-based education movement
Challenge of Promoting Use of Evidence-Based Practice by Teachers

- Lack of ASD specific training for many teachers
- Introduction of innovation into public school system
- Support and sustainability
Goals of the Center

Project goals are organized around four content areas:

1. Content development
2. Professional development
3. Technical assistance
4. Evaluation
Project Goals: Content Development

- Translate information about evidence-based practices into resources for service providers
- Establish and maintain a website
Project Goals: Professional Development

- Provide training to state professional development providers
- Provide training activities to practitioners in participating states
- Establish training sites that model evidence-based practices
Project Goals: Technical Assistance

• Develop outreach program
• Provide ongoing site-based training
• Establish a network of professional development sites, trainees, and national consultants
Project Goals: Evaluation

• Assist trainees in establishing a system for implementing EBP
• Collect follow-up data on use of evidence-based practices, practitioner skills, and child and family outcomes
Accomplishment of NPDC: Key Activities

- Professional Development
- Technical Assistance
- Content Development
- Evaluation
Content Development

• Develop online introductory course on ASD
• Identify/define criteria for evidence
• Identify evidence-based practices
• Develop briefs/modules on evidence-based practices
Content Development

Foundations of Autism Spectrum Disorders Online Course

- Eight sessions
- Pre- and post-test for each session
- PowerPoint and narrative formats
- Accessed online using BlackBoard platform
Content Development

Products: Online Introductory Course

Guiding Principles/Recommended Practices

- Understanding ASD
- Family-centered practices
- Use of evidence-based practices
- Interdisciplinary teaming
- Data-driven decision making
- Inclusion
- Providing access
- Transition planning
- Systems change approach
Content Development

Products: Online Introductory Course

• Understanding PDD/ASD
• Characteristics of individuals with ASD
• Assessment
• Guiding principles/recommended practices
• Learning and development

• Instructional strategies and learning environments
• Foundations of communication and social interventions
• Promoting positive behavior and reducing interfering behaviors
Online Introductory Course

http://autismmpdc.fpg.unc.edu/content(foundations-autism-spectrum-disorders-online-course-content)
Content Development

Evidence-Based Practices
Selection of Evidence-Based Practices (EBP)

• Intended to use National Standards Project (NSP) literature review as basis for selecting EBP
• NPDC developed criteria for EBP because NSP report was delayed
Process for Identifying EBP

• Established criteria for selection of research studies
• Established criteria for the level of evidence needed for a practice to be considered evidence-based
• Conducted a thorough literature review
• Selected practices that had sufficient evidence base and practical utility
Definition of EBP

To be considered an evidence-based practice (EBP) by The National Professional Development Center on ASD, efficacy must be established through peer-reviewed research in scientific journals using:

- *randomized or quasi-experimental design studies*. Two high quality experimental or quasi-experimental studies,
- *single-subject design studies*. Three different researchers must have conducted five high quality single subject design studies, or
- *combination of evidence*. One high quality randomized or quasi-experimental group design study and three high quality single subject design studies conducted by at least three different investigators or research groups.
EBP Criteria

• High-quality randomized or quasi-experimental design studies do not have critical design flaws that create confounds to the studies and have design features that readers/consumers can use to rule out competing hypotheses for study findings.

• High-quality single-subject design studies have no critical design flaws that create confounds and demonstrate experimental control at least three times.
Basis for EBP Definition and Criteria


<table>
<thead>
<tr>
<th>Evidence-based Practice</th>
<th>Early Childhood (2-5 yrs.)</th>
<th>Elementary (6-12 yrs.)</th>
<th>Middle School (13-15 yrs.)</th>
<th>High School (16-21 yrs.)</th>
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<tbody>
<tr>
<td>1. Computer-aided instruction</td>
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<td>2. Differential reinforcement (DRA/I/O/L)</td>
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<td>3. Discrete trial training (DTT)</td>
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<td>4. Extinction</td>
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<td>5. Functional behavior assessment (FBA)</td>
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<td>6. Functional communication training (FCT)</td>
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<td>7. Naturalistic interventions</td>
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<td>8. Parent-implemented interventions</td>
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<td>9. Peer-mediated instruction/intervention (PMII)</td>
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<td>10. Picture exchange communication system (PECS)</td>
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<td>11. Pivotal response training (PRT)</td>
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<td>12. Prompting</td>
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<tr>
<td>13. Reinforcement</td>
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<td>14. Response interruption/redirection</td>
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<td>15. Self-management</td>
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<td>16. Social narratives</td>
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<td>17. Social skills training groups</td>
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<td>18. Speech generating devices (SGD)/VOCA</td>
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<td>19. Stimulus control</td>
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<td>20. Structured work systems</td>
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<td>21. Task analysis and chaining</td>
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<td>22. Time delay</td>
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<td>23. Video modeling</td>
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<td>24. Visual supports</td>
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Shading indicates that the studies making up the evidence base for the practice included children and youth from these age groupings.

Disclaimer: The review completed by the NPDC on ASD was not exhaustive. It is possible that yet unidentified evidence exists for practices and ages not indicated above.
EBP for Students with ASD

- Antecedent-Based Interventions (ABI)
- Computer-Aided Instruction
- Differential Reinforcement
- Discrete Trial Training
- Extinction
- Functional Behavior Assessment
- Functional Communication Training
- Naturalistic Intervention
- Parent-Implemented Interventions
- Peer-Mediated Instruction and Intervention
- Picture Exchange Communication System (PECS)

- Pivotal Response Training
- Prompting
- Reinforcement
- Response Interruption/Redirection
- Self-Management
- Social Narratives
- Social Skills Groups
- Speech Generating Devices/VOCA
- Structured Work Systems
- Task Analysis
- Time Delay
- Video Modeling
- Visual Supports
Content Development

Evidence-Based Practice Briefs

• Developed for all 24 EBP
• Provide content to states while modules are still under development
• All briefs contain:
  ▪ Evidence base supporting the effectiveness of the practice
  ▪ Overview describing the practice
  ▪ Steps for implementation
  ▪ Fidelity implementation checklist
Content Development

Web-Based Module Content

- Pre-Test/Post-Test
- Contextual Information
- Step-by-Step Instructions
- Case Examples
- Video Examples
- Implementation Checklist
- Summary of Evidence Base
- Resources
Collaboration with OCALI and Partners for Module Development

http://www.autisminternetmodules.org/

AUTISM INTERNET MODULES

SIGN UP
ABOUT AIM
MODULE LIST
FORGOT PASSWORD?
HELP

WELCOME TO AIM

HIGHLIGHTED MODULES

STRUCTURED WORK SYSTEMS AND ACTIVITY ORGANIZATION
Individuals with autism spectrum disorders (ASD) thrive in well-organized situations. Environments that provide clear expectations and predictable routines promote increased engagement and on-task behavior. Creating such environments often involves the use of individual work systems. This module will define individual work systems, offer strategies for developing such systems, and discuss how these systems might be used at home, school, work, and in the community.

PEER-MEDIATED INSTRUCTION AND INTERVENTION (PMII) FOR CHILDREN WITH AUTISM SPECTRUM DISORDERS
Social impairment and difficulty with social reciprocity – or understanding the back-and-forth nature of social interactions – is perhaps the single most defining feature of autism. Peer-mediated instructional approaches can address social concerns by teaching children and youth with ASD new social skills and increasing social opportunities within natural environments, often a primary goal of families. This module will explain peer-mediated instruction and
VIDEO EXAMPLES

The first two videos should be viewed after completing the content for Steps 1 and 2. The first is a training session video, the second is a practice session video. The third video should be viewed after completing the content for Step 5.

MOVIE: PEER INITIATION TRAINING SESSION

Play Movie | Stop Movie | Skip Movie Back | Skip Movie Forward | Start Movie Over

MOVIE TRANSCRIPT

Adult: "What's your name?"
Sam: "Sam"
Adult: "Sam, and what is your name?"
Content Development

Evaluation

• Development of Assessment Instruments
  ▪ Autism Program Environment Rating Scale (APERS)
  ▪ Evidence-Based Practices Inventory
  ▪ Fidelity Implementation Checklists
  ▪ Goal Attainment Scaling
  ▪ Family Program Questionnaire
Developing an Assessment to Evaluate Program Quality

• Autism Program Environment Rating Scale (APERS)
• Observational tool used to evaluate programs that serve children and youth with ASD
• Two versions developed:
  ▪ APERS-Preschool/Elementary
  ▪ APERS- Middle/High School
Rationale for Developing the APERS

**Program Quality**
- Contextual features of the program that represents best practices
- Program quality as the house in which practices are employed

**EBP**
- EBP as specific tools for specific skills
- EBP as the furniture or appliances designed for specific functions
Example

**General Quality Indicators**

- Structure/Schedule
- Positive Learning Climate
- Assessment

**EBP**

- Visual Supports
- Peer-mediated Intervention
- Discrete Trial Training
Content Development

Autism Program Environment Rating Scale (APERS)

• Learning Environment
• Positive Learning Climate
• Assessment
• Social Competence
• Personal Independence/Competence
• Promoting Appropriate Behavior
• Family Involvement
• Teaming
• Transition Planning
Content Development

Evidence-Based Practice Inventory

• Self-report checklist for members of state autism training teams to rate their familiarity with and use of EBP

• State participants complete the inventory before they begin the online course and after their participation in the project
Process for measuring attainment of IFSP/IEP goals

State TA providers, model site practitioners, parents, and NPDC staff identify 3 priority goals for each target student

Attainment of goals is recorded at pre- and post-test
Content Development

Family Program Questionnaire

- Self-report measure for families of children with ASD that documents perceptions of services and supports
- Collected at pre- and post-test
Fidelity Implementation Checklists

- Individualized for each EBP
- Developed as part of online modules and EBP briefs
- Used to measure how well practitioners implement practices
- Collected at pre- and post-test on those EBP state TA providers and practitioners identified for each student
Launched September 2007, revamped 2010
Provides basic information about the project and state application
Includes online forums for state partners
Includes EBP Briefs for all 24 evidence-based practices
Content Development

Products

- Online course
- Web-based Modules
- Assessment Instruments
- Website
- National Network for Information Dissemination
Year 1, Cohort 1: Master content and process in collaboration with NPDC staff: IN, NM, WI
Years 2-4: States complete competitive application
  - Year 2, Cohort 2: KY, MN, MI
  - Year 3, Cohort 3: CA, TX, VA
  - Year 4, Cohort 4: ???
Total number of states served: 12
Key Activities with States

• Assemble a planning team consisting of key stakeholders and policymakers in the state
• Establish model demonstration sites
• Create a technical assistance team
• Prepare a strategic plan that describes goals and timelines for the state’s involvement
• Participate in summer institute
• Conduct ongoing technical assistance
• States take the lead in professional development activities in Year 2
State Application Process

• First year: Selected states based on interest and willingness to participate
• Application process established in Year 1 for remaining years
  ▪ States submit application online (http://www.fpg.unc.edu/~autismPDC/training/state-partners.cf)
  ▪ Applications reviewed by three independent reviewers
  ▪ Cohort 4 applications are due June 1, 2010
State Planning Teams

• Establish a state planning team in spring of first year of involvement
• Develop a strategic plan for professional development and technical assistance
• Identify technical assistance support teams, model demonstration sites, and service providers
1. Increase knowledge of EBP
2. Identify elements of high-quality programs
3. Build networking, collaboration, and skills of members of state autism training team, including model site personnel
4. Develop plans for model sites, technical assistance, and for dissemination across state
Chronology of Model Year 1

- State application
- Strategic planning with states
- Online course
- Intensive summer institute
  - Strategic planning with team members
- Fall data collection with TA providers and teams
- TA in local context--ongoing across year
- Community of professionals network
- Spring data collection
Chronology of Model Year 2

- State identifies second site for professional development
- Participants complete online course
- Summer institute led by state personnel
  - Strategic planning with teachers
- Fall data collection in classrooms
- TA in local context across the year
- Community of teachers/peer coaching
- Spring data collection and evaluation
Technical Assistance

1. Development of state strategic plan
2. Development of model sites
3. Use of goal attainment scaling
4. Development of community of practice
5. Onsite coaching/mentoring
   - Development/evaluation of high-quality programs
   - Use of EBP
   - Progress monitoring of target students
Follow-Up Technical Assistance

• NPDC staff, state TA providers, and model site team members develop a plan for incorporating EBP into their programs
• NPDC staff and state TA providers meet with model site team members
• State TA providers and model site team members establish a schedule for TA
States’ Year 2 Involvement

- State personnel take the lead in providing professional development and TA to a new set of model sites
- NPDC collaborates with state staff to administer online course, planning and delivering summer institute, and collecting evaluation data
Logic Evaluation Model

- **Resources** needed to complete activities
- **Activities** used to address the problem
- **Outputs** identified as activities are completed
- **Outcomes** that measure the success of activities
- **Impact** of the activities over the long term
APERS Findings

Mean APERS Subdomain Scores: Preschool/Elementary

THE NATIONAL PROFESSIONAL DEVELOPMENT CENTER ON AUTISM SPECTRUM DISORDERS
APERS Findings

Mean APERS Subdomain Scores: Middle/High School
APERS Findings

Mean APERS Total Scores: Preschool/Elementary

Mean APERS Total Scores: Middle/High School
### APERS Findings

#### Mean Effect Size by Model Site

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<tr>
<th>Site</th>
<th>Effect Size</th>
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<tr>
<td>IN0102IN</td>
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<tr>
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<tr>
<td>IN0103IN</td>
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<tr>
<td>IN0103SC</td>
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<tr>
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#### Mean Effect Size by State

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<tr>
<td>Wisconsin</td>
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<tr>
<td>New Mexico</td>
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#### Mean Effect Size by Grade Level

<table>
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<tr>
<th>Grade Level</th>
<th>Effect Size</th>
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<tbody>
<tr>
<td>Pre/Elem.</td>
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<tr>
<td>Middle/High</td>
<td>0.62</td>
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Current Priorities
Technical Assistance Model

*Long Term Goal #1:* State TA providers, model site practitioners, and NPDC staff will engage in a collaborative TA process that links assessment, intervention, and evaluation.

*Short Term Goal:*

1. Further develop the TA model that uses peer coaching as the means for sustaining support to participants.
Technical Assistance Model

**Long Term Goal #2:** Further refinement/development of resources will provide content and procedures needed by state TA providers to implement TA during and after participation in the project.

**Short Term Goal:**
1. Develop materials focused on the TA model that will be used during summer institutes to outline TA process
Technical Assistance Model

*Long Term Goal #3*: Refined TA model will provide states with a clear process to sustain professional development and TA activities over time.

*Short Term Goals:*
1. Adapt current implementation checklists to guide model sites in their implementation of EBP
2. Refine data collection process used to evaluate the TA model
Revision of Products

*Long Term Goal #1:* A valid set of professional development products will be produced.

*Short Term Goals:*

1. Ask experts to review resources and procedures to determine content validity
2. Revise EBP resources and procedures based upon feedback from state TA providers, model site practitioners, and experts
http://autismmpdc.fpg.unc.edu/

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