Training and Ongoing Technical Assistance in Interventions for Students with Autism Spectrum Disorders: Survey of a Sample of Elementary-Level Connecticut Teachers

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The Need for Empirically Supported Interventions for Students with Autism Spectrum Disorders (ASD)

- Individuals with Disabilities Education Improvement Act of 2004 requires free and appropriate education (FAPE) in the least restrictive environment (LRE) for students with disabilities, including those with autism.
- Rates of autism (or autism spectrum disorders; ASD) in CT have been increasing in recent years (Connecticut State Department of Education [SDE], 2005)
- Now more than ever, teachers must be able to provide evidence-based supports with competence and fidelity
  - Applies to *both* special and general education teachers, as the least restrictive environment may often be the general education classroom

What are the empirically supported interventions?

- Although a variety of empirically supported interventions for students with ASD exist, 8 were selected for this study: (see Connecticut SDE, 2005; National Autism Center [NAC], 2009; and/or National Professional Development Center on Autism Spectrum Disorders [NPDC on ASD], 2010; see also sources noted below)
  - **Picture Exchange Communication System (PECS**; see Frost & Bondy, 2002)
  - **Visual Schedules**
  - **Pivotal Response Training (PRT**; see Koegel, Koegel, & Carter, 1999)
  - **Function-based Behavior Support Plan (BSP**; see Crone & Horner, 2003)
  - **Self-Management**
  - **Modeling**
  - **Social Narratives** (see Gray, 2000)
  - **Peer Training**

Initial Data on Connecticut Training Resources and Needs

- Important to collect accountability data on the provision of professional development related to interventions that are empirically supported for use with students with ASD
- *Report of the Study Group for Special Act 08-5* (2009): CT training resources and needs related to providing appropriate education and supports for students with ASD and other developmental disabilities (DD)
  - Hundreds of trainings provided by over 50 organizations in 2007-08 (p. 10)
  - Variety of higher education pre-service programs that prepare teachers to support students with disabilities; programs have varying levels of emphasis on information specific to ASD/DD (p. 7)
  - The report indicated that a theme that emerged was that school staff may need further training (p. 11)
- The apparent need for further training may be related to the way in which training and/or ongoing assistance is provided.
- We may need to know more about the characteristics and quality of CT teachers' training as well as ongoing technical assistance.

What are potential quality indicators? Initial Training

- Adult learning method characteristics: (Dunst, Trivette, & Deal, 2010; Trivette, Dunst, Hamby, & O'Herin, 2009)
  - Introduce
  - Illustrate
  - Practice
  - Evaluate
  - Reflection
  - Mastery
  - ✓ "Evaluate", "Reflection", and "Mastery" may be especially powerful
  - ✓ The *more* effective adult learning method characteristics, the better
- A research synthesis by Trivette et al. (2009, see p. 9) indicated the adult learning method characteristics were more effective when training…
  - Was provided to a small number of trainees (i.e., fewer than approximately 30)
  - Lasted more than 10 hours in duration
- In addition, research on in-service training for early intervention practitioners indicated that on-site/field-based training was linked to more positive judgments of training benefits than other types of training (Dunst et al., 2010)

What are potential quality indicators? Ongoing Technical Assistance

- Coaching (see Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; Hord, 1994; Showers, Joyce, & Bennett, 1987)
- Implementation fidelity monitoring (see Hagermoser Sanetti, Chafouleas, Christ, & Gritter, 2009, for a review of approaches)
  - Direct observation
  - Inspection of permanent products
  - Self-reporting
- Implementation fidelity promotion
  - Performance feedback (see Noell, 2008)
  - Data on student progress monitoring can be presented along with implementation data (e.g., Noell, Duhon, Gatti, & Connell, 2002; Noell, Witt, Gilbertson, Ranier, & Freeland, 1997)

Purpose of the Project and Research Questions

- Purpose: to collect data on specific elements of training and ongoing technical assistance provided to a sample of elementary education teachers in CT with regard to eight empirically supported interventions for students with ASD
- Survey of elementary-level general and special educators in CT:
  - In which of eight interventions for ASD have teachers received training, and which of these are they actually using?
  - Who provided them with initial training, and where?
  - Which of the six adult learning method characteristics (e.g., Trivette et al., 2009) were incorporated in initial training?
  - What types of ongoing technical assistance are teachers receiving, and from whom?
  - What progress monitoring methods are used to ensure the intervention is working?

Method: Participants

- 82 participants from elementary schools in a small sample of districts in CT
- Teachers:
  - 66 general educators (80.5%)
  - 16 special educators (19.5%)

Method: Procedure

- E-mails requesting permission to distribute survey were sent to elementary-level principals of districts whose superintendents provided approval
- Principals forwarded e-mail message to teachers in their schools:
  - Explaining purpose of project
  - Requesting participation
  - Providing link to online survey, and
  - Assuring no identifying information would be collected in survey data

Method: Survey

- Section 1: Professional role and # years teaching
- Section 2: Training
  - Eight interventions for students with ASD:
    - Trained?
    - Ever used for student with ASD?
  - Other intervention?
- Section 3: Characteristics of initial training
  - Who provided?
  - Where?
  - How long?
  - How many trainees?
  - Used with how many students?
  - Which adult learning method characteristics (e.g., Trivette et al., 2009) occurred?
- Section 4: Characteristics of ongoing technical assistance
  - What type(s)?
  - Who provides?
- Section 5: What progress monitoring methods are used?

Method: Data Analysis

- Descriptive statistics
- Cohen's *d* effect sizes to determine differences between general and special educators
- Examination of open-ended responses

Results: Intervention Training and Use

- Highest percentage of teachers trained in **self-management** – followed by visual schedules, BSP, social narratives, and modeling
  - For each of the eight interventions except PRT, at least 50% of the sample of special educators reported they had been trained.
  - In the sample of general educators, the percentage reporting that they had been trained was less than 25% for each intervention other than self-management.
- For almost all interventions, **over 70% of teachers who reported training also reported having used the intervention** with a student with ASD
- On average, teachers most often reported having used the intervention with 1-5 students ($M = 71.85\%$, $SD = 16.76$)

Results: Intervention Training

Percentage of Teachers Trained in Each Intervention

Intervention	Teacher Group					
	General Education		Special Education		Overall Sample	
	n	%	*n*	%	*n*	%
PECS	1	1.5	10	66.7	11	13.6
VS	15	22.7	13	86.7	28	34.6
PRT	4	6.1	4	26.7	8	9.9
BSP	15	23.8	12	75.0	27	34.2
SM	20	30.8	13	81.2	33	40.7
M	14	22.6	11	68.8	25	32.1
SN	14	21.2	13	81.2	27	32.9
PT	8	12.9	8	50.0	16	20.5

Note. PECS = Picture Exchange Communication System; VS = visual schedules; PRT = pivotal response training; BSP = function-based behavior support plan; SM = self-management; M = modeling; SN = social narratives; PT = peer training.

Results: Format of Initial Training

Averaging across interventions in the overall sample, the most often reported…

- …Provider was **in-district professional,** followed by college/university and "other"
  - Special educators appeared to report university-based training more often than general educators
- …Location was **on-site/field-based**, followed by classroom and workshop
  - Classroom training appeared more common for special educators than for general educators
- …Duration was **1-5 hours**
- …Attendance was **1-10 trainees**

Results: Format of Initial Training

Format of Initial Training Averaged Across Interventions

Format	General Education		Special Education		Overall Sample	
	Mean %	*SD*	Mean %	*SD*	Mean %	*SD*
Who?						
State agency	2.78	7.85	0.00	0.00	1.31	3.71
Regional agency	0.00	0.00	6.55	11.64	5.49	11.49
In-district	66.94	32.12	58.49	26.85	61.19	27.72
College/university	6.00	10.16	21.28	13.83	17.86	12.51
Other	11.78	16.49	13.68	8.13	14.14	9.15
Where?						
Workshop	16.13	14.26	15.16	11.97	16.55	8.14
Classroom lecture	9.40	12.30	38.10	12.02	27.71	8.87
Annual conference	0.96	2.72	0.00	0.00	0.54	1.52
On-site/field-based	71.18	20.65	46.73	10.11	54.03	7.64
Other	2.35	4.45	0.00	0.00	1.16	2.16
How long?						
1-5 hr	82.95	13.19	88.16	8.80	86.04	9.72
6-10 hr	15.26	12.34	6.81	5.85	10.60	7.40
Over 10 hr	1.79	5.06	5.03	5.40	3.35	4.39
How many trainees?						
1-10 trainees	67.38	30.14	75.36	11.11	75.75	8.01
11-20 trainees	11.04	11.50	19.55	12.13	16.71	6.83
21-30 trainees	3.95	5.53	5.09	5.54	5.25	5.69
Over 30 trainees	5.14	10.44	0.00	0.00	2.26	4.58

Note. "National organization" and "Advocacy organization" are omitted from the "Who?" category, and "Online course" is omitted from the "Where?" category, because these responses were never selected by any teachers.

Results: Adult Learning Method Characteristics (Trivette et al., 2009) in Initial Training

- Overall, teachers experienced an average of 3.66 (*SD* = 1.45) characteristics during initial training
- Averaging across interventions in the overall sample, the most often reported characteristics were:
  - Introduce (*M* = 83.40%, *SD* = 6.99)
  - Illustrate (*M* = 83.51%, *SD* = 6.10)
  - Practice (*M* = 82.69%, *SD* = 4.71)
- Special educators reported experiencing "practice", "evaluate", "reflection", and "mastery" more often than general educators*

*Note: Varying cell sizes prevented calculation of effect size confidence intervals– limits conclusiveness of interpretations of findings.

Results: Adult Learning Method Characteristics (Trivette et al., 2009) in Initial Training

Table 6

Mean Percentage of Teachers Reporting Each Characteristic

Type	Teacher Group				Effect Size
	Special Education		General Education		
	Mean %	*SD*	Mean %	*SD*	Cohen's *d*
Introduce	78.85	8.94	93.81	5.80	-1.99
Illustrate	83.94	7.95	85.27	16.55	-0.10
Practice	98.44	4.42	50.71	23.41	2.83
Evaluate	53.88	11.30	38.07	32.32	0.65
Reflection	52.10	15.66	37.26	26.94	0.67
Mastery	14.23	9.80	9.81	7.85	0.50

Results: Technical Assistance

Averaging across interventions in the overall sample, the most often reported…

- …Type was **coaching** ($M = 57.08\%$, $SD = 10.20$), followed by self-reporting ($M = 19.71\%$, $SD = 12.56$)
  - Special educators reported receiving direct observation and performance feedback more often than general educators*
- …Provider was **special educator** ($M = 56.44\%$, $SD = 9.80$), followed by pupil/related services personnel ($M = 54.91\%$, $SD = 21.52$)
  - Special educators reported assistance from ASD specialist, administrator, or pupil/related services personnel more often than general educators*

*Note: Varying cell sizes prevented calculation of confidence intervals– limits conclusiveness of interpretations of findings.

Results: Technical Assistance

Mean Percentage of Teachers Reporting Ongoing Technical Assistance

Type	Teacher Group				Effect Size
	Special Education		General Education		
	Mean %	*SD*	Mean %	*SD*	Cohen's *d*
Coaching/Mentoring	46.83	12.77	81.25	17.63	-2.24
Direct Observation	18.78	17.03	4.59	8.54	1.05
Performance Feedback	21.76	7.24	0.00	0.00	4.25
Permanent Products	4.51	9.14	2.09	5.90	0.31
Self-Reporting	19.20	16.82	16.25	21.63	0.15
None	16.59	15.42	16.68	16.62	-0.01
Other	9.93	9.34	0.00	0.00	1.50

Results: Technical Assistance

Mean Percentage of Teachers Reporting Providers of Ongoing Technical Assistance

Type	Teacher Group				Effect Size
	Special Education		General Education		
	Mean %	*SD*	Mean %	*SD*	Cohen's *d*
ASD Specialist	17.93	8.61	1.56	4.42	2.39
Special Education Teacher	43.03	15.53	85.59	12.45	-3.02
Pupil/Related Services Personnel	59.36	16.85	45.98	38.24	0.45
Administrator	15.96	14.89	0.00	0.00	1.52
No One	9.08	13.52	11.29	12.55	-0.17
Other	8.90	8.16	0.00	0.00	1.54

Results: Progress Monitoring Methods

- Commonly reported progress monitoring methods:
  - Classroom observations
  - Daily behavior charts/checklists
  - Collaboration with personnel

Conclusions: Training

- In the sample of special educators, the percentage reporting training was at least 50% for each of the interventions except one. In the sample of general educators, however, the percentage reporting training was lower than 25% for each of the interventions except one.
- Training most often reported as provided on-site, by an in-district professional, for 1-5 hours, and for 1-10 trainees.
  - In Trivette et al. (2009, see p. 9), the six adult learning method characteristics were more effective when provided in the context of a small number of trainees and duration of more than 10 hours. Thus, results of the current study appear to be mixed with regard to contextual elements of initial training that set the stage for the provision of the adult learning method characteristics.
- Despite similarities between the teacher groups in *format*, important discrepancies may exist in *delivery*.
  - Special educators more often reported experiencing characteristics that may more actively engage the learner in assessing their learning and use of the material (i.e., "evaluate", "reflection", "mastery"). See Trivette et al. (2009) for discussion of the differential effectiveness of the adult learning method characteristics.

Conclusions: Ongoing Technical Assistance

- The most commonly reported providers of ongoing technical assistance were special education and pupil/related services personnel, and the most often reported type of assistance was coaching/mentoring.
- Averaging across interventions, 17% of teachers reported receiving no assistance at all.
- Averaging across interventions, response percentages for each type of method of fidelity monitoring and promotion were generally low – although if the percentage of teachers receiving at least *one* of these methods were to have been evaluated, it is possible that this percentage would be higher.

Limitations

- Small sample sizes, especially for certain questions
- Convenience sample—not representative of the population of Connecticut elementary-level teachers
- Survey respondents were expected to recall specific aspects of training that may have occurred a while ago, and therefore recall may have contained some inaccuracies.
- Average response percentages were calculated by summing percentages across the eight interventions and dividing by eight—represents one way that average response percentage could be calculated, but not the only way
- Survey did not extensively define all response options; thus, it is unclear whether types/elements of training and/or technical assistance reported by participants in this survey (e.g., "on-site/field-based") reflected the same types/ elements described in the literature (such as those in Dunst et al., 2010, for example)
- Confidence intervals could not be calculated for effect sizes due to varying cell sizes across categories—limits the conclusiveness of effect size calculations
- Due to time constraints, I did not have the chance to interview personnel from the Connecticut SDE before the start of this project; thus there could be more information on Connecticut training and technical assistance at this point in time.

Implications

- Connecticut SDE should continue to collect accountability data on training and ongoing technical assistance, especially on aspects related to quality.
- Quality training and technical assistance should be provided to both general and special educators.
- As teachers may often receive training and technical assistance from in-district professionals (e.g., school psychologist, occupational therapist), such professionals should be skilled in providing quality training and technical assistance.
- Coaching should be supplemented with fidelity monitoring and promotion, as well as quality progress monitoring.
- The *Report of the Study Group for Special Act 08-5* (2009) made several recommendations that suggest Connecticut is moving in an exciting direction regarding the quality and coordination of professional development for educators of students with ASD. Please see the report (with link in "References" section) for more details.

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