Once more, with feeling: Examining multiple facets of intervention implementation

Evan Dart, Ph.D., L.P. BCBA-D, University of South Florida

Natalie Romer, Ph.D., L.P., BCBA, NCSP, WestEd

Chelsea Salvatore, M.A., University of South Florida

Christopher Vatland, Ph.D., Cornell University

UNIVERSITY OF SOUTH FLORIDA

WestEd

CORNELL UNIVERSITY FOUNDED A.D. 1865 Cornell University

Welcome and Introductions

Objectives

You will leave this session, with an increased:

- understanding of different critical variables that impact implementation
- familiarity of methods and measures for assessing implementation of school-based interventions
- knowledge of how implementation is reported within the single-case research focused on implementation of function-based interventions within schools

Key Concepts

Systematic Review

Implications for Practice

Key Concepts

Systematic Review

Implications for Practice

Implementation

A complex, multi-dimensional **process** in which implementation variables influence intervention outcomes
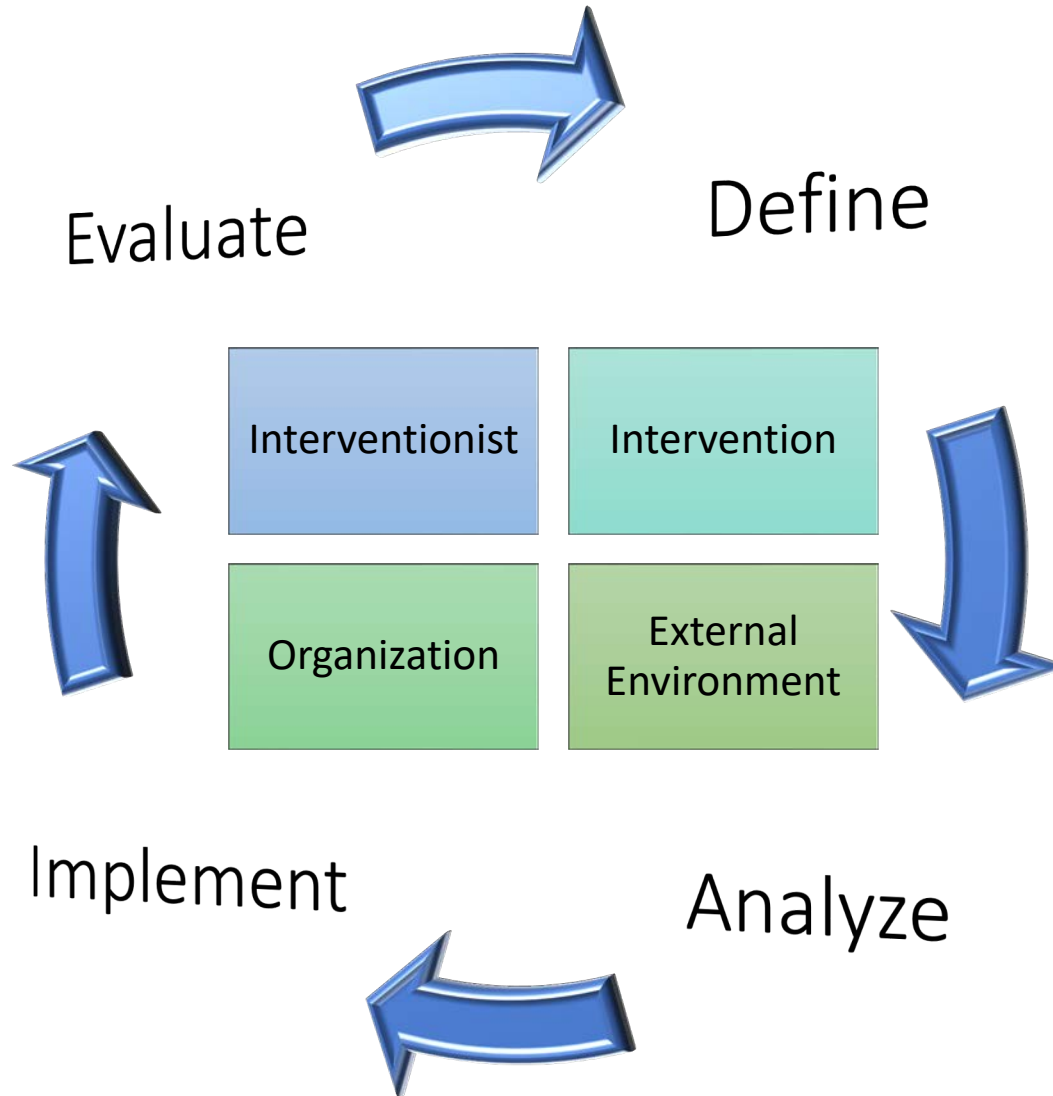
(Durlak & DuPre, 2008; Dane and Schneider, 1998; Fixen et al., 2005; Forman et al., 2013; Sanetti & Kratochwill, 2014)

In your work, what helps support effective implementation?

Factors Influencing Implementation

(Durlak & DuPre, 2208; Fixen et al., 2005; Forman et al.,, 2013; Sanetti & Kratochwill, 2009; Sanetti & Collier-Meek, 2019)

Aspects of Implementation

Adherence/Fidelity*	Dosage	Quality	Program Differentiation
Adaptation	Program Reach	Participant Responsiveness	Control/Comparison

(Adpated from Dane and Schneider , 1998; Durlak and DuPre, 2008)

Measuring Implementation

- How
  - Direct observation
  - Self report
  - Archival record
  - Interview

- Method
  - Checklist
  - Discrete behavioral observation
  - Global rating scale

Others?

Take Aways

- Although some aspects of implementation have a robust body of research behind them (i.e., adherence, dosage), others have received limited attention (i.e., participant responsiveness, program differentiation).

- Aspects of implementation need to be studied both individually and concurrently to determine their interactions as part of the broader construct of implementation

- Implementation may also be better conceptualized to include not only the implementation of intervention strategies, but also the degree to which educators are implementing the assessment, training, on-going coaching, and progress monitoring that is inherent to the broader assessment-informed intervention process

FBA/BIP

FBA/BIP within a problem-solving framework has been established as an effective process for supporting individualized student needs.

(Cook et al., 2012; Filter & Horner, 2009; Ingram, et al., 2005; Newcomer & Lewis, 2004)

Determine the Behavior's Function

- Team-based approach
- Define the behavior
- Data collection
  - Direct observation
  - Interview (Parent, Student, Teacher)
  - Behavior rating scales
  - Archival records, permanent products
- Identify the function / develop hypothesis

Develop Intervention

- Match perceived function
- Develop a plan
  - Antecedent manipulation
  - Teach new skills
  - Reinforcement
- Strategies are clearly written
  - Frequency, Duration, Dosage, etc
- Plan for implementation

Plan Implementation

- Measure behavior change AND implementation
  - Adherence/fidelity
  - Dosage
  - Quality
  - Participant responsiveness
- Plan for measurement
  - Who
  - How
- Training and coaching
- Social validity

Single-Case Design

Single-Case Design

- Focus on applied, behavioral research that results in meaningful and durable outcomes.

- Underscores the importance of demonstrating experimental control by documenting an effect through:
  - Repeated measurement of a dependent variable
  - Technical precision of the independent variable
    - Including providing clear and easily interpretable descriptions of both procedures and the behavioral principles underlying an intervention

(Baer, Wolf, & Risley, 1968)

Single-Case Design

- Often used in classroom settings

- Well suited to measuring interventions that have been individualized or that take into account student-level variables
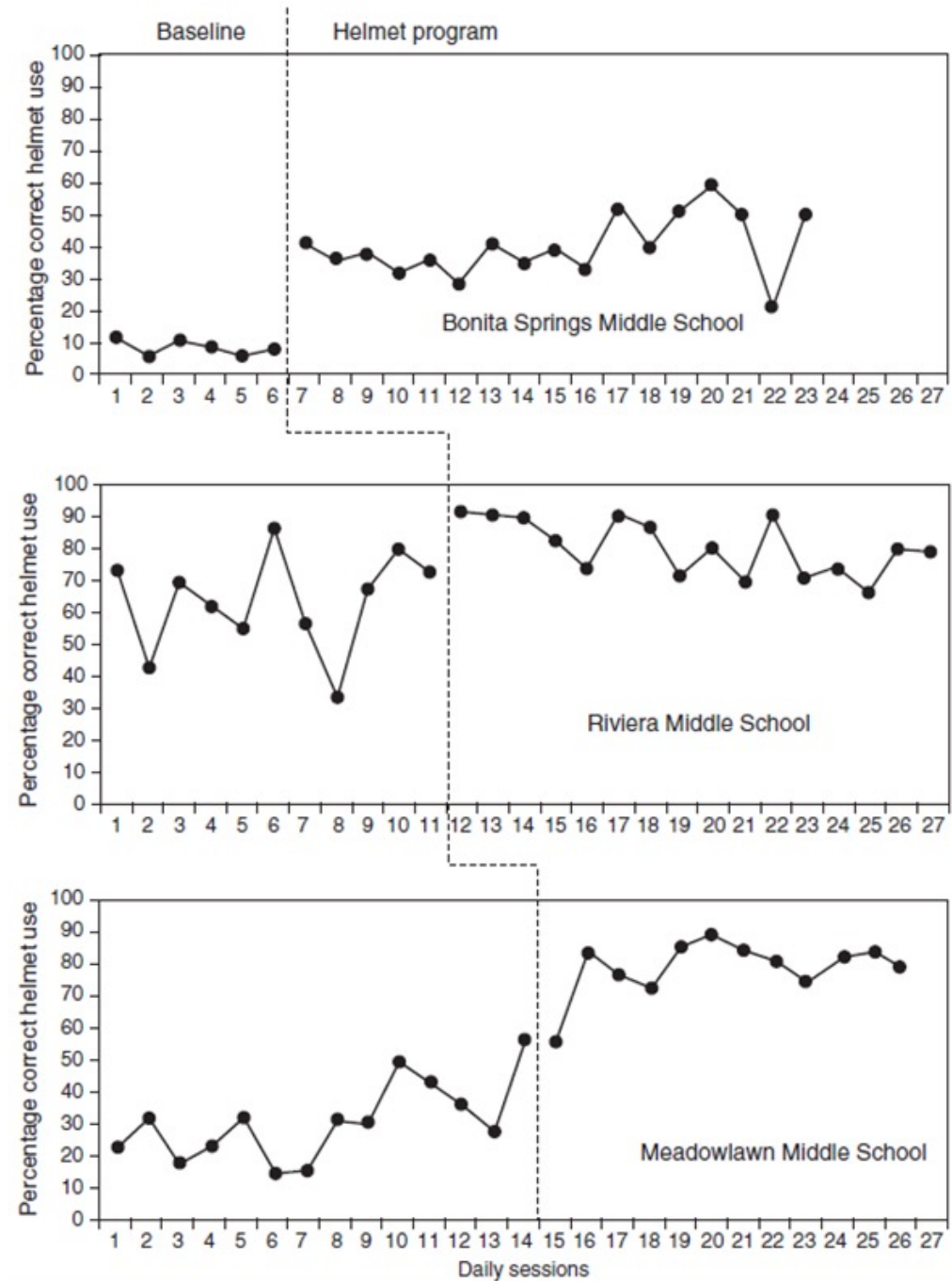
Designs

- Multiple Baseline

- Reversal/Withdrawal

- Alternating Treatment

- Changing Criterion

With all single-case designs:
- ❑ Case is the unit of intervention – can be one or multiple participants
- ❑ Case provides its own control
- ❑ Outcome is measured repeatedly within and across different conditions or levels of the IV (phases)
  - ❖ Demonstrate clear baseline(s)
  - ❖ Demonstrated change that accompanies manipulation of the IV at least three points in time
  - ❖ Examine trend, variability, immediacy of effect
- ❑ Determine whether a causal relation exists and the effect of altering a component

Kratochwill, T. R., Hitchcock, J., Horner, R. H., Levin, J. R., Odom, S. L., Rindskopf, D. M & Shadish, W. R. (2010). Single-case designs technical documentation. Retrieved from What Works Clearinghouse website: http://ies.ed.gov/ncee/wwc/pdf/wwc_scd.pdf.
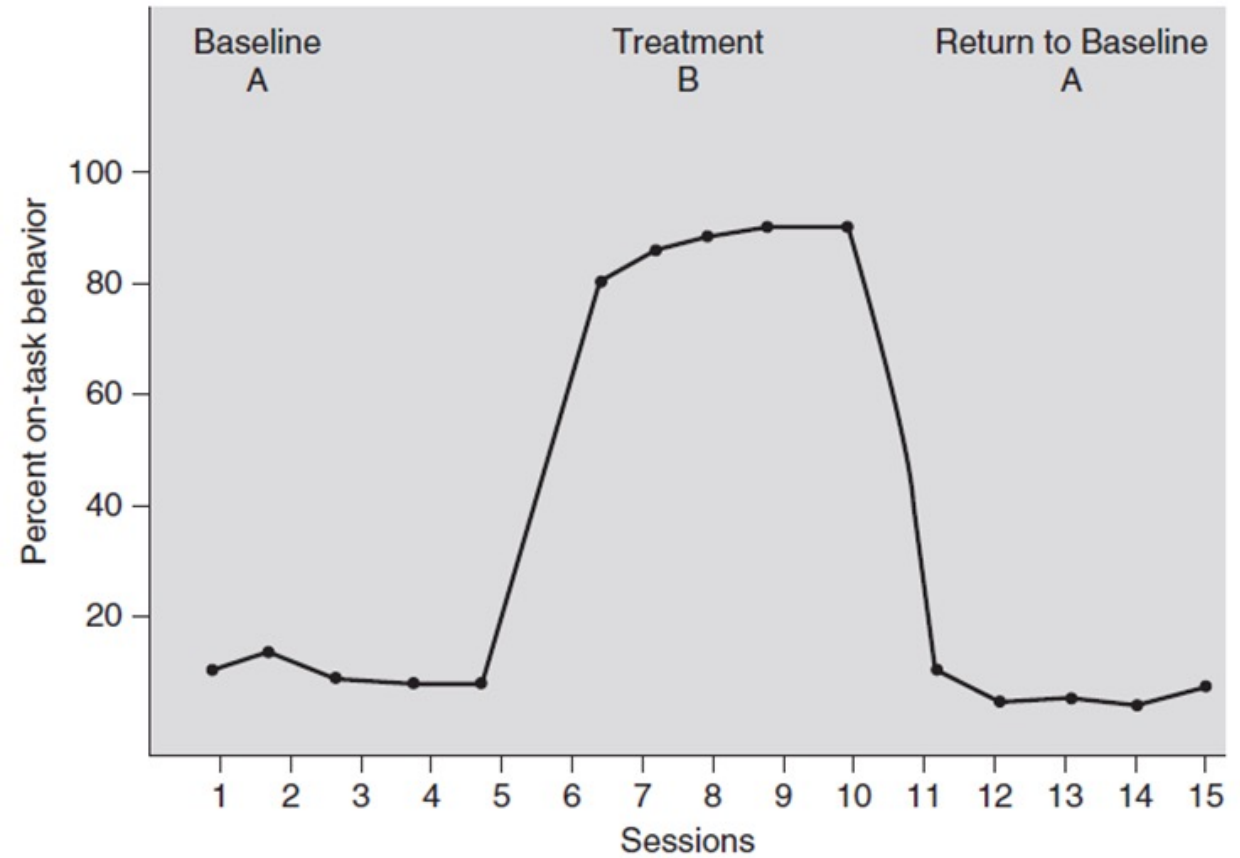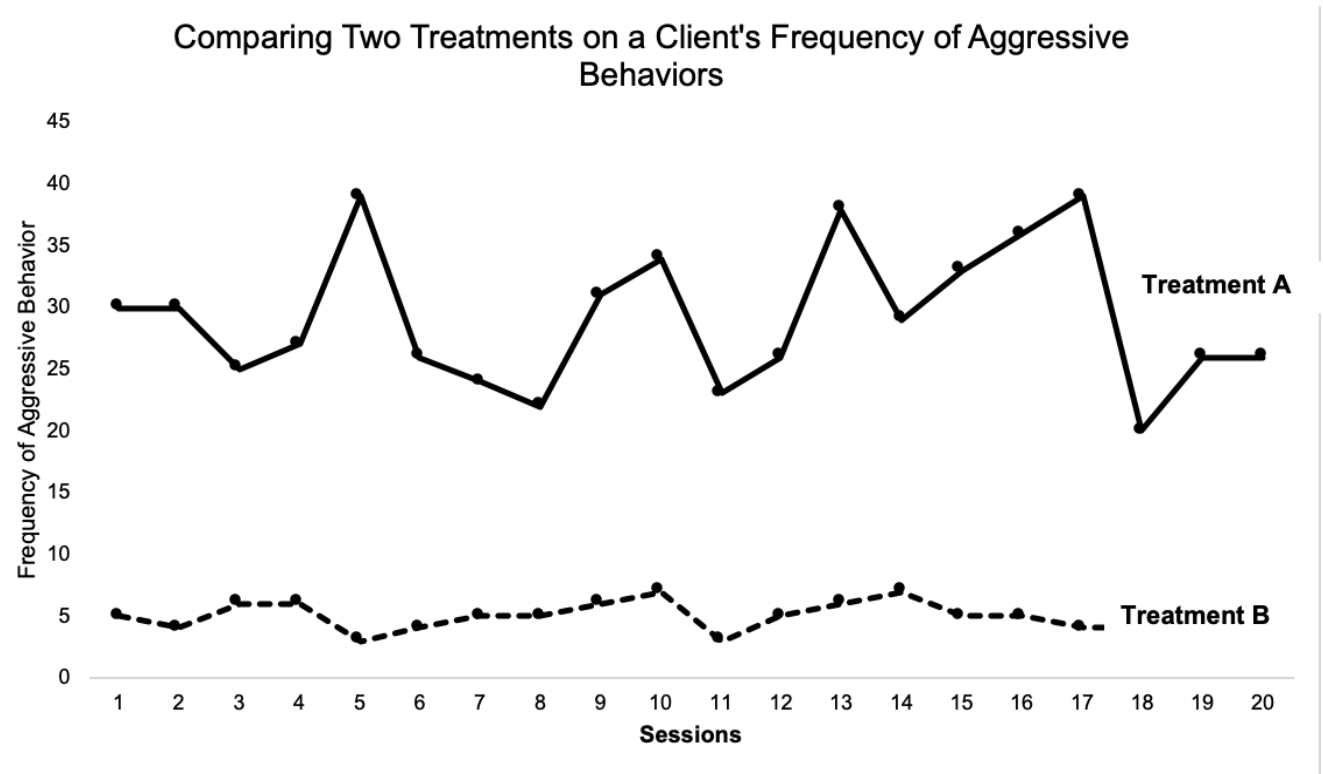
Designs

- Multiple Baseline
- Reversal/Withdrawal
- Alternating Treatment
- Changing Criterion

Designs

- Multiple Baseline
- Reversal/Withdrawal
- Alternating Treatment
- Changing Criterion

Designs

- Multiple Baseline
- Reversal/Withdrawal
- Alternating Treatment
- Changing Criterion

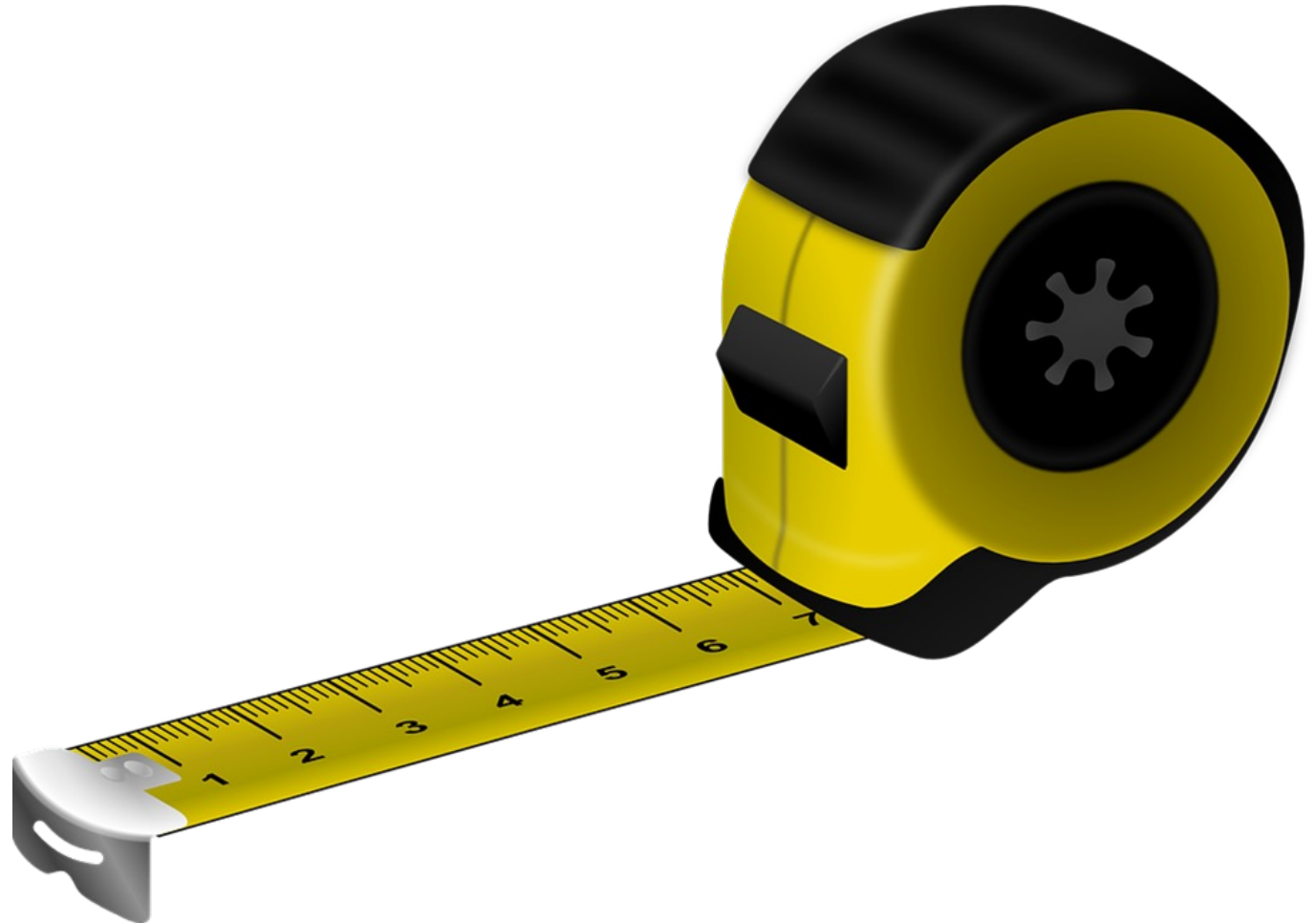Comparing Two Treatments on a Client's Frequency of Aggressive Behaviors

Designs

- Multiple Baseline
- Reversal/Withdrawal
- Alternating Treatment
- Changing Criterion
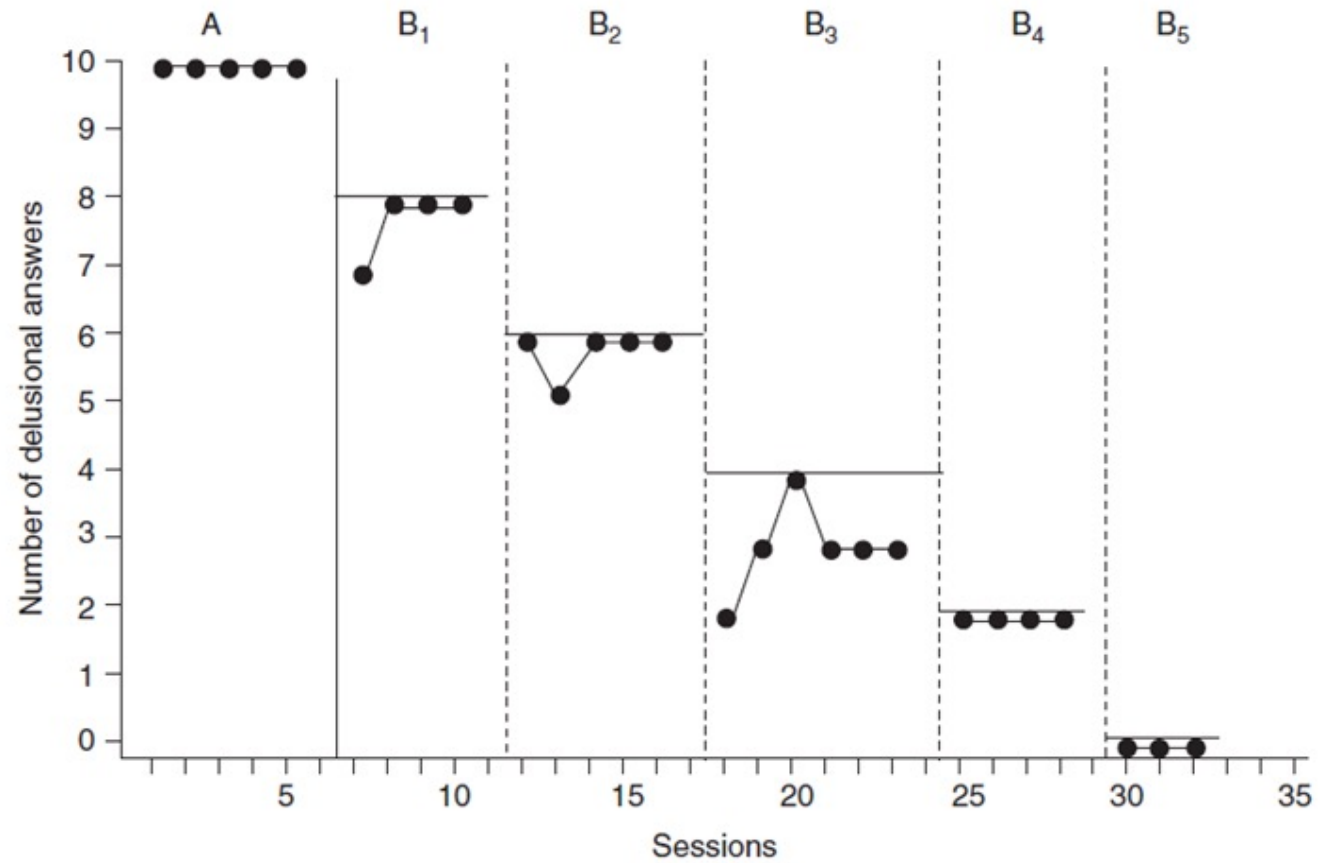
What is (or can be) measured?

- Assessment
- Training
- Intervention
- Comparison conditions
- Communication
- Coaching
- Social validity

At issue…

- Most single-case studies include:
  - Detailed descriptions of the participants and study context
  - Some aspects (e.g. dosage) inherent to the research design
- School-based intervention also might include:
  - Assessment procedures and outcomes
  - Implementers training
  - Follow-up coaching provided by researchers.

Questions remain about the extent to which these additional aspects of implementation are measured in single-case research
and how this information might be used to better inform practice.

Key Concepts

Systematic Review

Implications for Practice

Key Concepts

Systematic Review

Implications for Practice

- Examine how implementation is measured

- Function-based interventions in schools as context

- Single-case design focus due to conceptual fit

- Individualized interventions for students identified as at risk or having SpEd classification

Search Terms

- Single-case (e.g., multiple baseline design)

- Functional assessment (e.g., function-based intervention)

- School-based setting (e.g., school, classroom)

- PsycInfo, ERIC, Academic Search Premier

Inclusion Criteria

- Used single-case research design

- A functional assessment was conducted to guide the intervention

- The study was conducted in a school setting in the US

- At least half participants were K-12 (or 5-21 years old)

Literature Search

- 1999 – 2022

- Initial search – 127

- Included – 55

Article Coding

- General study characteristics (e.g., participants, int. agents)

- Implementation measurement (e.g., adherence, dosage, responsiveness)

- Measurement approach (e.g., direct observation, self-report)

- 20 articles (36%) double coded for IOA, 89.2% agreement – disagreements reviewed and discussed until 100% consensus

Participant Characteristics

- Setting – 49% SpEd, 25% GenEd, 18% mixed

- Primarily male, 5 – 19yo (M = 8.9); K – 9th (M = 3.3)

- 54.7% participants receiving SpEd services
  - 30% EBD, 18.8% ASD, 16.3% SLD; 8.8% ID; 6.3% OHI; 20% Other or NR

Target Behaviors

85% of studies targeted a behavior for reduction

- 43% disruptive behavior, 16% off-task, 7% aggression, 25% combination

69% of studies targeted a behavior for increase

- 74% academic engagement, 10% social behavior

Both almost exclusively measured using interval recording (e.g., MTS), some frequency/rates

Functional Assessment

Less than half (42%) used team-based approach

Attention and Escape maintained 91% of challenging behaviors

Tangible and Automatic reinforcement represented once each

Intervention

- Most (71%) taught replacement/appropriate behavior

- Most (67%) modified antecedent and consequence conditions

- Few were antecedent interventions (18%) or consequent interventions (13%)

Adherence / Fidelity

- Any measure of whether the intervention was delivered as intended

Direct:
75%

Additional:
47%

Campell & Anderson (2008)

Dosage

- Any measure of the amount of the original program that was delivered

Lane et al. (2009)

Quality

- Any measure of how well program components are delivered, which can encompass measures of implementation clarity and correctness, perceived effectiveness, or more qualitative variables

Direct:

9%

Additional:

36%

Restori et al. (2007)

Program Differentiation

- A measure of the extent to which the critical components of the program (e.g., theoretical framework, specific practices) can be measured as unique and distinguishable from comparison programs.

Direct:

0%

Additional:

35%

Restori et al. (2013)

Adaptation

- Any measure of the changes made to specified programs during actual delivery.

Direct:

0%

Additional:

33%

Stahr et al. (2006)

Program Reach

- Any measure of the rates of participation across populations of participants, and the scope of the program during delivery.

Direct:

0%

Additional:

56%

Kern et al. (2007)

Participant Responsiveness

- Any measure of the degree to which participants respond to the implementation of the program

*Direct:

100%

Additional:

47%

Lane et al. (2007)

Control / Comparison

- Any comparison of treatment and control groups in an effort to measure program effects.

Direct:

0%

Additional:

33%

Todd et al. (1999)

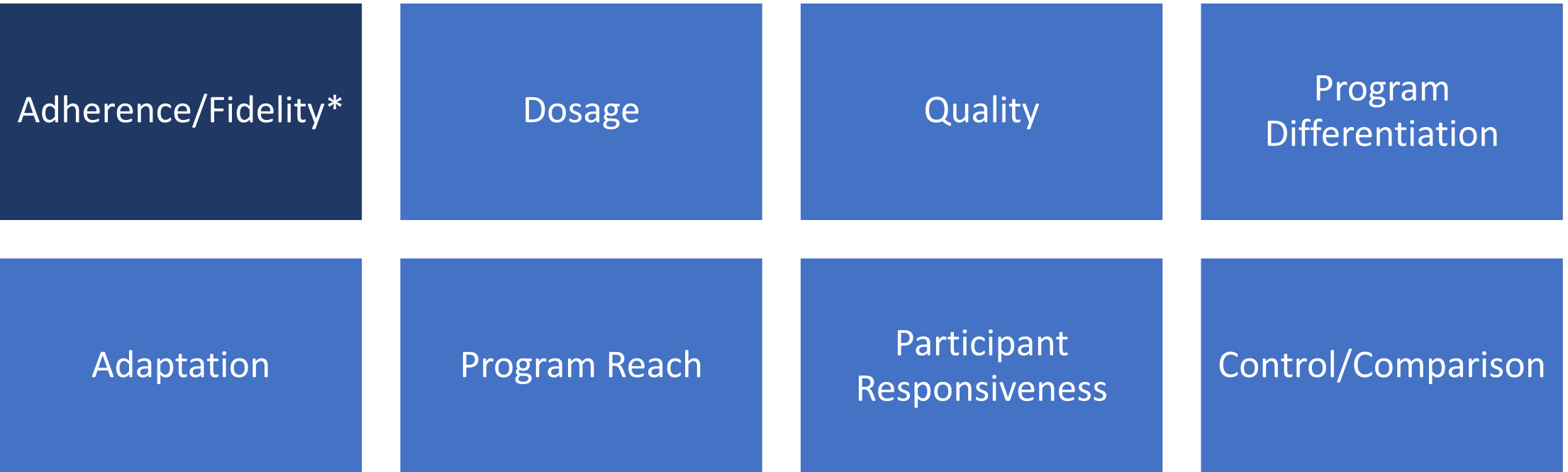Key Concepts

Systematic Review

Implications for Practice

Implications for Practice

Adherence/Fidelity*	Dosage	Quality	Program Differentiation
Adaptation	Program Reach	Participant Responsiveness	Control/Comparison

(Adpated from Dane and Schneider , 1998; Durlak and DuPre, 2008)

Implications for Practice

Applications of single-case design (e.g., progress monitoring) offer opportunity to evaluate implementation beyond adherence

Measure aspects of implementation that may be most relevant to your work

Identify and implement supports to foster comprehensive implementation

Thank you! Questions?

Evan Dart – ehd@usf.edu

Natalie Romer – nromer@wested.org

Chelsea Salvatore – csalvatore@usf.edu

Christopher Vatland – cv267@cornell.edu

Selected References

Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1,* 91-97.

Dane, A. V., & Schneider, B. H. (1998). Program integrity in primary and early secondary prevention: Are implementation effects out of control?. *Clinical Psychology Review, 18,* 23-45.

Durlak, J. A., & DuPre, E. P. (2008). Implementation matters: A review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology, 41,* 327-350.

Selected References

Sanetti, L. M. H., & Collier-Meek, M. A. (2019). Increasing implementation science literacy to address the research-to-practice gap in school psychology. *Journal of School Psychology*, *76*, 33-47.

Sanetti, L. M. H., Charbonneau, S., Knight, A., Cochrane, W. S., Kulcyk, M. C., & Kraus, K. E. (2020). Treatment fidelity reporting in intervention outcome studies in the school psychology literature from 2009 to 2016. *Psychology in the Schools*, *57*(6), 901-922.