



Measuring Treatment Fidelity in a Triadic Intervention Model



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Introduction

- Parent-Implemented Enhanced Milieu Teaching (EMT) is a triadic model of intervention:
 - Therapist:** provides training to the parent and also provides intervention to child
 - Parent:** receives parent training from the therapist and subsequently provides intervention to the child
 - Child:** receives the intervention directly from the therapist and the parent
- Fidelity of implementation occurs at three levels:
 - The therapist's delivery of the parent training
 - The therapist's implementation of the intervention strategies
 - The parent's implementation of the intervention strategies

It is essential to measure fidelity of implementation at each of these levels to fully interpret the results of intervention on parent behavior and child outcomes. The purpose of this paper is to illustrate measurement of fidelity in triadic intervention.

Research Questions

- What is the fidelity at each level of implementation of the intervention?
- What is the impact of high fidelity therapist training on parents' implementation of EMT?
- Given high fidelity therapist training and high levels of fidelity, do children in the treatment group have better language skills than children in the control group following intervention?

Methods

Research Design

- Randomized clinical trial of EMT (n=16) versus business as usual control (BAU) group (n=18)

Participants

- 34 children between 24 and 42 months
- Mean age of 31 months
- 83% male, 17% female
- 84% Caucasian, 16% African American
- Average yearly income of \$61,750 with the majority of mothers (69%) with a bachelor's degree or higher
- Normal cognitive ability but delayed language
 - Bayley Cognitive > 80 (M=88, SD=6.1)
 - Bayley Language < 79 (M=70, SD=9.9)

Intervention

- 24, 60-minute intervention sessions in the clinic (14) and home (10).
- Home sessions included reading a book, eating a snack, playing with preferred toys a routine of the parent's choice.
- In each session:
 - The therapist modeled the EMT intervention with the child.
 - The therapist taught the parent to use specific strategies.
 - The parent implemented EMT with the child across play and routines.

Results

- Therapist training of parents was delivered at high levels of fidelity across home and clinic settings.
- Observational measures of four key therapist parent-training behaviors indicated fidelity ranged from 84 to 99% across behaviors and settings.
- This level of fidelity in a well specified model of parent training was sufficient to train parents to implement EMT at criterion levels.
- Parents implemented EMT at levels comparable to the levels of fidelity achieved by the therapist.
- Parent and child outcomes of the intervention in the treatment and BAU comparison group were analyzed using multi-level modeling.
- Parents used all six EMT strategies significantly more than parents in the BAU group.
- Children whose parents were taught to implement EMT scored higher on all language measures than did children in the BAU group (ES ranged from .29- .75).

Fidelity of Parent Training

Parent Training Strategy	Example	Home	Clinic
Teaching the strategy	Didactic teaching using a checklist of skills to be reviewed	.87 (.18)	.90 (.15)
Modeling with child	Therapist highlighted strategies at least six times per session	.95 (.18)	.95 (.12)
Coaching the parent	Therapist praised or gave constructive feedback once per minute	.96 (.05)	.99 (.04)
Providing feedback	Therapist summarized the session, linking parent use of strategies to child language	.84 (.37)	.91 (.17)

Fidelity of Parent Use of EMT Strategies

EMT strategy	Measure	Criteria	Parent Implementation
Matched turns	Percentage of adult turns that are in response to a child's previous utterance	>.80	.81 (.08)
Parent responsiveness to child verbal turns	Percentage of child verbalizations that are followed by a contingent, related response	>.80	.83 (.08)
Parent talk at the child's level	Percentage of parent utterances that are at the child's target level	>.50	.53 (.11)
Expansion of child's utterances	Percentage of child utterances that the parent expands	>.40	.62 (.11)
Time delay strategies	Percentage of episodes that include correctly executed steps of the non-verbal prompting hierarchy	>.80	.74 (.18)
Prompting strategies	Percentage of episodes that include correctly executed steps of the verbal prompting hierarchy	>.80	.73 (.31)

Parents' Use of EMT: Treatment vs. BAU

Measure	β	SE	p	d
Matched turns	.46	.03	.00	3.19*
Responsive Feedback	.21	.02	.00	1.85*
Target Talk	.36	.02	.00	2.90*
Expansions	.36	.03	.00	2.20*
Time delay strategies	.65	.00	.00	5.32*
Prompting Strategies	.19	.06	.00	1.81*

*p<.05

Child Language: Treatment vs. BAU

Measure	β	SE	p	d
PLS-Total	9.02	3.84	.03	.60*
PLS-AC	8.00	4.79	.11	.46
PLS-EC	7.41	3.43	.04	.67*
MCDI	86.90	47.14	.08	.29
MLUm	.25	.15	.13	.57
NDW	15.86	9.75	.06	.62
TNW	50.44	6.05	.03	.75*

Conclusions

- Levels of fidelity were high for the therapist's parent training and the parent's use of EMT strategies.
- Parents in the EMT group used all six language support strategies more than parents in the control group.
- Children in the EMT group used more words and longer sentences than children in the control group.
- Children in the EMT group had significantly greater PLS-4 scores.

Implications for Practice

- Parents can learn to use EMT language support strategies when therapists provide the parent training systematically with high levels of fidelity.
- Preliminary findings suggest that parent-implemented EMT is an effective intervention for children with language delays, when parents use the strategies at criterion levels.

Limitations & Future Research

- Long-term outcomes for parents and children are unknown.
- The sample size is small.
- Future research should examine the directionality of the relationship between parent use of strategies and child language skills across settings and over time.
- Future research should compare the effects of different methods of parent training.

References

- Huttenlocher, J., Haight, W., Bryk, A., Seltzer, M., & Lyons, T. (1991). Early vocabulary growth: Relation to language input and gender. *Developmental Psychology*, 27, 236-248.
- Kaiser, A. (1993). Parent-implemented language intervention: An environmental system perspective. In A. Kaiser & D. Gray (Eds.), *Enhancing children's communication: Research foundations for intervention* (Vol. 2, pp. 63-84). Baltimore, MD: Paul H. Brookes.
- Tomasello, M., & Todd, J. (1983). Joint attention and lexical acquisition style. *First Language*, 4, 197-212.
- Vigil, D., Hodges, J., & Klee, T. (2005). Quantity and quality of parental language input to late-talking children during play. *Child Language Teaching and Therapy*, 21, 107-122.

More Information

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