The Effects of a Professional Development Intervention on Teachers' Implementation of the Pyramid Model Practices and Children's Outcomes

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The Pyramid Model: Promoting Social-Emotional Competence and Addressing Challenging Behavior



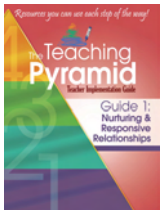
Status of Pyramid Practices in EC Classrooms

	TPOT study *N*=50		Potential Efficacy Trial *N*=40		Distance coaching *N*=33		Efficacy Trial *N* = 92	
	Mean	Range	Mean	Range	Mean	Range	Mean	Range
Red flags	3.0	0-11	3.75	1-10	2.13	0-7	3.23	0-11
Percent of indicators	39.1%	14% to 73%	38.24%	16% to 74%	39.87%	14% to 66%	48.27%	19% to 86%

Efficacy Study Overview

- Multi-site randomized controlled trial
  - Vanderbilt University
  - University of Florida
  - University of South Florida
- 92 teachers (2 cohorts)
  - 45 received workshops and 16 weeks of coaching
  - 47 received workshops at the end of their primary year of the study (BAU)
- 979 children
  - 250 "target" children
  - 729 non-target children

Professional Development Intervention



- Intervention teachers received:
  - 3 days of training (19.5 hr)
  - 4 implementation guides
  - Implementation materials
  - Practice-Based Coaching
    16 weeks (Efficacy Study)
    M = 94 min observation, 34 min debrief
- Control teachers received training at end of study

Practice-Based Coaching

(Snyder, Hemmeter, & Fox, 2015)



Snyder, P., Hemmeter, M.L., & Fox, L. (2015). Supporting implementation of evidence-based practices through practice-based coaching. *Topics in Early Childhood Special Education*, *35*, 133-143.

Coaching Fidelity

	Fidelity			Inter-rater agreement on fidelity		
	Mean	SD	Range	Mean	SD	Range
Across sessions	93.71%	10.33%	40.00-100.00%	90.83%	11.58%	40.00-100.00%

Teacher Outcome Measures

Primary Study Year—Intervention

- Teaching Pyramid Observation Tool (Fox, Hemmeter, & Snyder, 2012)
- Classroom Assessment Scoring System (CLASS; Pianta, LaParo, & Hamre, 2008)
- Both measures administered
  - Baseline (Wave 1)
  - Following workshops (Wave 2)
  - Mid-way through coaching (Wave 3)
  - Post-intervention (Wave 4)

Sustainability Year—Follow-Up

- Teaching Pyramid Observation Tool
  - August/September (Wave 5)
  - November (Wave 6)
  - January (Wave 7)
  - April (Wave 8)

Teaching Pyramid Observation Tool (TPOT)

- Judgment-based rating scale
- ~2 hr observation/interview and then complete ratings
- Implementation of *Pyramid Model* practices
  - Universal Practices
  - Teaching Practices
  - Communication Practices
  - Red Flags

Key Practices

CLASS

- Classroom interactional and instructional quality
- 10 dimensions under 3 domains
  - Emotional support (*v* = 4)
  - Instructional support (*v* = 3)
  - Classroom organization (*v* = 3)

Intervention Year Findings—TPOT Key Practices

	Adjusted Means			
Wave	**Intervention**	**BAU**	**Adjusted Mean Difference**	**Effect Size**
2	54.43	46.47	7.97	0.52*
3	61.19	45.82	15.36	1.01*
4	59.85	46.76	13.08	0.86*

Note. Adjusted means are the percentage of 122 TPOT indicators scored as "yes" (implemented Pyramid Model practice).
MANCOVA with full information maximum likelihood with adjusted standard errors for clustering.
* Statistically significant difference by Bonferroni-Holm procedure ($p < .001$) and noteworthy effect size.

Intervention Year Findings—TPOT Subscales

Subscale	Wave 2 Effect Size	Wave 3 Effect Size	Wave 4 Effect Size
Universal Practices	0.55*	0.76*	0.63*
Teaching Practices	0.50*	1.16*	1.11*
Communication Practices	0.15	0.56	0.26
Red Flags	-0.41*	-0.46*	-0.38*

*Treatment effect is significant by Bonferroni-Holm procedure for directional or non-directional test and noteworthy effect size.

Sustainability Year Findings—Intervention Group

Key Pyramid Model Practices			
Wave	Mean	Mean Difference	Effect Size
Wave 4 (Intervention Year)	**59.13**		
Wave 5	58.67	-0.46	-0.03
Wave 6	57.30	-1.83	-0.12
Wave 7	54.39	-4.7	-0.30
Wave 8	57.43	-1.69	-0.11

Dependent samples *t* tests comparing the mean for intervention teachers at Wave 4 to the mean at each of Waves 5 to 8. Standard errors of the single-level analyses were corrected for clustering.

Findings show teachers in intervention condition generally sustained their use of Pyramid Model practices at similar level to Wave 4 in primary study year.

CLASS Findings: Intervention Year

Domain	Dimension	Wave 2	Wave 3	Wave 4
Emotional Support		0.09	0.38	0.36
	Positive Climate	0.15	0.29	0.30
	Negative Climate	0.06	-0.10	0.40
	Teacher Sensitivity	0.06	0.32	0.27
	Regard for Student Perspectives	0.01	0.57*	0.30
Classroom Organization		0.01	0.13	0.23
	Behavior Management	-0.08	0.01	0.09
	Productivity	0.11	0.18	0.26
	Instructional Learning Format	-0.03	0.19	0.27
Instructional Support		-0.09	0.14	0.34
	Concept Development	-0.04	0.01	0.34
	Quality of Feedback	-0.16	0.32	0.28
	Language Modeling	-0.09	0.06	0.30

Effect sizes reported to assist in interpreting the magnitude of the adjusted mean difference. *Treatment effect is significant by Bonferroni-Holm procedure for directional or non-directional test.

Summary - Implementation of *Pyramid Model* Practices

Intervention Year

- Statistically significant and moderate to large effects of the Pyramid intervention on *Key Pyramid Practices*.
- Statistically significant and moderate to large effects of the *Teaching Pyramid* intervention on *Universal and Targeted Practices*
- Statistically non-significant but small to moderate effects of the Pyramid intervention on *Communication Practices*.
- Statistically significant and moderate effects on *Red Flags* at all waves.

Sustainability Year

- Teachers in the intervention group generally sustained their implementation of *Pyramid Model* practices during the sustainability year

Child Outcome Measures: Intervention Year

- Social Skills Improvement System (Gresham & Elliot, 2008)
  - Completed for all children in classroom
    - Non-target
    - Target
    - Baseline (Wave 1)
    - Post-Intervention (Wave 4)
- Target Child Observation System (Fox et al., 2008)
  - Target children only
  - Data for 3 waves (baseline mid-point, post-intervention)

Social Skills Improvement System

(Gresham & Elliot, 2008)

- Judgment-based rating scale (teacher completed)
  - Problem behavior
  - Social skills
- 979 children
  - 250 "target" children
  - 729 non-target children

Target Children

	Adjusted Means—Wave 4			
Subscale	Coaching	BAU	Adjusted Mean Difference	Effect Size
Problem Behavior	108.70	112.29	-3.59	-0.23*
Social Skills	87.22	82.09	5.14	0.27*

Non-Target Children

	Adjusted Means—Wave 4			
Subscale	Coaching	BAU	Adjusted Mean Difference	Effect Size
Problem Behavior	97.65	100.71	-3.07	-0.20*
Social Skills	100.65	96.08	4.56	0.24*

Summary—SSIS

- Teachers in the intervention group reported less problem behavior for target and non-target children
- Teachers in the intervention group reported higher social skills for target and non-target children

Target Child Observation System (Fox et al., 2008)

- Direct observation measure
- 90 min
- Two categories of continuous event codes
  - Positive social interaction skills (initiate to adult, initiate to peer, respond to adult, respond to peer)
  - Disruptive (challenging) behavior (verbal aggression adult, verbal aggression peer, physical aggression adult, physical aggression peer, other disruptive behavior)
- 4 classroom activities (duration codes)
  - Structured
  - Unstructured
  - Transition
  - Target activity

TCO Findings for Target Children: Social Interaction

Social Interaction (SI)	Wave	ES	*p*
Total SI	3	.09	.47
	4	.25*	.01
PRA (Positive Response Adult)	3	.18	.13
	4	.28*	.01
PSP (Positive Initiation Peer)	3	.02	.86
	4	.17	.11
PSA (Positive Initiation Adult)	3	-.12	.31
	4	.13	.24
PRP (Positive Response Peer)	3	.01	.95
	4	-.01	.96

*Statistically significant by a directional test.

TCO Findings for Target Children: Social Interactions by Activity

Activity Variable	Wave	ES	p
Routine	3	-.06	.73
	4	.16	.38
Structured	3	.00	.99
	4	.21*	.08*
Transitions	3	-.15	.25
	4	.20	.13
Unstructured	3	.04	.79
	4	.07	.60
Target	3	.11	.38
	4	.27*	.03
Non-target	3	.03	.79
	4	.16	.15

*Statistically significant by a directional test.

Summary of TCO Findings

- Evidence of more total social interaction for target children in intervention teachers' classrooms
- Evidence of more social responses to adults for target children in intervention teachers' classrooms
- Evidence of more social interaction in structured settings for target children in intervention teachers' classrooms
- No evidence of differential effects for intervention vs. BAU classrooms for disruptive behavior variables

Overall Summary and Recommendations

- Findings from Goal 3 study replicated those from our Goal 2 study
- Workshops and coaching associated with improved fidelity of implementation of Pyramid Model practices relative to BAU
- Use TPOT to inform PD decisions
  - Consider "booster" workshops for teachers
  - Targeted coaching for teachers who need additional support for practice implementation

Future Research

- Coaching Dosage
  - Identifying dosage needs for individual teachers
    - Consider other delivery modes/formats
  - Program wide implementation
- Tier 2 and 3 Interventions
  - Teacher training issues/Fidelity
  - Child Outcomes
- Child Outcomes
  - Self-regulation
  - Language

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