

Measuring Fidelity: An Essential Element of Understanding Intervention

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Importance of Fidelity

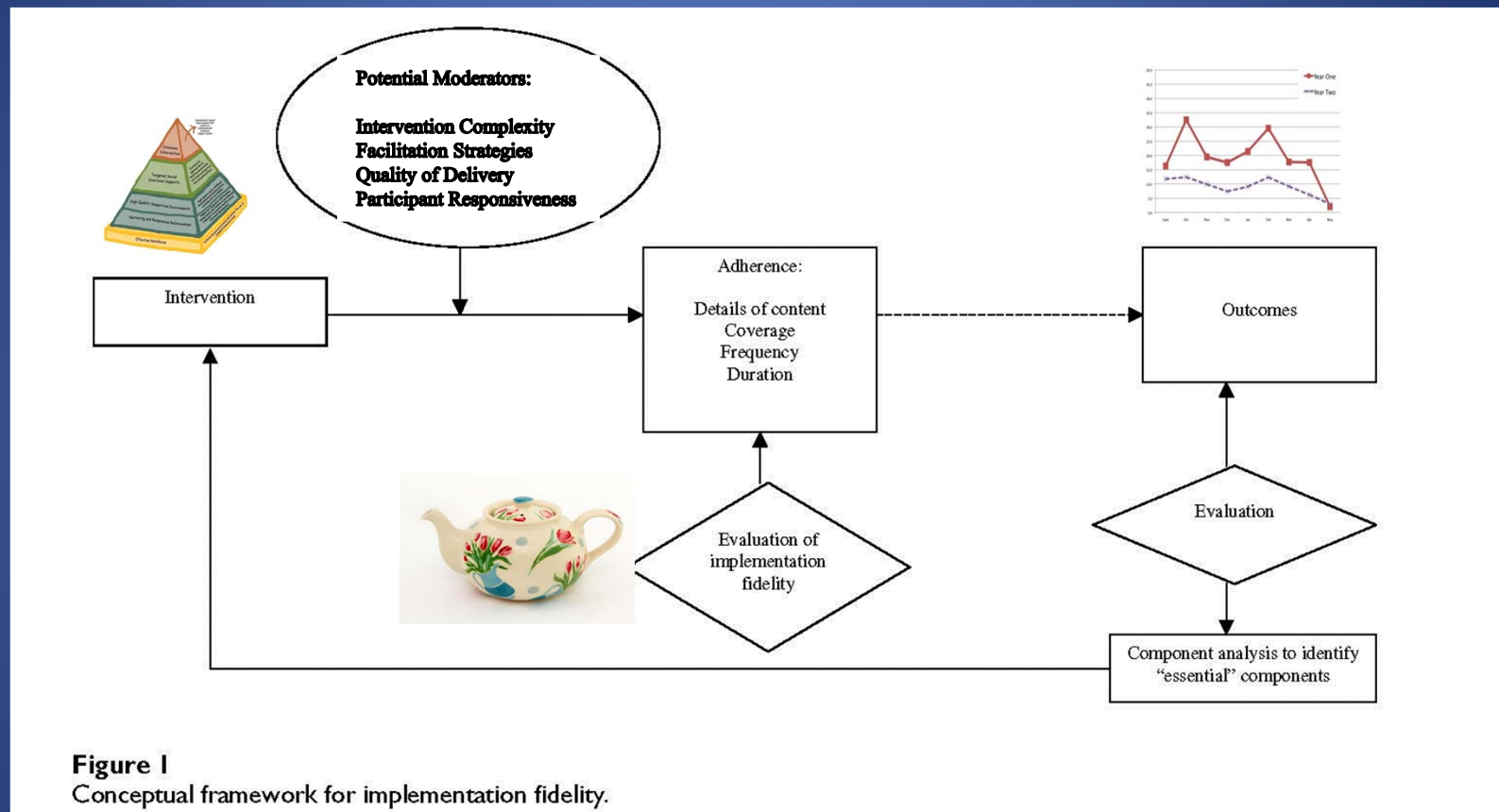
- Fidelity of implementation is the determination of how well an intervention is implemented in comparison to its intended design
- Fidelity measures are needed to explain the degree of variation in treatment implementation and how it might affect or moderate outcomes

Fidelity of Implementation: Multiple Dimensions

- Extent to which an intervention (including its content and process) is implemented as designed (“adherence”)
- Amount of intervention received (“dosage” or “exposure”)
- What it looks like when it is implemented (“quality”)
- How far participants respond to, or are engaged by, an intervention (“participant responsiveness”)
- Identification of essential components* (“differentiation”)

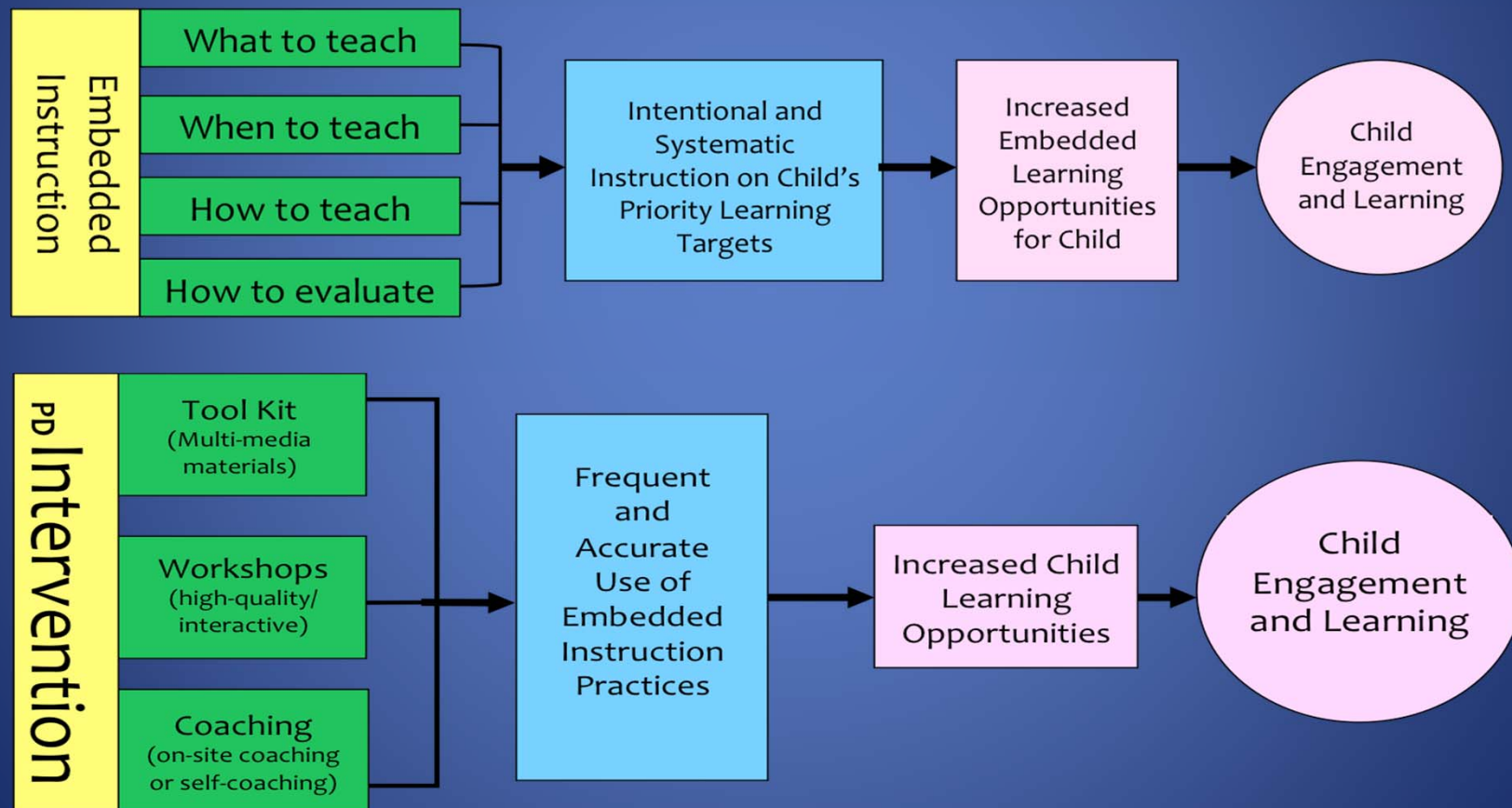
Carroll, C., Patterson, M., Wood, S., Booth, A., Rick, J., & Balain, S. (2007). A conceptual framework for implementation fidelity. *Implementation Science*, 2:40. doi: 10.1186/1748-5908-2-40

Impact: Linking Fidelity of Implementation to Outcomes

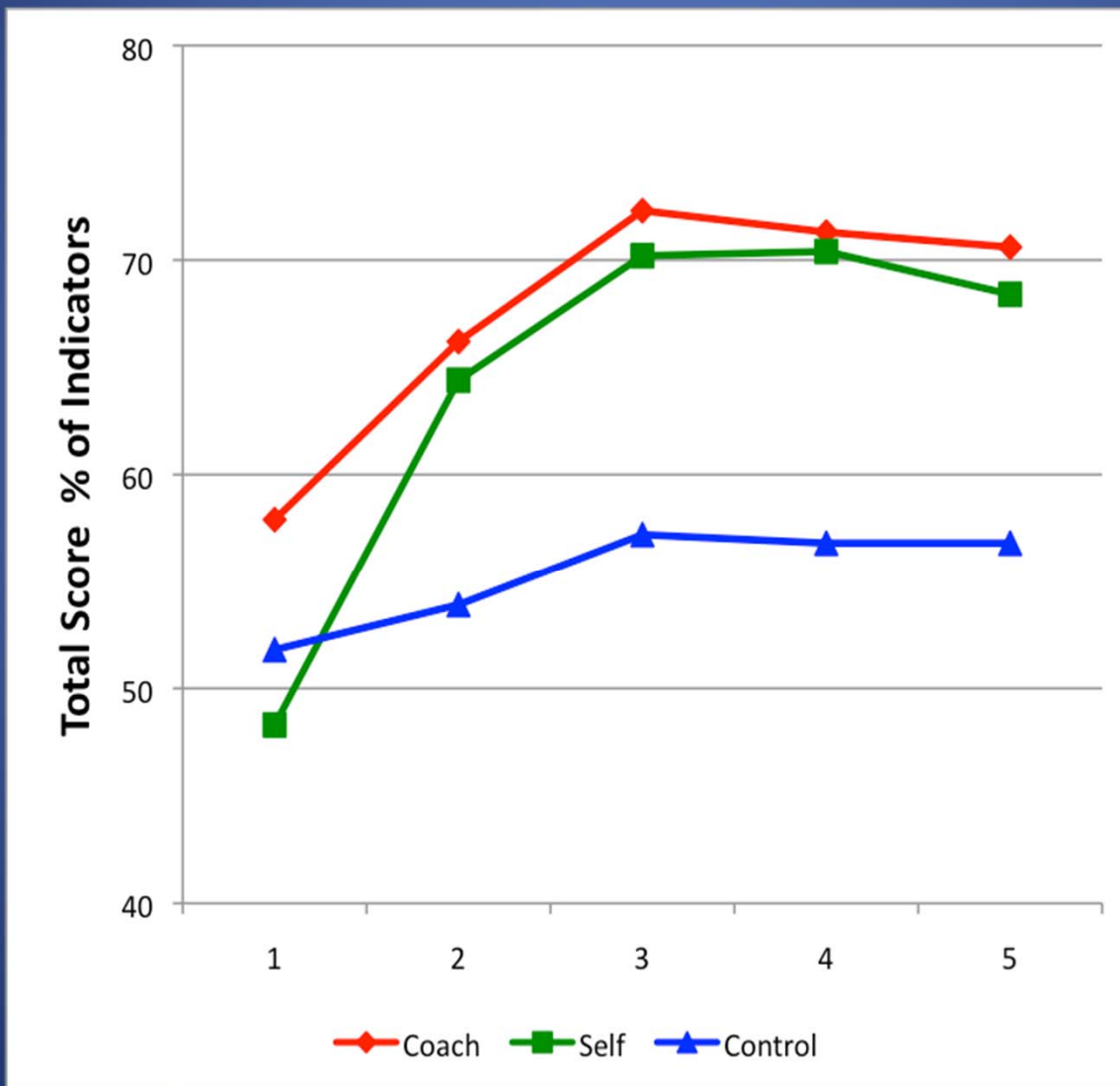


From: Carroll, C., Patterson, M., Wood, S., Booth, A., Rick, J., & Balain, S. (2007). A conceptual framework for implementation fidelity. *Implementation Science*, 2:40. doi: 10.1186/1748-5908-2-40

Theory of Instruction and Theory of Change: Embedded Instruction for Early Learning



Learning Targets Rating Scale



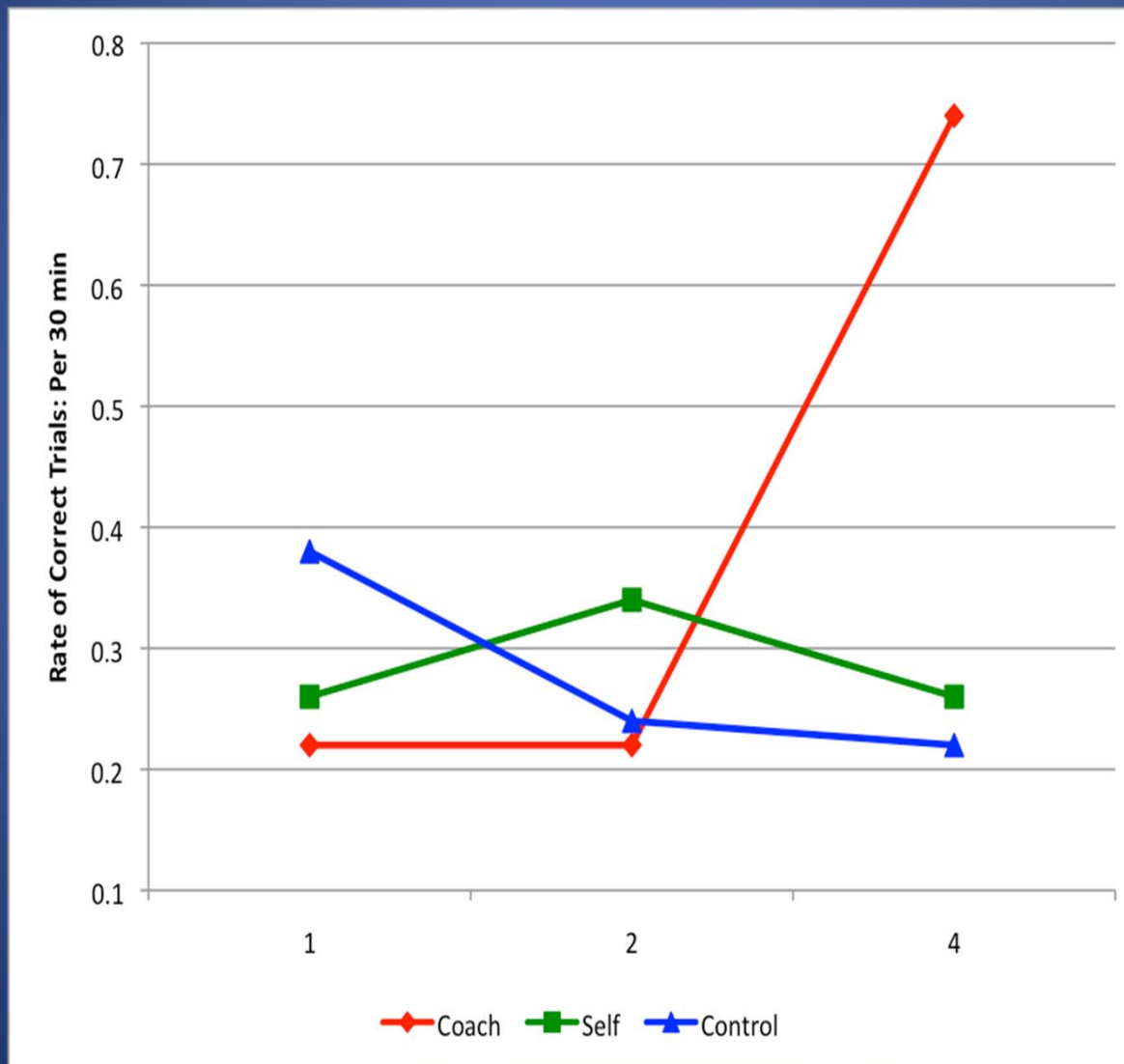
Wave 4 Cohen's *d* Effect Sizes:

**Coach vs.
Control**
1.6**

Self vs. Control
1.5**

Coach vs. Self
.09

EIOS: Teacher Implementation “Embedded” Complete Learning Trials



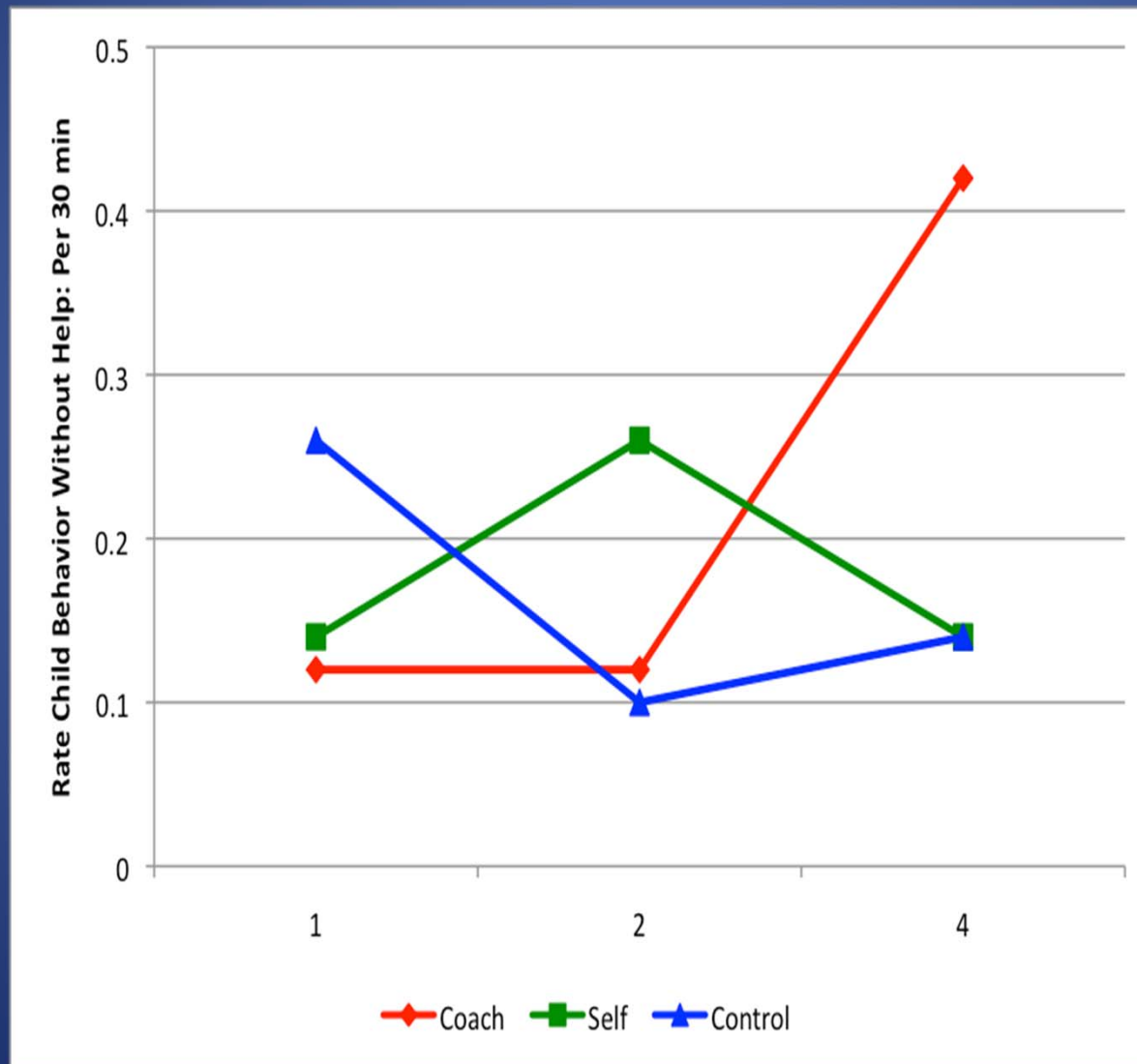
Wave 4 Cohen's
d Effect Sizes:

**Coach vs.
Control**
1.36**

Coach vs. Self
1.24**

Self vs. Control
0.12

EIOS: Child Behaviors



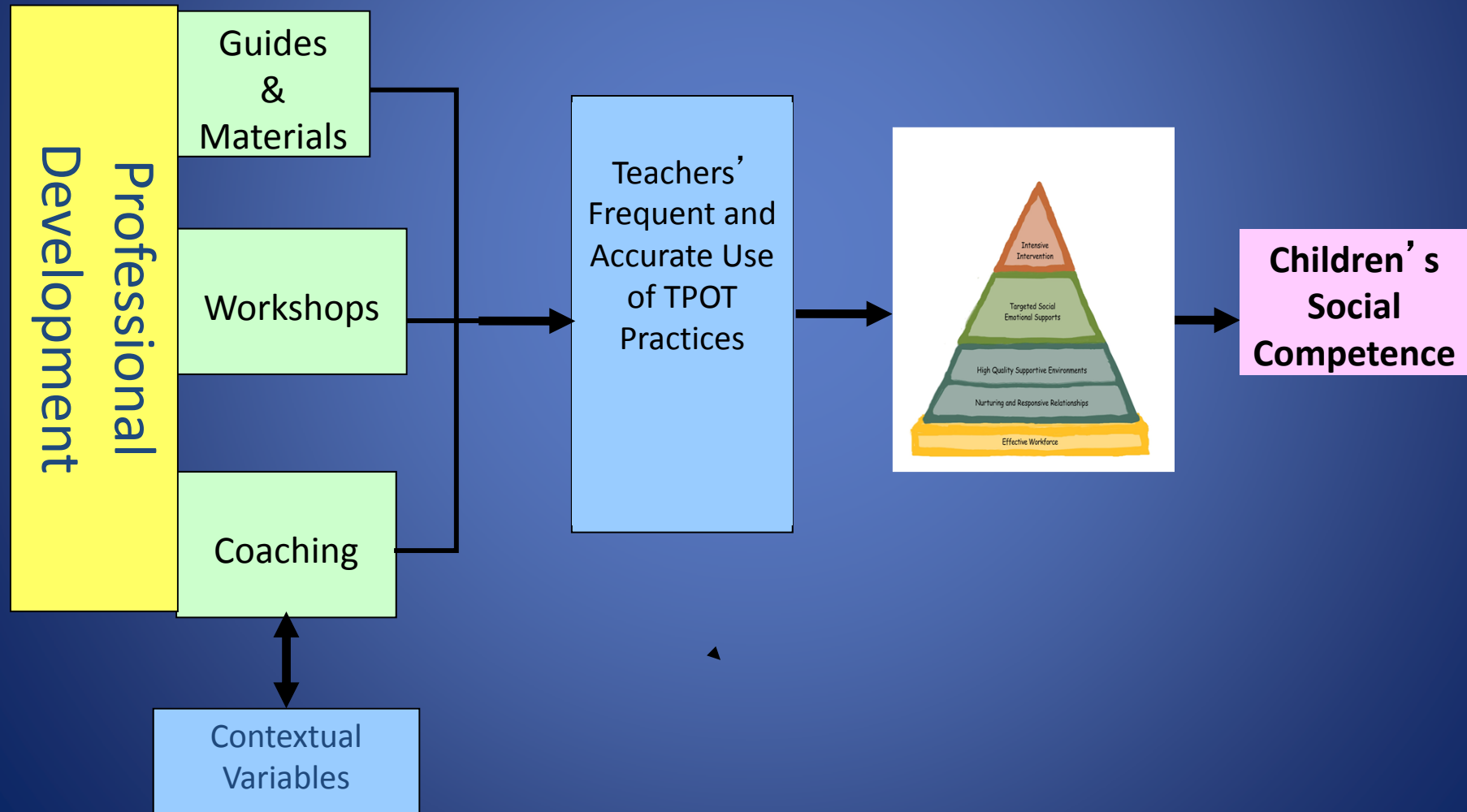
Wave 4 Cohen's
d Effect Sizes:

**Coach vs.
Control
0.90****

**Coach vs. Self
0.92****

**Self vs. Control
-0.02**

TPOT Study: Theory of Change



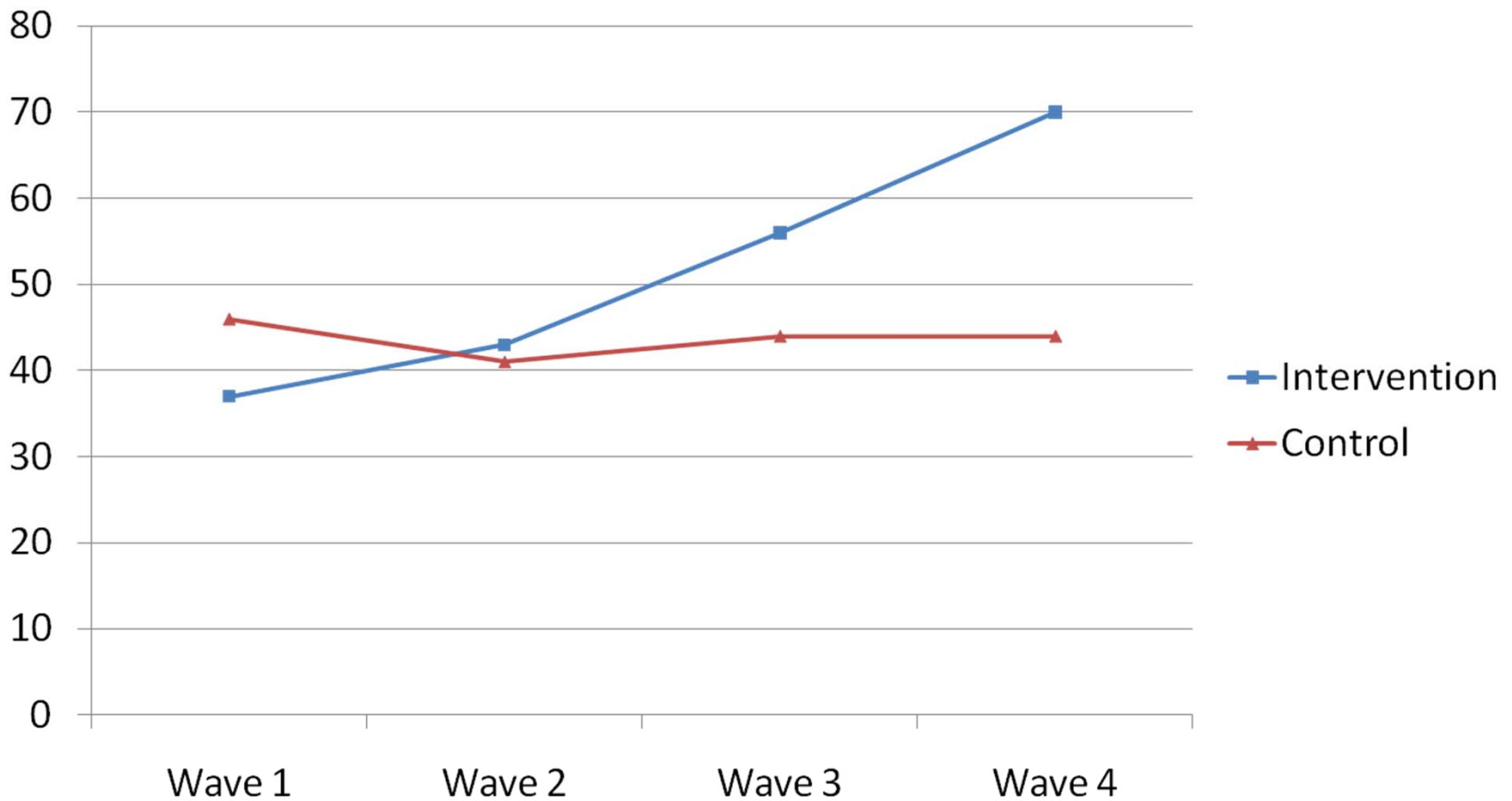
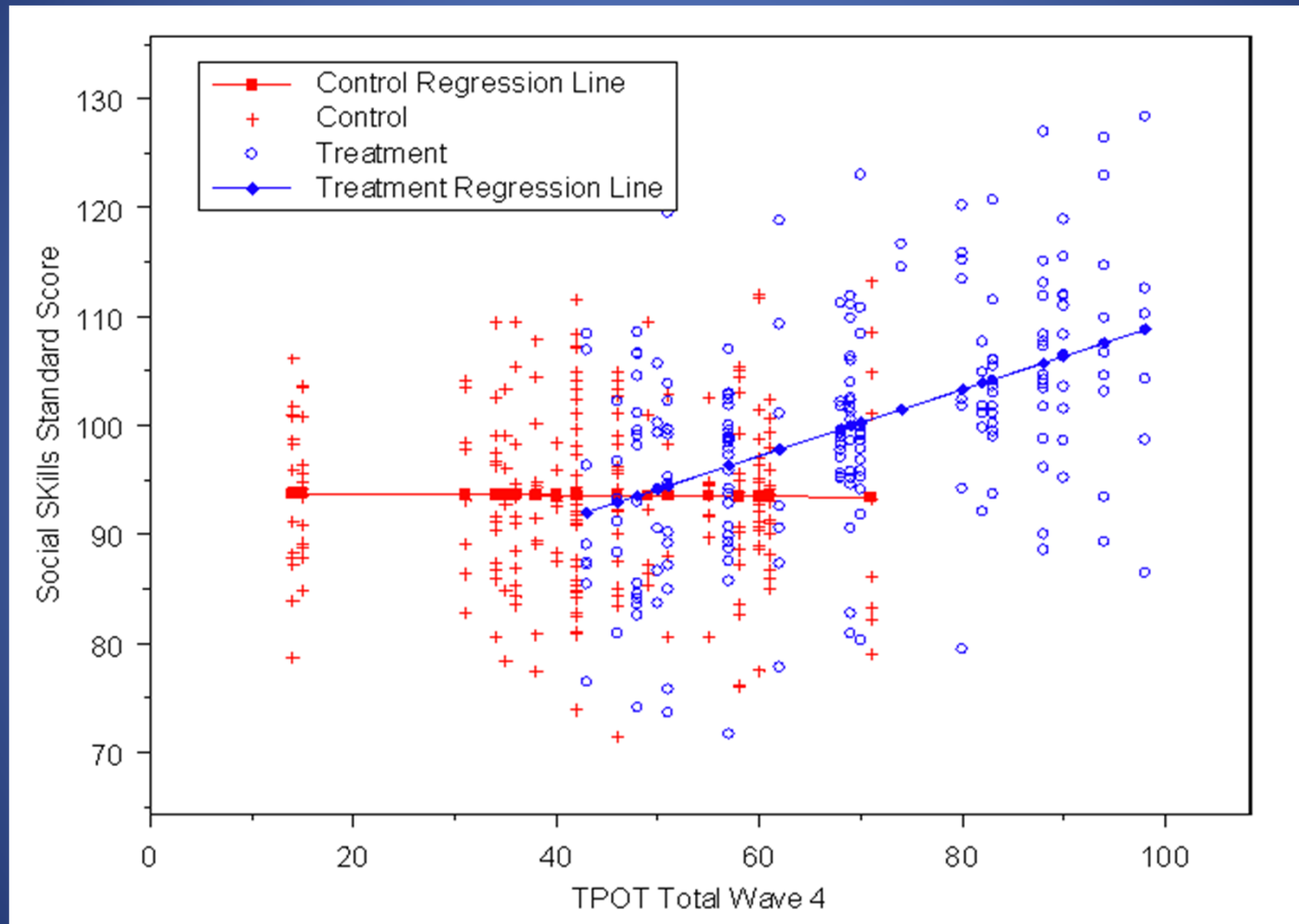


Figure 1. Mean Teaching Pyramid Observation Tool implementation scores across waves by experimental condition. Total number of TPOT indicators = 108. Statistically significant and noteworthy differences at Wave 4 [$t(40.03)=6.80, p<.001, \text{Cohen}'s d=2.6$)

Implementation Moderates/Mediates Social Skills



Failure to Measure Fidelity

- Incorrect conclusion about the effectiveness of interventions
- Lack of application of the planned “treatment”
- Lack of understanding of the manner in which a treatment was or was not applied, compromising replication
- Evaluation of a *described* independent variable, versus *delivered*
- Understanding of the counterfactual group and the differences between intervention and “business-as-usual”

Developing Measures

- Identify conceptual framework, theoretical model
 - Identify active ingredients
 - Operationalize constructs
 - Seek specificity
- Multi-dimensions
 - Adherence, dosage, quality, responsiveness
- Multiple measures
- Evaluate psychometric integrity of fidelity measures

Understanding Fidelity

- Factors influencing
 - External environment
 - Organization
 - Intervention
 - Interventionist
- Level needed to yield effects
- Adaptations and flexibility of Interventions
- Sustainability
- Implementation supports