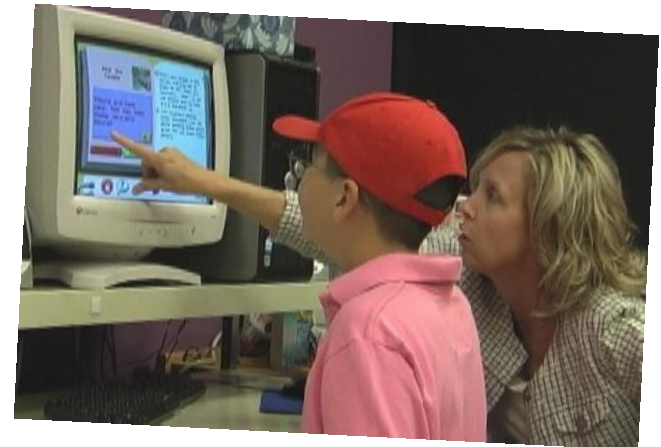


# Outcomes Associated with the Translation and Implementation of Research-based Intervention for Learners with ASD in Schools



**Samuel L. Odom and Ann W. Cox**



THE NATIONAL PROFESSIONAL DEVELOPMENT CENTER ON  
AUTISM SPECTRUM DISORDERS



# **National Professional Development Center on ASD**

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



THE NATIONAL PROFESSIONAL DEVELOPMENT CENTER ON  
AUTISM SPECTRUM DISORDERS

# 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





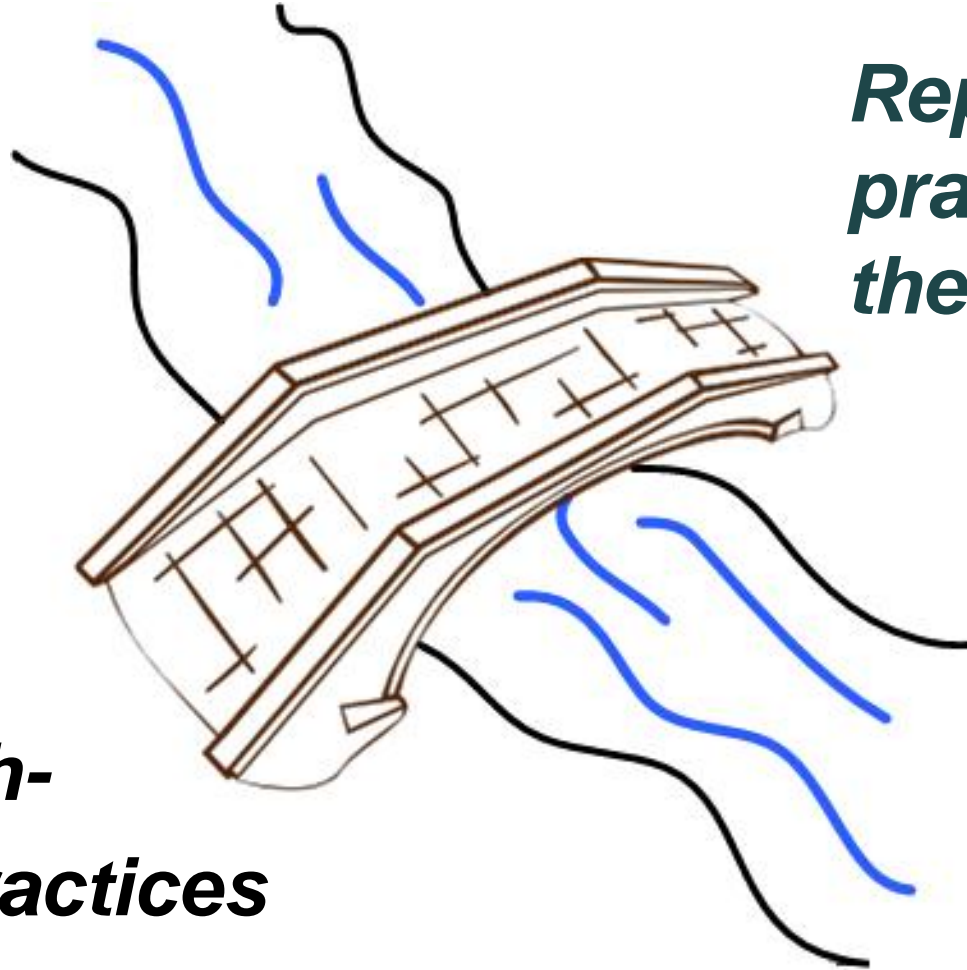
***What do we do?***



THE NATIONAL PROFESSIONAL DEVELOPMENT CENTER ON  
**AUTISM SPECTRUM DISORDERS**

# Bridge the Gap

*Replicable  
practices in  
the classroom*



*Research-  
based practices*

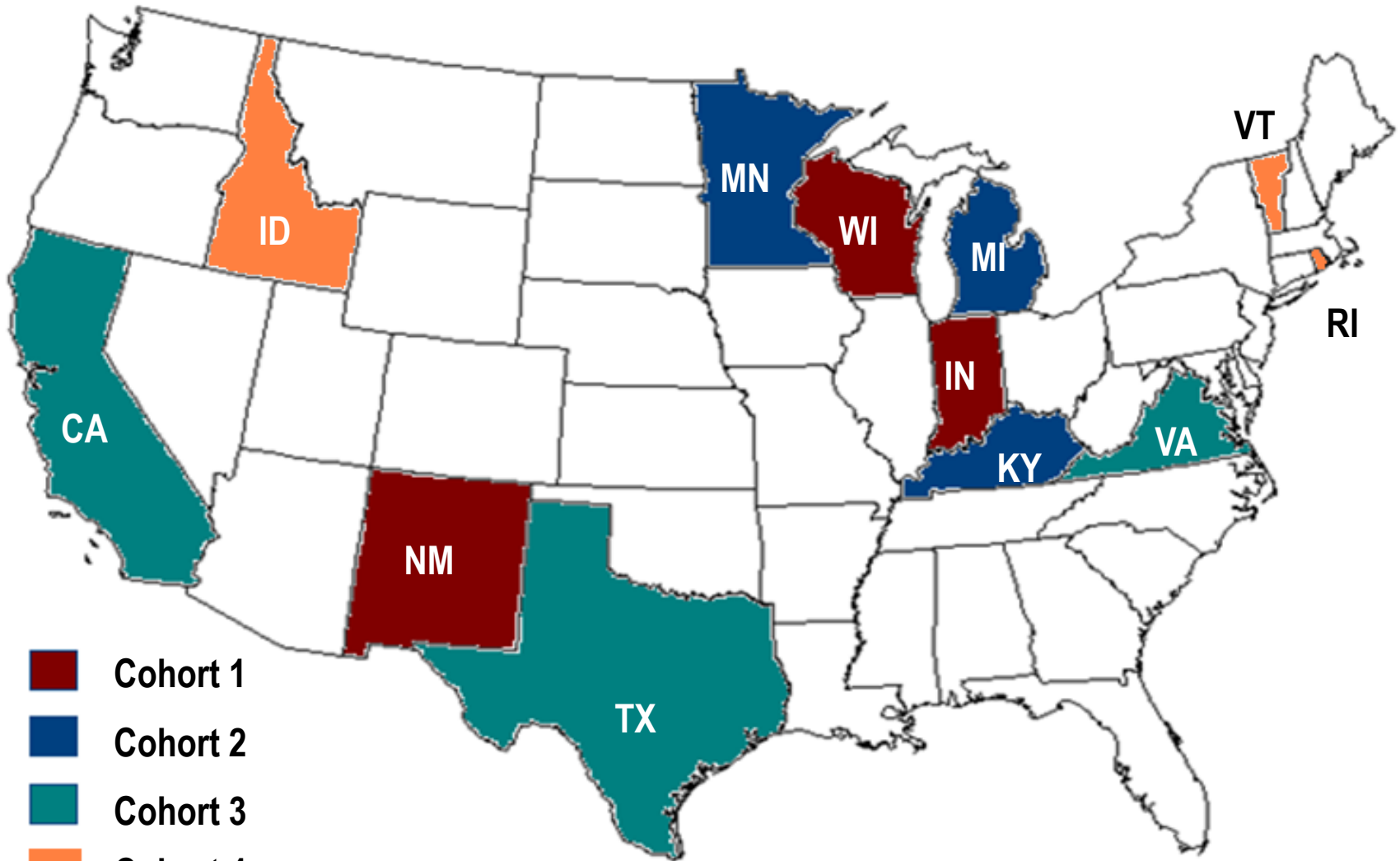


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AUTISM SPECTRUM DISORDERS

# Working in Partnership With States



# *State Involvement to Date*



-  Cohort 1
-  Cohort 2
-  Cohort 3
-  Cohort 4



# State Involvement to Date

- Currently there are 4 groups of 3 states.
- These include:
  - Cohort 1: (2008-2010) Indiana, New Mexico, Wisconsin
  - Cohort 2: (2009-2011) Kentucky, Michigan, Minnesota
  - Cohort 3: (2010-2012) California, Texas, Virginia
  - Cohort 4: (2011-2012) Idaho, Rhode Island, Vermont



# NPDC 2- Year Cycle

## Year 1 State Capacity Building

application development, IAPG formed, strategic plan, model sites confirmed, Autism Training Team completes training

### Model Sites

program quality  
use of EBP  
parent involvement  
collaborative  
coaching

## Year 1 and 2

Model and Expansion Site Development  
Use of Evidence-Based Practices

### Expansion Sites

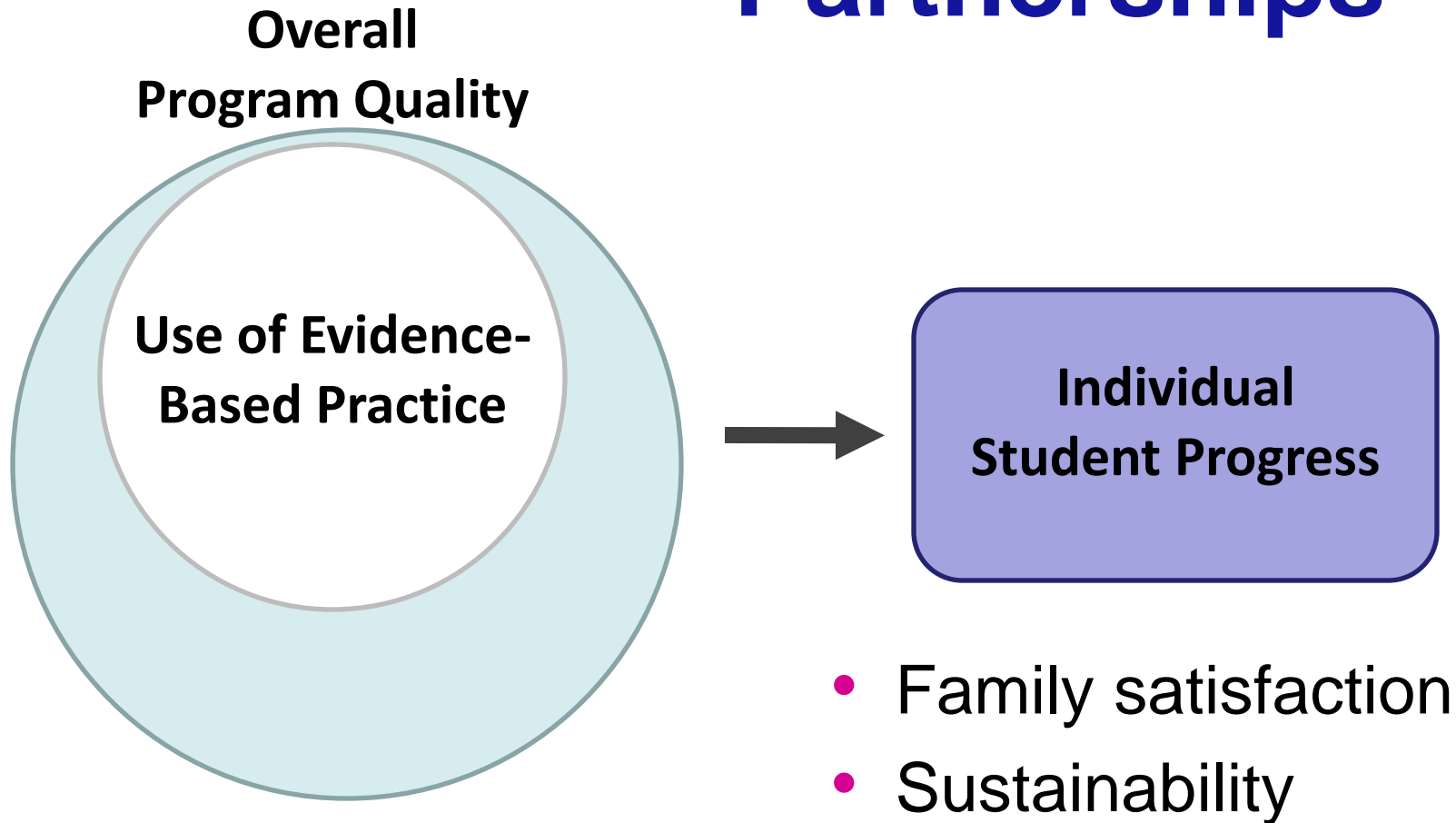
program quality  
use of EBP  
parent involvement  
collaborative  
coaching

## Year 2 Sustainability

strategic plan updated; leadership shift; state ownership of process, materials, further expansion , training, and coaching



# Outcomes of NPDC Partnerships



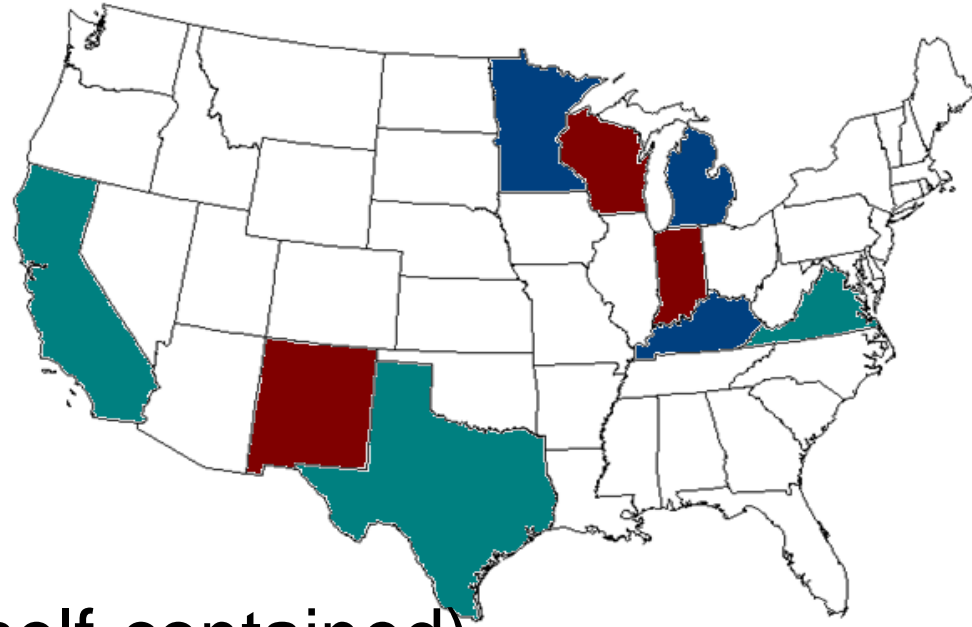
# Outcomes

- APERS – program quality measure
  - Fall and Spring
- Use of Evidence-based Practices
  - Fall and Spring
- Goal Attainment Scale – student outcome measure
  - Assesses growth across year
- Family Questionnaire
  - Fall and Spring
- Sustainability – state use of model during and after PDC involvement



# All Current NPDC Data

- 58 school programs
  - 12 Preschool
  - 23 Elementary
  - 12 Middle
  - 11 High
- 142 students  
(55% inclusive/45% self-contained)
- Nine States:
  - Cohort 1: IN, KY, NM,
  - Cohort 2: KY, MI, MN,
  - Cohort 3: TX, VA, CA (first year only)



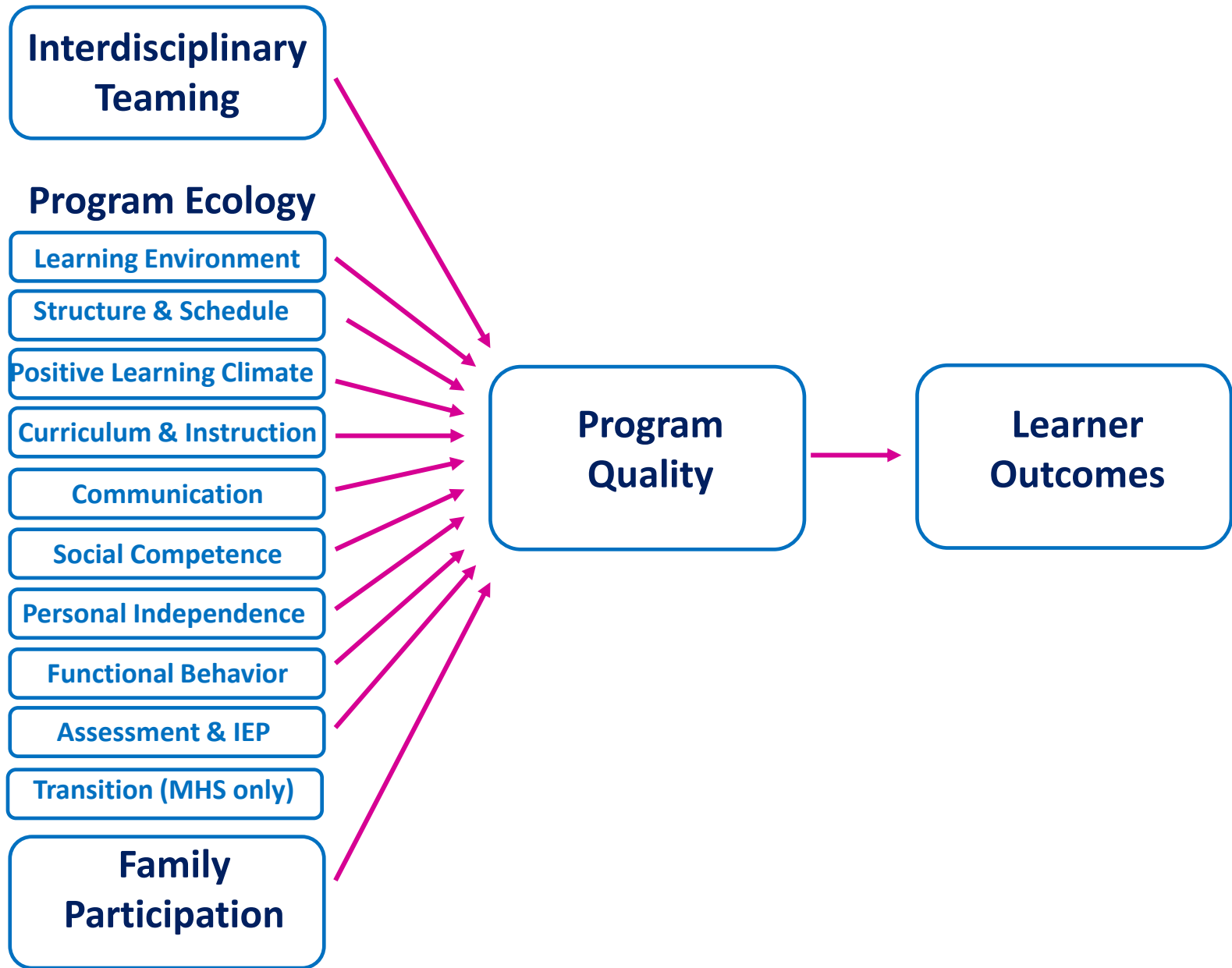
# I. Quality of the Program



# Why is a 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.





# Assessing Program Quality

- Piloting experimental instrument:  
**Autism Program Environment Rating Scale (APERS)**
- Designed to assess quality indicators of programs for students with ASD
- Versions of the APERS
  - Preschool and Elementary (P/E)
  - Middle and High School (M/H)



# Example: Score of 5

27*	<ul style="list-style-type: none"><li><input type="checkbox"/> Team members consistently over-prompt students during instruction.</li><li><input type="checkbox"/> Team members consistently under-prompt or use no prompts during instruction.</li><li><input type="checkbox"/> When team members use prompts only one form is used with students (e.g., physical, verbal, gestural).</li></ul>	<ul style="list-style-type: none"><li><input checked="" type="checkbox"/> When needed, key team member uses a clear prompting hierarchy during instruction (e.g., less intensive prompts followed by increased support as needed).</li><li><input checked="" type="checkbox"/> When needed, key team member uses a variety of prompts during instruction to meet individual student needs (e.g., physical, verbal, gestural).</li></ul>	<ul style="list-style-type: none"><li><input checked="" type="checkbox"/> When needed team members use a clear prompting hierarchy during instruction (e.g., less intensive prompts, graduated guidance, simultaneous instruction).</li><li><input checked="" type="checkbox"/> When needed, team members use a variety of prompts to meet individual student needs.</li></ul>
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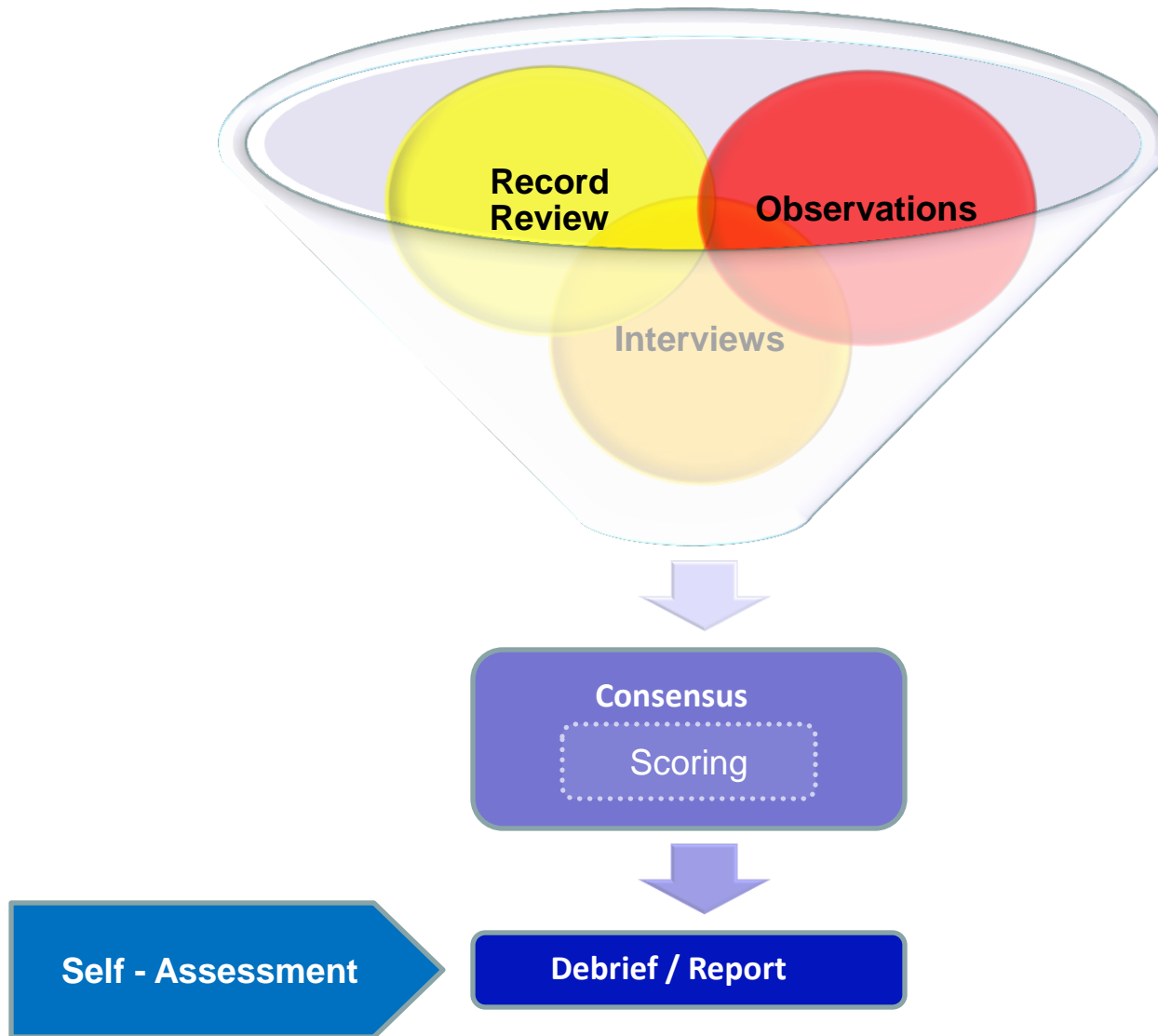


# Assessment Tool for Measuring Quality

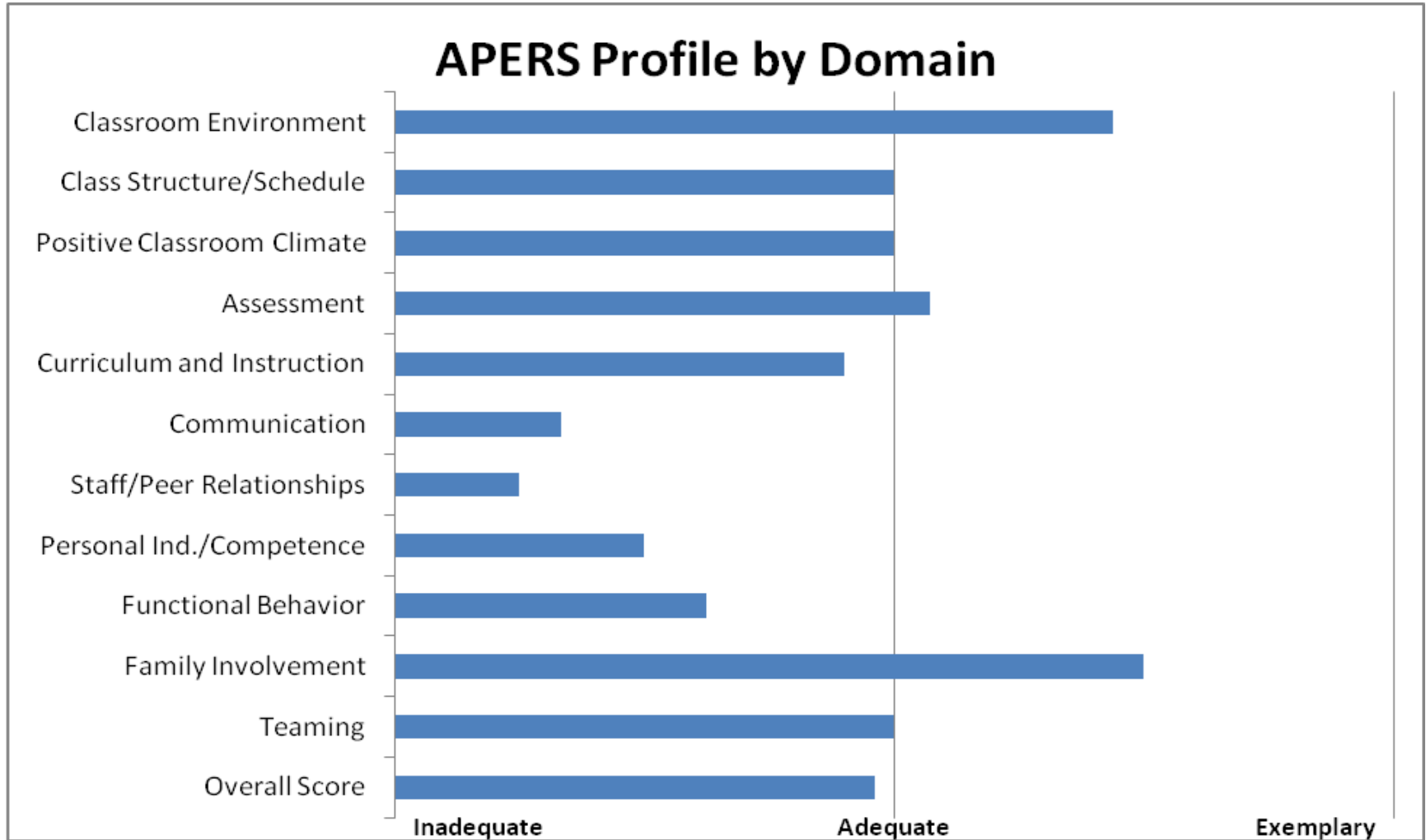
- Autism Program Environment Rating Scale
  - Preschool/Elementary (64 item)
  - Middle/High School (66 items)
- Used to assess quality of program environment
  - Observations in classes
  - Interview Teachers, Team Members, Families
- Generate Overall Score



# APERS Process



# Autism Program Environment Rating Scale



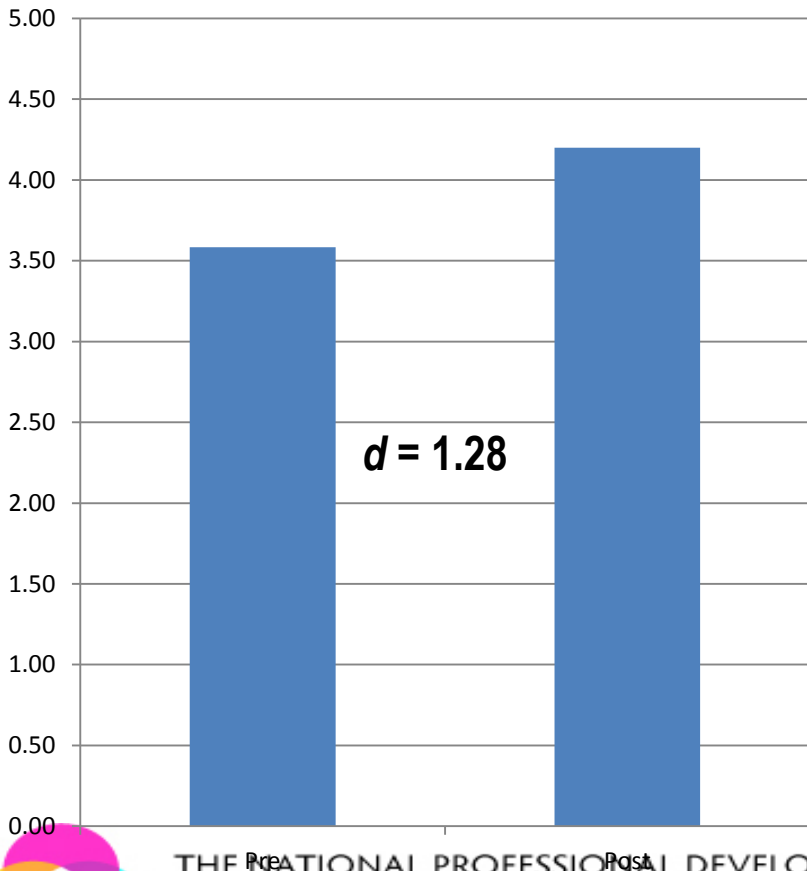
# How Do We Use The APERS?

- 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.

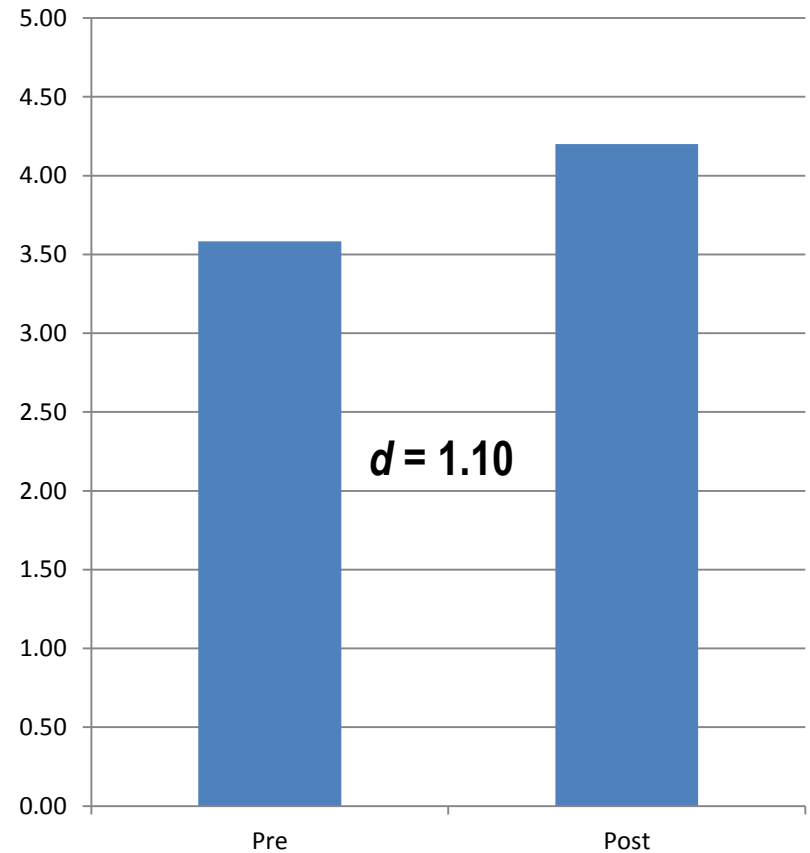


# Average APERS Scores

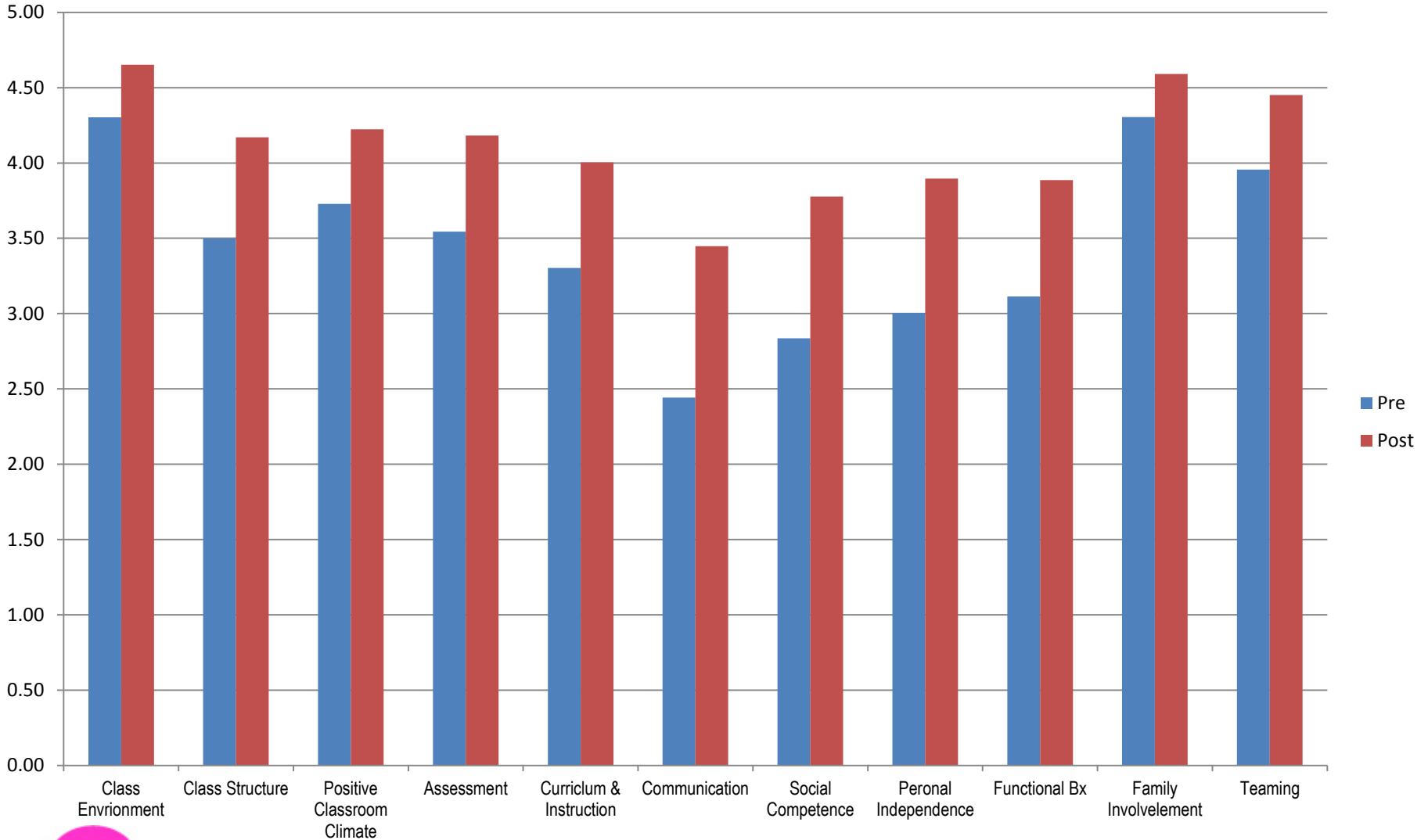
Mean APERS Total Score:  
Preschool/Elementary Version  
(n = 34)



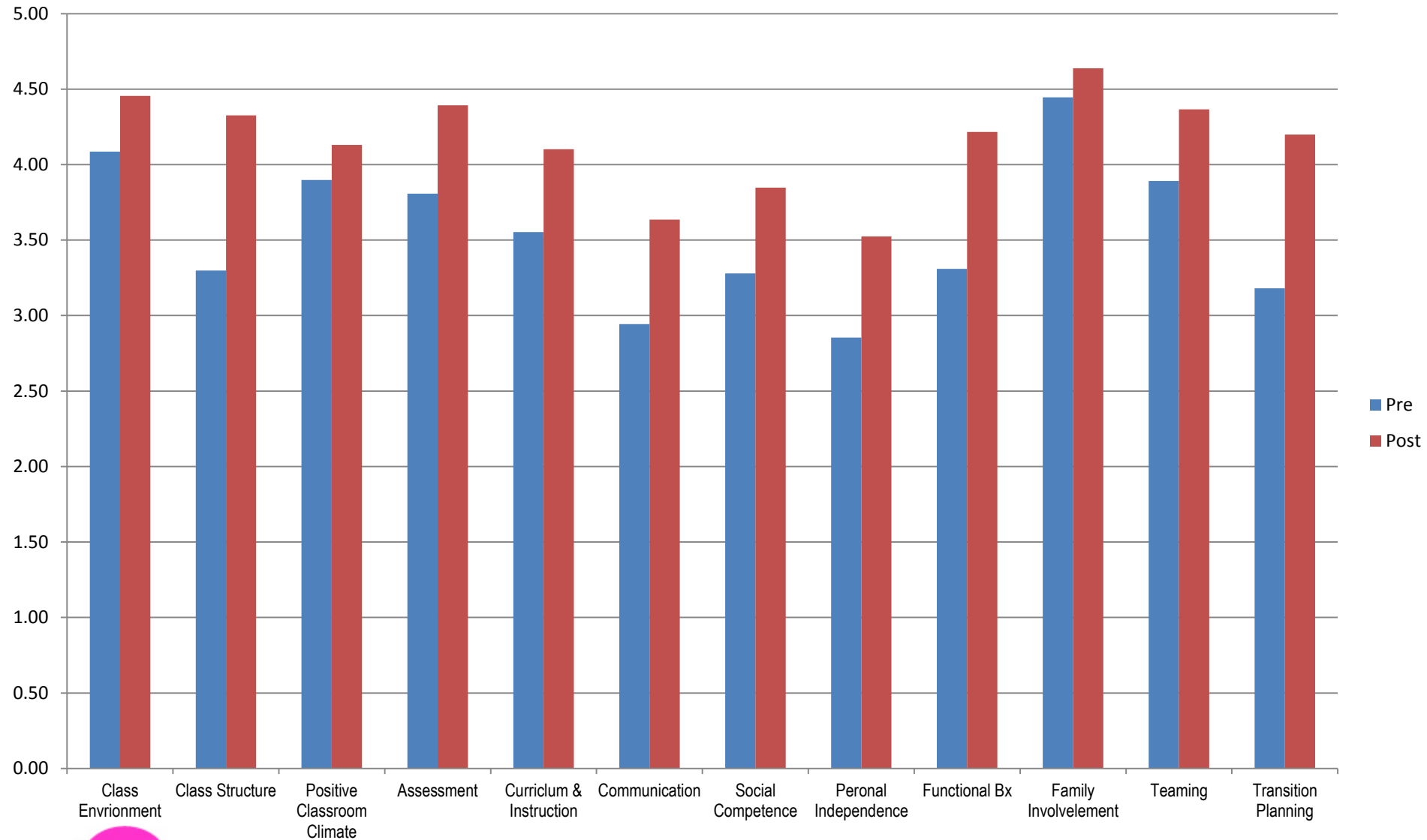
Mean APERS Total Score: Middle/  
High School Version  
(n = 24)



# Mean APERS Subdomain Scores: Preschool/Elementary Version (n = 34)



## Mean APERS Subdomain Scores: Middle/High School Version (n = 24)



# II. Use of Evidence-based Practices



# 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, Colett-Klingenberg, Rogers, & Hatton, 2010)



# 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



# Assessing Use of EBP

- 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



# Resources on NPDC's EBP

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

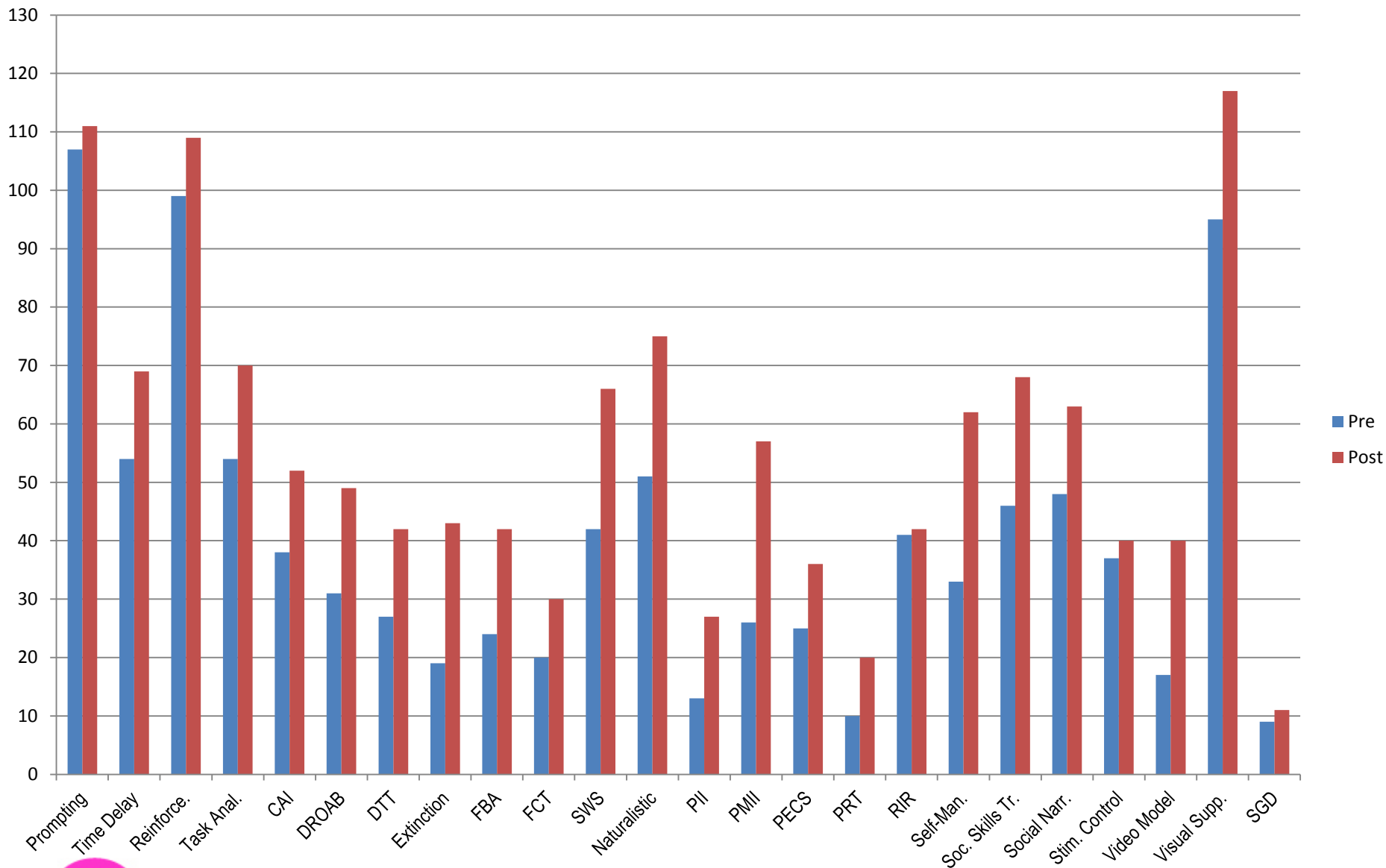


# Resources on NPDC's EBP

- Online Modules (Collaboration with OCALI)
  - Posted on AIM Website ([www.autisminternetmodules.org](http://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



## Number of Students Targeted with EBPs (n = 124)



# 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***



# Coaching

Form of embedded 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 recognizes individual expertise and professional growth



# Coaching

- Supports practitioner's ability to apply knowledge to skills in the classroom
- Focuses on content that encourages the use of data to inform practice  
(Annenberg Institute for School Reform, 2004)
- Uses adult learning principles and respects the learner's professionalism and ability to make decisions



# Coaching – Promising Practice

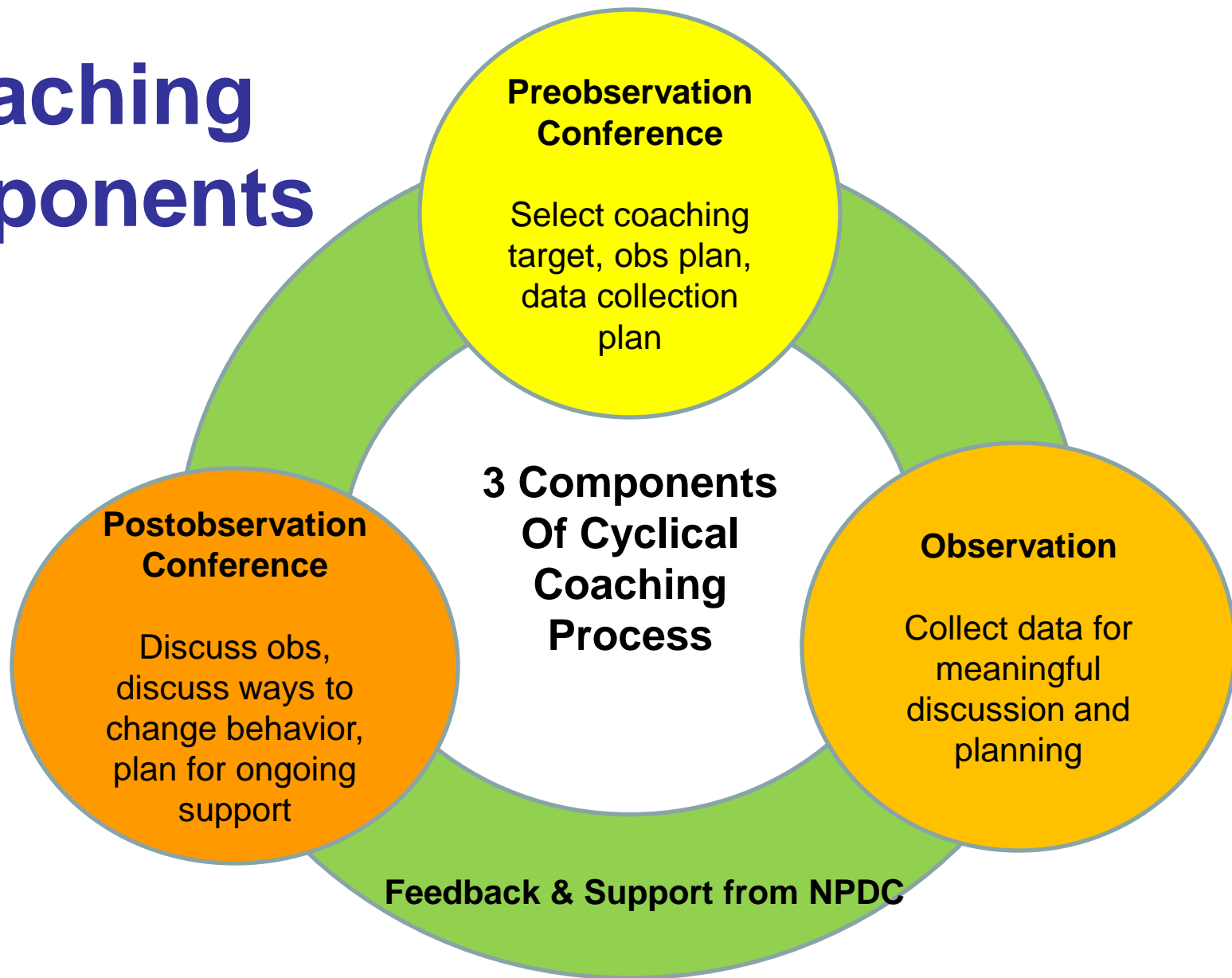
Coaching leads to . . .

- Improvement in instructional capacity, increasing teachers' ability to apply what has been learned to their work with students.
- Improvement in the instructional culture of the school.

(The Annenberg Institute for School Reform, 2004)



# Coaching Components



# Sample Implementation Checklist

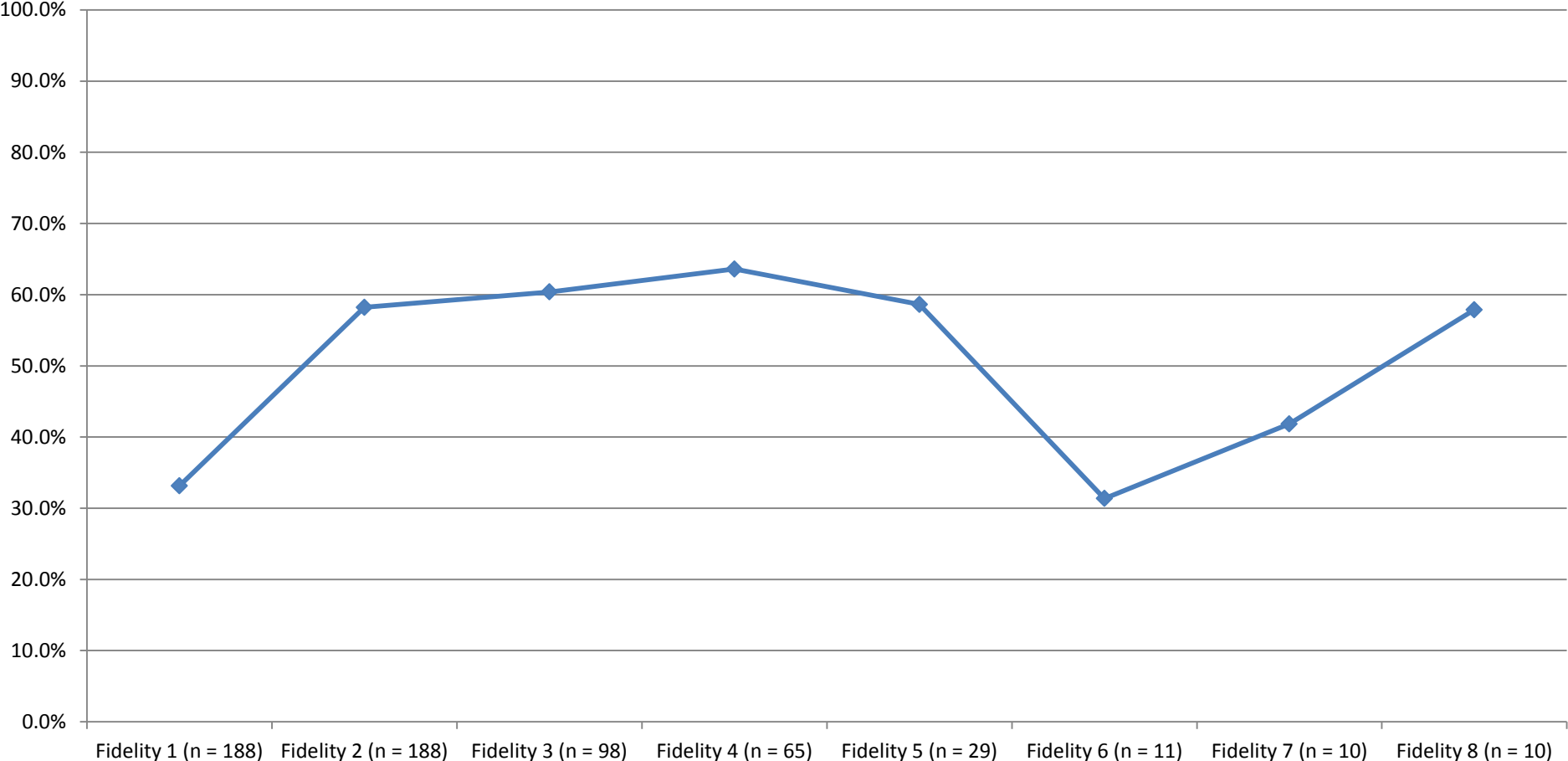
## Implementation Checklist for Naturalistic Intervention

	Observation	1	2	3	4	5	6	7	8
	Date								
	Observer's Initials								
<b>Step 1. Identifying a Target Act</b>	<b>Score**</b>								
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.									
<b>Step 2. Collecting Baseline Data</b>	<b>Score**</b>								
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.									

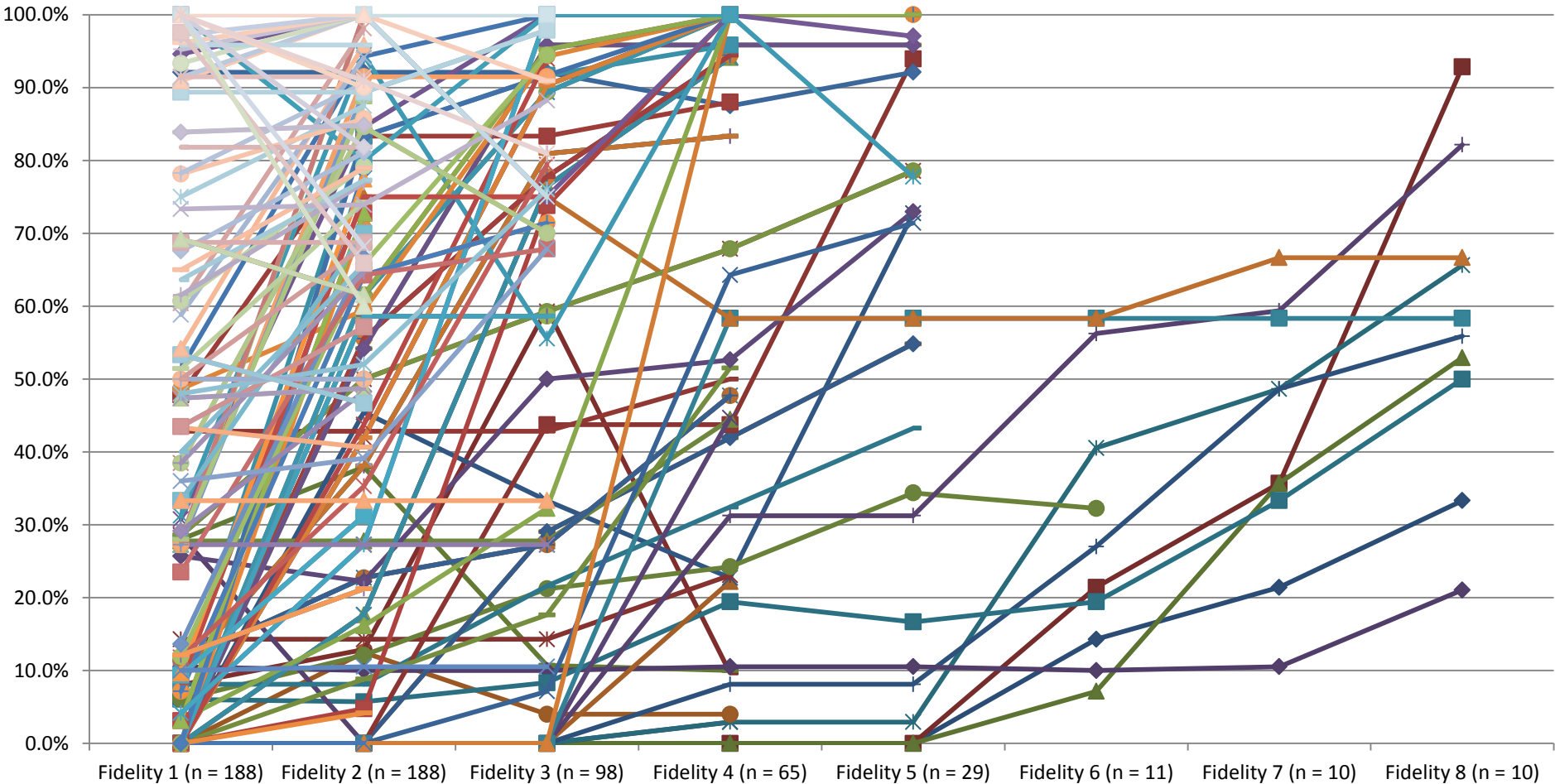
**\*\*Scoring Key:** 2 = implemented; 1 = partially implemented; 0 = did not implement; NA = not applicable



# Average Percentage of Steps for Implementation Followed with Fidelity for All Cases with 2 or more Data Points

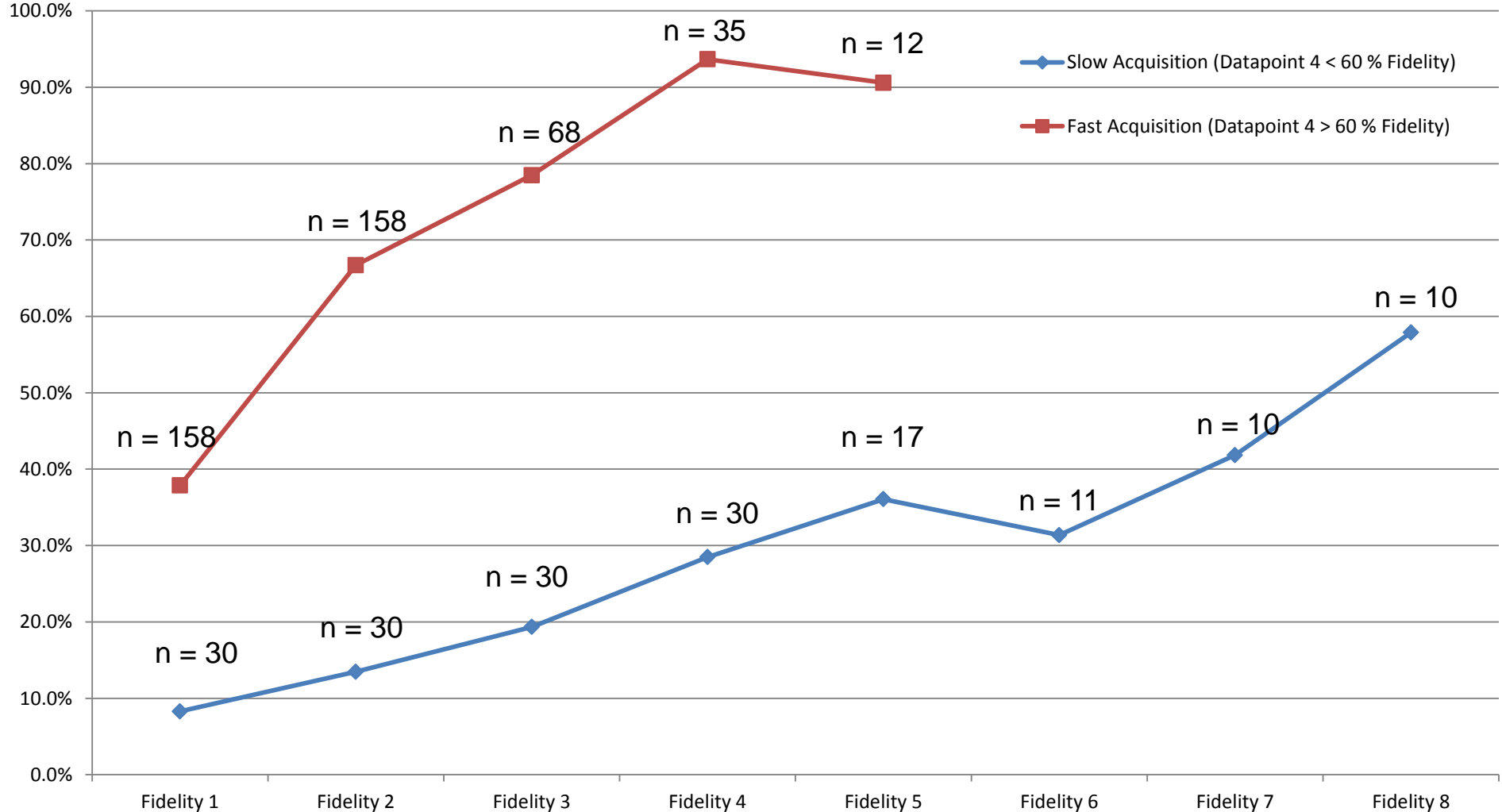


# Percentage of Steps for Impelementation Followed with Fidelity for all Cases with 2 or More Data Points



# Average Percentage of Steps for Implementation Followed with Fidelity for All Cases with 2 or more Data Points

## Groups Split into Slow Acquisition (Data Point 4 < 60% Fidelity) and Fast Acquisition (Data Point 4 > 60% Fidelity)



# III. 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



# Assessing Student Progress

- Goal Attainment Scaling: a five point range of performances for students:
  - Much less than expected
  - Somewhat less than expected
  - Expected level of outcome
  - Somewhat more than expected
  - Much more than expected



# How Do We Use GAS?

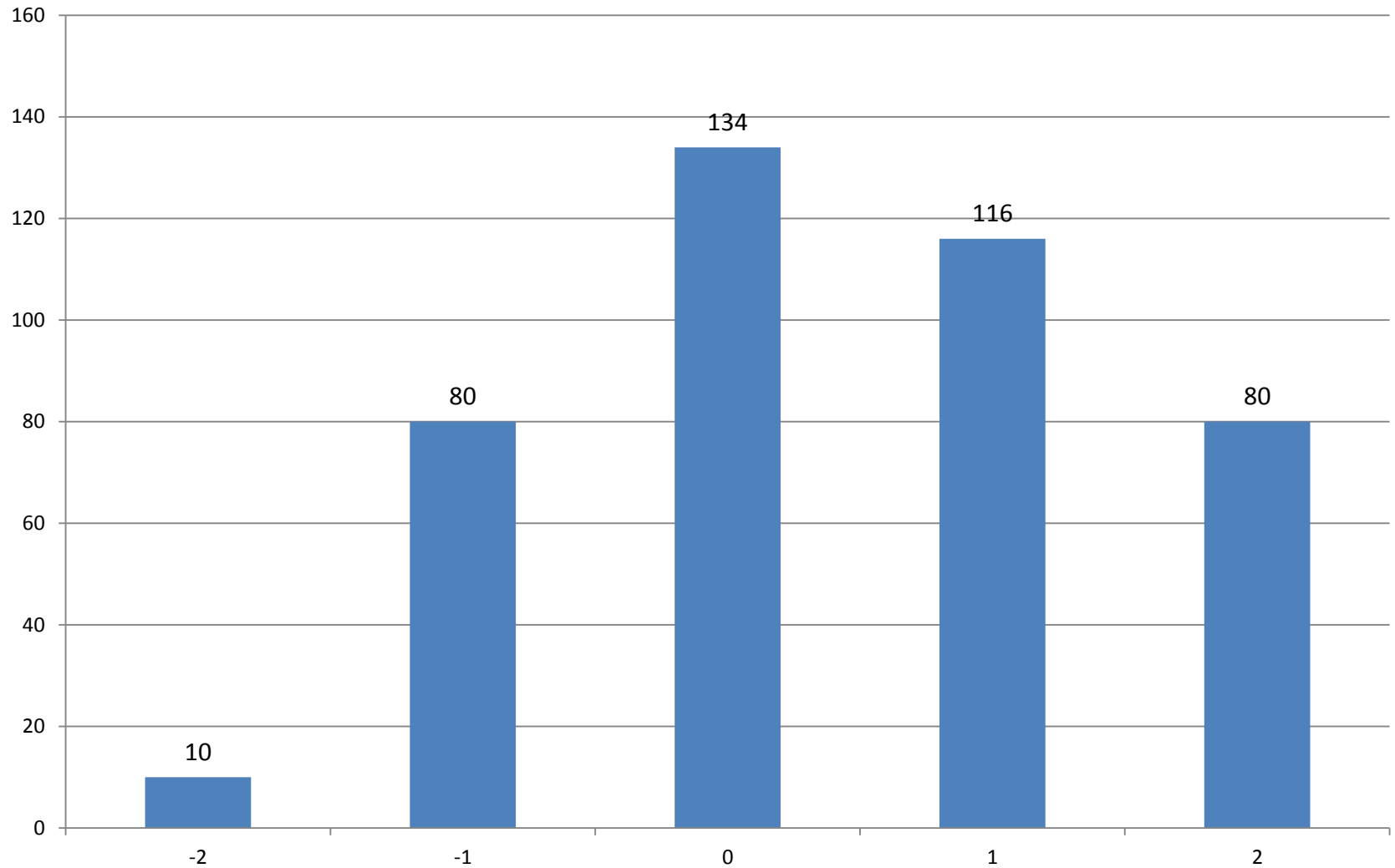
- Select learning objective/benchmark with a defined continuum of outcomes.
- Identify outcomes that reflect the five points on the continuum noted.
- Identify the current level of performance.
- Use the continuum to evaluate growth on a designated schedule (monthly, bimonthly).
- Use GAS to determine final outcome at end of learning period (end of the year).



<p><b>Much less than expected</b> <i>(Present Level of Performance)</i></p>	<p>When he enters classroom EJ does not greet his peers or professionals</p>
<p><b>Somewhat less than expected</b> <i>(Benchmark)</i></p>	<p>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</p>
<p><b>Expected level of outcome</b> <i>(Annual Goal)</i></p>	<p>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.</p>
<p><b>Somewhat more than expected</b> <i>(Exceeds annual goal)</i></p>	<p>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.</p>
<p><b>Much more than expected</b> <i>(Far exceeds annual goal)</i></p>	<p>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.</p>

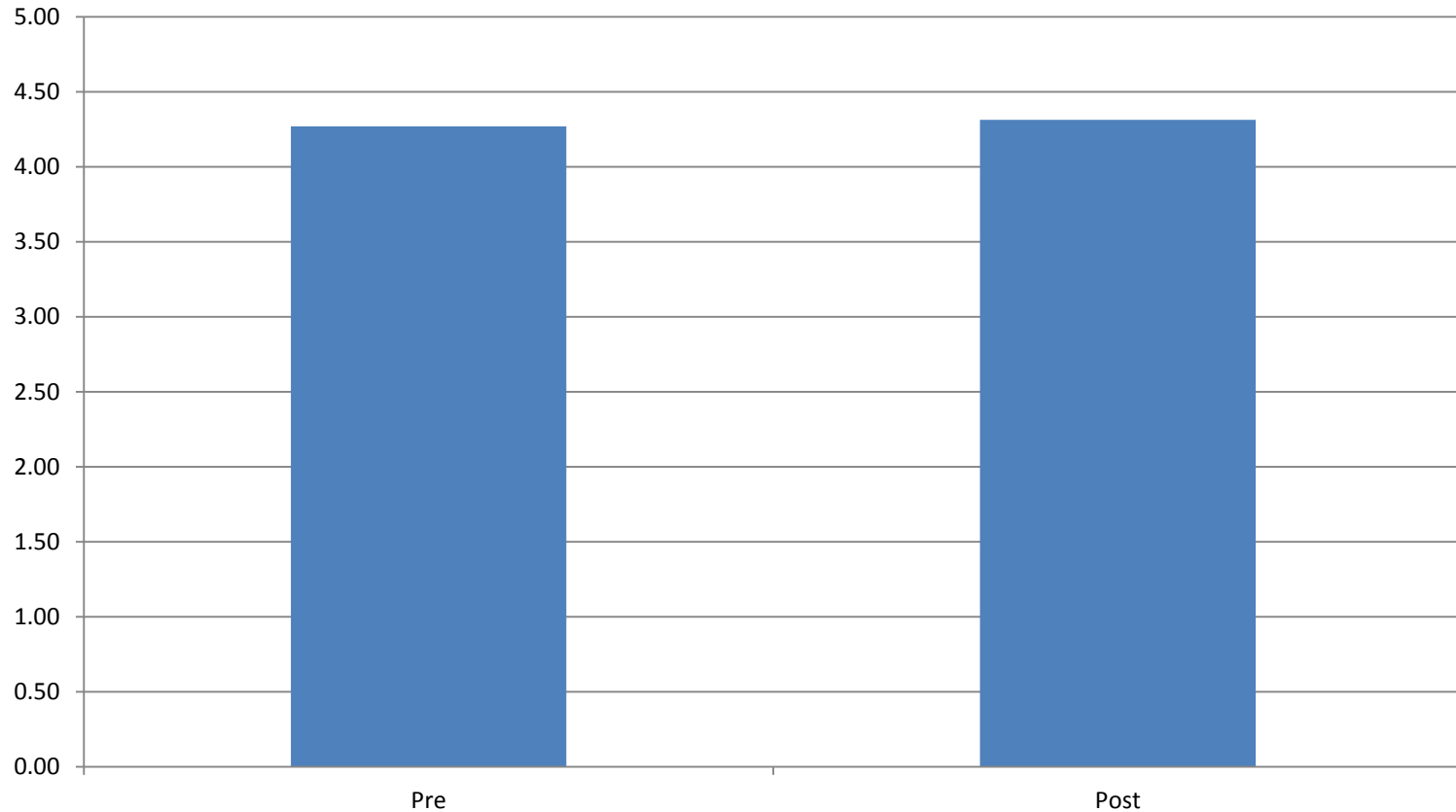


## Frequency of GAS Outcome Ratings (n = 420)



# IV. Family Survey

Family Program Questionnaire (n = 99)



# V. Expansion/Sustainability

States	NPDC model sites	State only supported expansion sites**	Total sites
<b>Cohort 1</b>			
IN	6	17	23
NM	6	3	9
WI	7	Modified model with 10 teams	17
<b>Cohort 2</b>			
KY	8	36	44
MI	6	4	10
MN	6	Modified model with 10 coach/teacher dyads	16
<b>Cohort 3</b>			
CA	6	7	13
TX	6	14	20
VA	6	6	12

\*\* In addition to developing new sites, these states report expansion in existing sites to additional students



# Questions and Discussion

