

Implementation Matters: Measuring Fidelity to Support Data-Based Decision Making

Alexandra M. Pierce¹, PhD;
Melissa A. Collier-Meek², PhD, BCBA;
Lisa M. H. Sanetti¹, PhD, BCBA;
Julia Brandes²; Thea Bucherbeam²;
Spencer Perry¹; Lanae Drachslin¹; Sara Flash¹

¹University of Connecticut

²Teachers College, Columbia University



Preparation of this presentation was supported by a grant from the Institute for Education Sciences, U.S. Department of Education (R324A210266). Opinions expressed herein do not necessarily reflect the position of the U.S. Department of Education

Agenda

- Getting to know one another
- Learning objectives
- Implementation fidelity overview
- Measuring & analyzing implementation fidelity
- Tailoring fidelity assessments
- Implementation supports to address inconsistent or limited fidelity

Get to Know One
Another

PRIME 

What region of the country do you work in?

- Great Plains
- Gulf Coast
- Northeast
- Mid-Atlantic
- Midwest
- Mountain West
- Pacific Northwest
- Southeast
- Southwest/ West

What age-level students do you work with most often?

- Early childhood / Pre-K
- Primary (K-2)
- Late Elementary (3-5)
- Middle School (6-8)
- High School (9-12+)
- Other

What's your favorite
part about being a
school psychologist?

In your opinion, how important is assessing intervention fidelity?

- 1 = Unimportant
- 2 = Not very important
- 3 = Moderately important
- 4 = Important
- 5 = Very important

What are some barriers
you've experienced with
fidelity assessments?

Learning Objectives

Attendees will...

- Examine the importance of **measuring implementation fidelity data** to promote positive student outcomes
- Identify and apply best practices for collecting and **analyzing intervention fidelity** data
- **Tailor methods** of intervention fidelity assessment to the needs of your school

Case Example

Russell

Meet Russell

Russell is a kindergarten student in Ms. Lopez's class.

Russell has trouble keeping his body calm and is often verbally disruptive.

An FBA determined the function of Russell's disruptive behavior is to gain adult attention.



Russell's Behavior Support Plan (BSP)

- Teach desired behaviors
 - Proactively provide attention
 - Reinforce desired behaviors
 - Effective replacement behaviors
 - Planned ignoring of disruptive behaviors
-
- After 3 weeks, Ms. Lopez notices no decrease in Russell's disruptive behaviors.

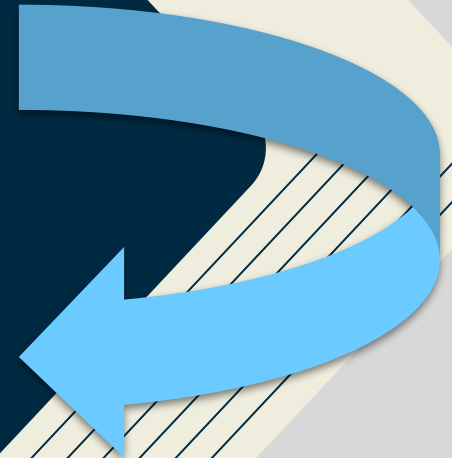
Why is Russell still struggling?

~~Russell is just a bad kid?~~

~~Russell requires more interventions?~~

~~Russell's BSP needs to be modified?~~

Russell's BSP is not being implemented with fidelity?



Let's Discuss

Have you encountered situations of inconsistent intervention fidelity? How did you determine this?

What was the impact of inconsistent or limited fidelity?

Implementation Fidelity

The what & the why

The Research-to-Practice Gap

- There is widespread documentation of the importance of fidelity to student behavioral and academic outcomes.
- Only 7% of school psychologists report measuring implementation fidelity data.

(Scott et al., 2019)

(Cochrane et al., 2019)

Implementation Fidelity

What is it?

- The extent to which a practice is **carried out as intended.**

Why does it matter?

- Assists in assessing if a student **received the full extent of an intervention.**
- Understand if student **outcomes are attributed to the intervention.**

Evidence-based interventions are
less likely to be effective if not
implemented as planned.

(Fryling et al., 2012; Noell et al., 2002; Wilder et al., 2006)

Measuring Implementation Fidelity

Measuring Fidelity

Advanced planning for the collection of implementation fidelity data is key to successful data collection.

School psychologists must:

- Ensure data collectors are **properly trained**
- Establish the **frequency** of data collection
- Set up a time for regular data **review**

(Sanetti & Collier-Meek, 2019)

Let's Discuss

Who in your school typically implements academic interventions?

Behavioral interventions?

How, if at all, are educators supported in their implementation of these plans?

Measuring Fidelity

Establish the **frequency** of data collection

- Ask yourself, “How intense is the intervention?”
- Determine how high-stakes the result will be.
 - Low intensity + low stakes
 - Student(s) being served in **Tier 1 or 2**, no concerns for needing SPED evaluation
 - High intensity + high stakes
 - Example: **Tier 3** behavior support plan developed for a student with aggressive behavior that may place peers at risk.

Measuring Fidelity

Set up a time for regular data **review**

- Schedule will depend on the nature of the intervention and context of the school/setting.
 - However, determine the dates and set the calendar in advance to help ensure they take place.

Measuring Fidelity

In the past, how have you collected intervention fidelity data?

- Direct observation
- Permanent products
- Self-report
- Rating scales (e.g., Likert scales)

...and more!

Case Example

Russell

Consider...

Given the BSP steps on the next slide, what might you look to **measure** when assessing a teacher's fidelity to the plan?

Case Example - BSP Steps

PREVENT

1. Provide positive proactive attention to Russell every 5 minutes.
2. Before each transition, verbally remind Russell to raise his hand to ask for help.

TEACH

1. Teach Russell desired behaviors through modeling and practice opportunities

RESPOND

1. When Russell raises his hand or behaves as desired, provide behavior-specific praise.
2. When Russell is disruptive, provide little/no attention.

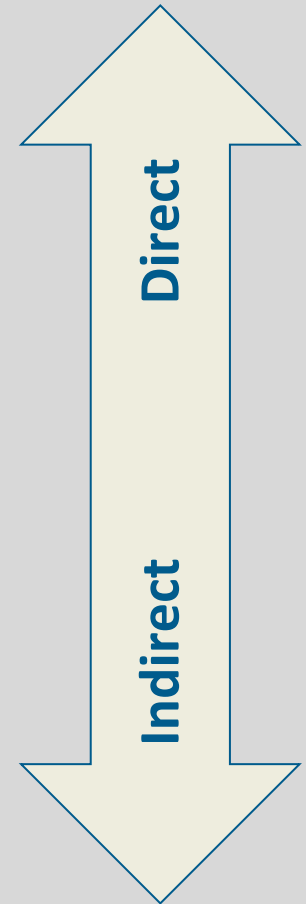
How to Measure Intervention Fidelity

Measuring Fidelity

✓	Intervention Fidelity Data Collection Steps
Document Intervention Fidelity	
	1. List the intervention steps
	2. Choose the assessment method
	3. Identify rating option(s)
	4. Pull the form together
Collect Intervention Fidelity Data	
	1. Train the data collector
	2. Determine the frequency of data collection
	3. Establish a schedule for regular data review

Fidelity Assessment Methods

Direct observation	School psychologist directly observes the intervention in action <ul style="list-style-type: none">- Frequency / summary ratings
Permanent product review	Review materials created as a byproduct of the intervention
Self-report	Request the implementer rate their use of the intervention



Fidelity Assessment Methods

Rating Systems

- **Likert Scale**
 - Adherence rating (e.g., 0-2)
 - Quality rating (e.g., 0-2)
- **Checklist**
 - Dichotomous (i.e., yes/no)
 - Multiple choice
 - Fill in the blank

Recording Systems

- **Frequency Count (tally)**
- **Duration Recording (timing)**
- **Time Sampling**
 - Momentary
 - Partial Interval
 - Whole Interval

Case Example

Russell

Case Example - BSP Steps

PREVENT

1. Provide positive proactive attention to Russell every 5 minutes.
2. Before each transition, verbally remind Russell to raise his hand to ask for help.

TEACH

3. Teach Russell desired behaviors through modeling and practice opportunities

RESPOND

4. When Russell raises his hand or behaves as desired, provide behavior-specific praise.
5. When Russell is disruptive, provide little/no attention.

Let's Practice!

Provide proactive positive attention to Russell every five minutes

1. List intervention steps

Provide positive, proactive attention every 5 minutes

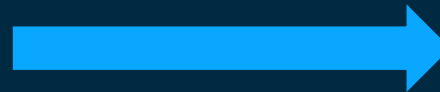
2. Choose an assessment method

Frequency count & Likert scales (adherence & quality)

3. Identify rating options

For Likert scales: 0-2 (3 rating options)

4. Develop the form



Fidelity Ratings: Adherence

Adherence refers to the relationship between the teacher's frequency of applying the plan step to the opportunities in which they could have applied the step.

Implemented as Planned (2)	Implemented with Deviation (1)	Not Implemented (0)
The teacher implemented this step exactly as written in the intervention plan	The teacher attempted to implement this step, but it was implemented differently from the plan	There was an opportunity for the teacher to implement this step, but it wasn't implemented

ADHERENCE: EXAMPLE

Provide proactive positive attention to student every five minutes

Implemented as Planned (2)	Implemented with Deviation (1)	Not Implemented (0)
The teacher implemented this step exactly as written in the intervention plan	The teacher attempted to implement this step, but it was implemented differently from the plan	There was an opportunity for the teacher to implement this step, but it wasn't implemented

Ms. Lopez is teaching a 15-minute phonics lesson, so Russel should have three check-ins. She approached Russel's desk and said:

Time 1: "Russel, you're doing a great job on the activity! Keep it up!"

Time 2: "I love the way you're working, Russel! Do you need any help?"

Time 3: "I know this can be hard for you – how is it going?"

ADHERENCE: EXAMPLE

Provide proactive positive attention to student every five minutes

Implemented as Planned (2)	Implemented with Deviation (1)	Not Implemented (0)
The teacher implemented this step exactly as written in the intervention plan	The teacher attempted to implement this step, but it was implemented differently from the plan	There was an opportunity for the teacher to implement this step, but it wasn't implemented

Ms. Lopez is teaching a 15-minute phonics lesson, so Russel should have three check-ins. She approached Russel's desk and said:

Time 1: "Russel, you're doing a great job on the activity! Keep it up!"

Time 2: [teacher did not check in]

Time 3: "I know this activity is hard but please keep your voice off."

ADHERENCE: EXAMPLE

Provide proactive positive attention to student every five minutes

Implemented as Planned (2)	Implemented with Deviation (1)	Not Implemented (0)
The teacher implemented this step exactly as written in the intervention plan	The teacher attempted to implement this step, but it was implemented differently from the plan	There was an opportunity for the teacher to implement this step, but it wasn't implemented

Ms. Lopez is teaching a 15-minute phonics lesson, so Russel should have three check-ins. She approached Russel's desk and said:

Time 1: "Russel, I don't see you focusing on your work."

Time 2: [teacher did not check in]

Time 3: "I know this activity is hard but please keep your voice off."

Fidelity Ratings: Quality

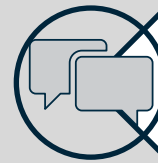
Quality can be rated on a similar 0-2 scale as adherence, and it refers to how well the teacher implements the given step.

Quality Indicators

- Appropriateness of the interaction
 - Tone, specificity, and non-verbal behavior
- Smooth and natural-looking
- Appropriately timed
- Competently implemented

QUALITY EXAMPLE

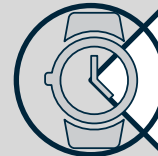
- Every 5 minutes, Ms. Lopez approached Russel’s desk and had a positive, proactive check-in.
- Ms. Lopez was enthusiastic and natural in their interaction with Russel.
- The teacher said:
 - Time 1: “Russel, you’re doing a great job on the activity! Keep it up!”
 - Time 2: “I love the way you’re working, Russel! Do you need any help?”
 - Time 3: “I know this can be hard for you – how is it going?”



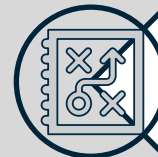
Appropriate interaction



Smooth/natural



Appropriately timed





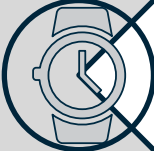

Competently implemented



Good (2)	Fair (1)	Poor (0)
--------------------	--------------------	--------------------

QUALITY EXAMPLE

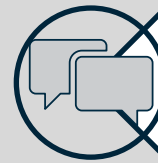
- Every 10 minutes, Ms. Lopez approached Russel’s desk and had a positive, proactive check-in.
- Ms. Lopez was enthusiastic and natural in their interaction with Russel.
- The teacher said:
 - Time 1: “Russel, you’re doing a great job on the activity! Keep it up!”
 - Time 2: [No check-in]
 - Time 3: “I know this activity is hard but please keep your voice off.”

	Appropriate interaction	✓ X
	Smooth/natural	✓
	Appropriately timed	✓
	Competently implemented	✓

Good (2)	Fair (1)	Poor (0)
-------------	-------------	-------------

QUALITY EXAMPLE

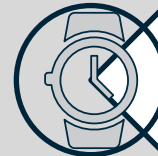
- Every 10 minutes, Ms. Lopez initiated an interaction with Russel from the front of the room.
- Ms. Lopez was not positive or enthusiastic in their interaction with Russel.
- The teacher said:
 - Time 1: “Russel, I don’t see you focusing on your work.”
 - Time 2: [No check-in]
 - Time 3: “I know this activity is hard but please keep your voice off.”



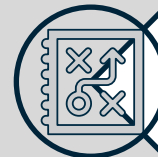
Appropriate interaction



Smooth/natural



Appropriately timed



Competently implemented



Good
(2)

Fair
(1)

Poor
(0)

Form Example

Provide proactive positive attention to student every five minutes

Frequency count:		Notes:
Adherence to Intervention: (rated 0 through 2)	1	
Quality of Intervention: (rated 0 through 2)	2	Observation Start Time: 9:45 Observation End Time: 10:00

Analyzing Implementation Fidelity Data

Analyzing Fidelity Data

1. Summarize **session fidelity** and **intervention step fidelity**
2. **Graph data points**
3. Interpret graphs with **visual analysis**
4. Develop **summary statement** about implementation

Case Example

Russell

Case Example - BSP Steps

PREVENT

1. Provide positive proactive attention to Russell every 5 minutes.
2. Before each transition, verbally remind Russell to raise his hand to ask for help.

TEACH

3. Teach Russell desired behaviors through modeling and practice opportunities

RESPOND

4. When Russell raises his hand or behaves as desired, provide behavior-specific praise.
5. When Russell is disruptive, provide little/no attention.

Let's Practice! (Adherence)

After week 1, the teacher maintained high adherence.

Observation Date	10/10	10/17	10/24	10/31	11/7
Step 1	1	2	2	2	2
Step 2	0	2	2	1	2
Step 3	1	2	2	1	2
Step 4	1	1	2	2	2
Step 5	1	2	2	2	2

1. Summarize session implementation fidelity and intervention step fidelity

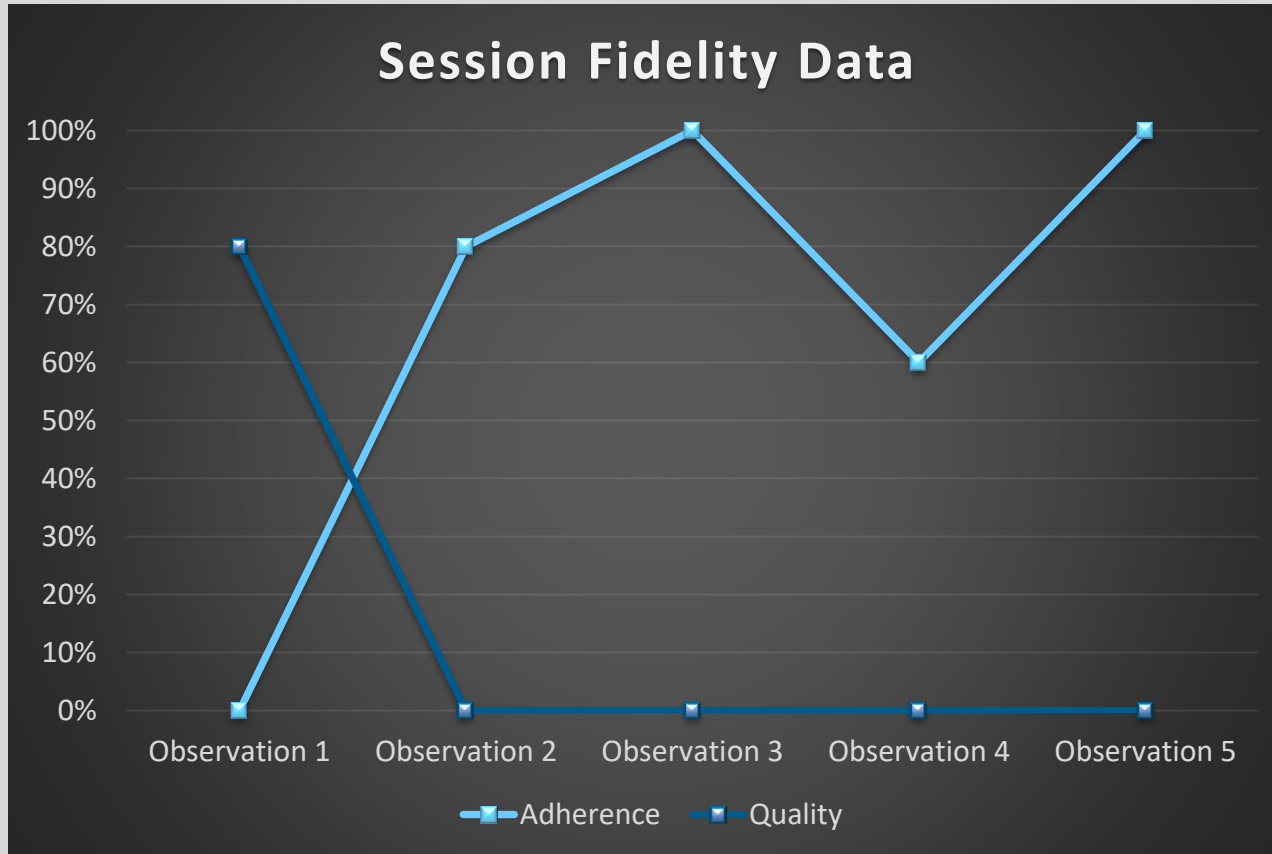
Let's Practice! (Quality)

After week 1, the quality of intervention delivery was insufficient.

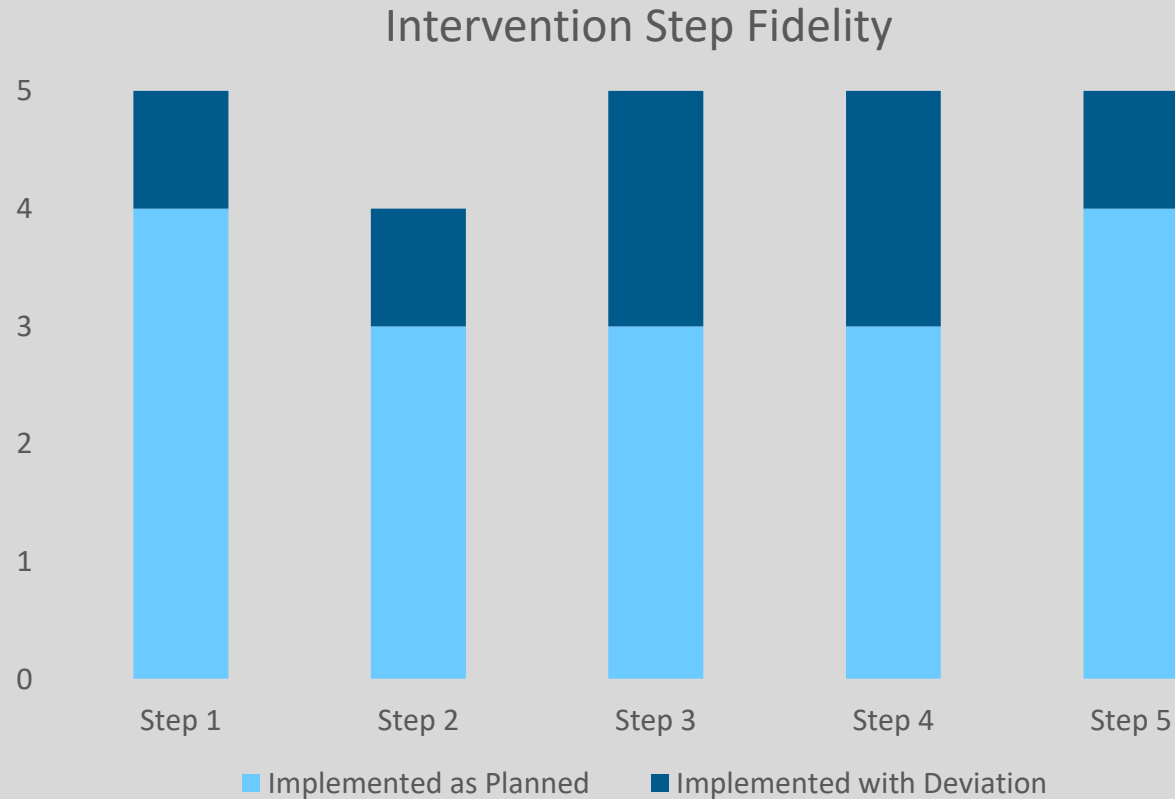
Observation Date	10/10	10/17	10/24	10/31	11/7
Step 1	2	1	0	0	0
Step 2	0	0	1	1	1
Step 3	2	1	1	1	1
Step 4	2	1	0	0	1
Step 5	2	1	1	0	0

1. Summarize session implementation fidelity and intervention step fidelity

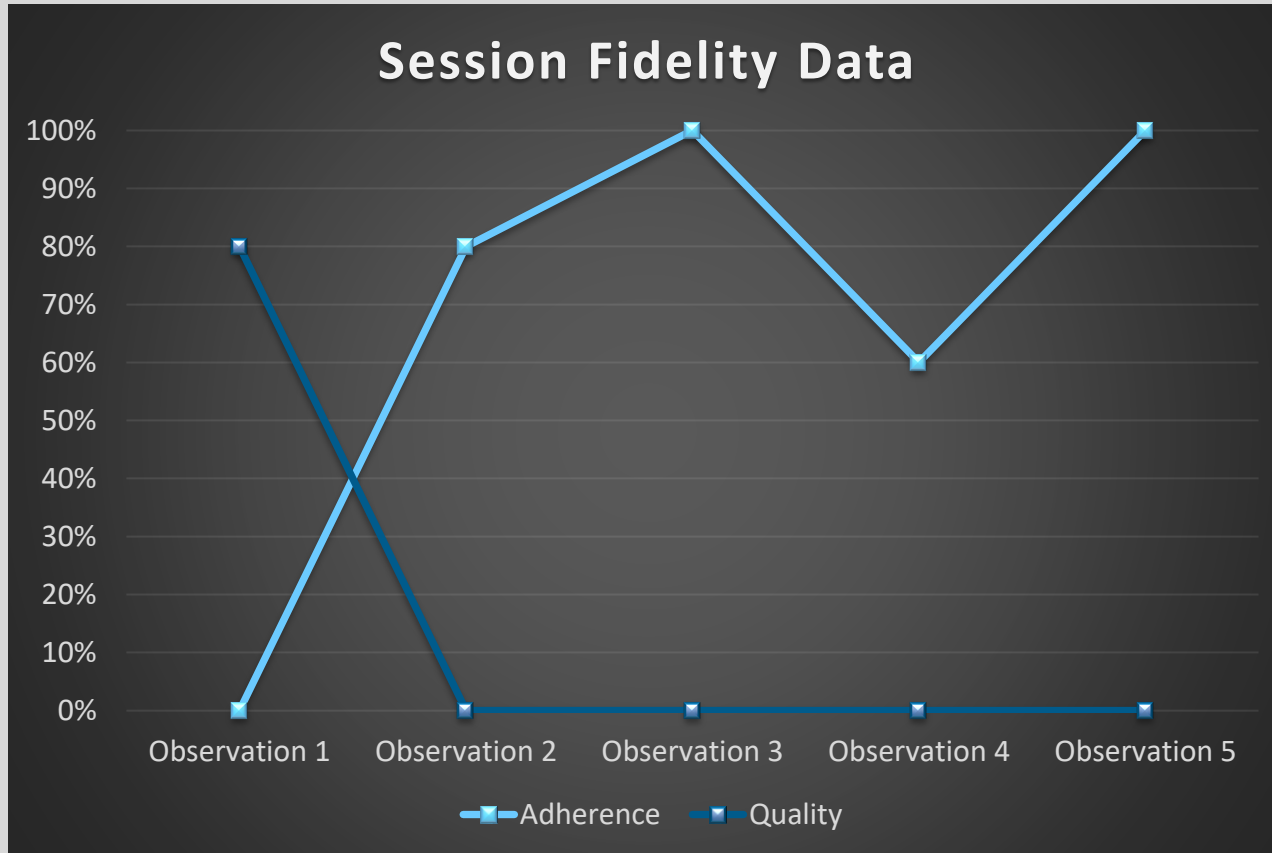
2. Graph Data Points



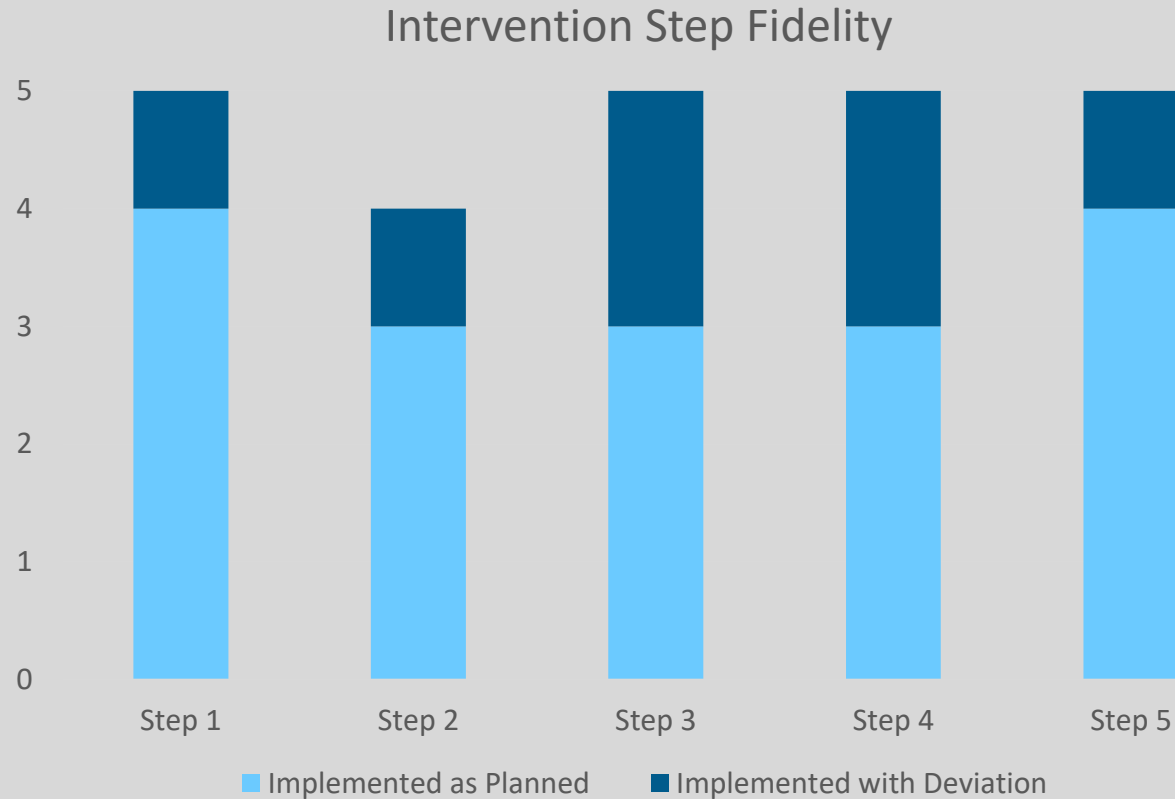
2. Graph Data Points



3. Interpret Graph with Visual Analysis

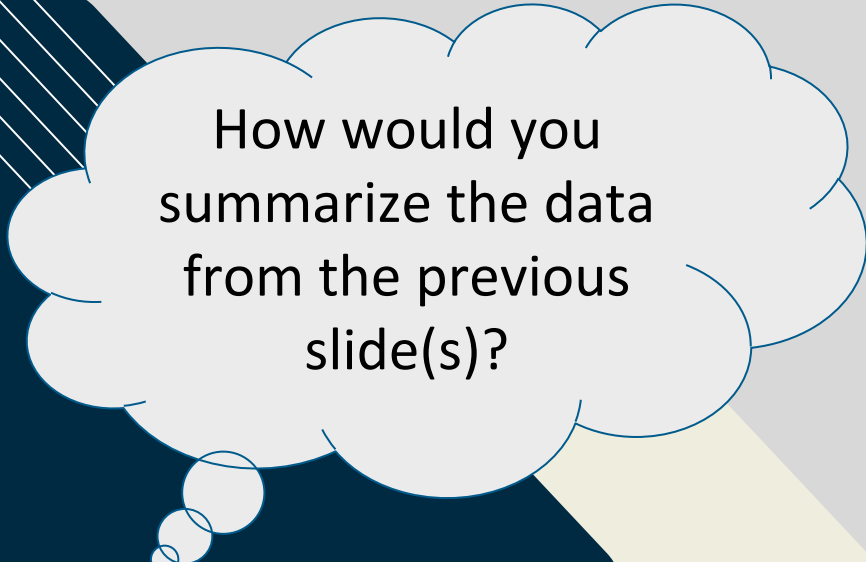


3. Interpret Graph with Visual Analysis



4. Develop Summary Statement

- Account for trend, level, and variability of intervention fidelity over time
- Highlight specific intervention step fidelity



How would you summarize the data from the previous slide(s)?

Now You Try One!

In small groups, analyze the fidelity data for the following plan steps:

- a) When Russel is verbally disruptive, provide little to no attention.
- b) When Russel raises his hand or behaves as desired, provide behavior-specific praise.

1. List intervention steps
2. Choose an assessment method
3. Identify rating options
4. Develop the form

How We Went About it

1. List intervention steps

- Ignoring verbal disruptive behavior, providing behavior-specific praise for hand-raising

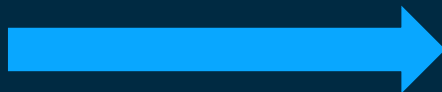
2. Choose an assessment method

- Frequency count: hand raises
- Frequency count: praises after hand raises
- Record duration of verbal disruptive behavior
- Frequency count: teacher attention following verbal disruptive behavior
- Frequency counts to inform Likert ratings (adherence & quality)

3. Identify rating options

- 3-point Likert scales for adherence and quality of behavior-specific praise following hand raises and ignoring verbally disruptive behavior

4. The Form



Fidelity Assessment

Observation Start: 8:30 Observation End: 9:00

Frequency Counts:

Student hand raise		Notes:
Teacher praise following hand raise		Praise statements:
Verbal disruptive behavior incidence (Duration)	8:34 (22s), 8:41 (19s), 8:50 (140s)	“good,” “good job;” enthusiastic tone
Teacher attention following verbal disruptive behavior		Attention provided was brief and nonverbal

Fidelity Assessment

Observation Start: 8:30 Observation End: 9:00

Likert Ratings:

Adherence: Praise hand raising (0-2)	1	Praise statements: "good," "good job;" enthusiastic tone
Quality: Praise hand raising (0-2)	1	
Adherence: Ignore verbally disruptive behavior (0-2)	2	Attention provided was brief and nonverbal
Quality: Ignore verbally disruptive behavior (0-2)	2	

Let's Discuss

How, if at all, do you currently share intervention data?

Intervention fidelity data?

Tailoring Fidelity Assessments


Fidelity Assessment Methods: Review

Rating Systems

- **Likert Scale**
 - Adherence rating (e.g., 0-2)
 - Quality rating (e.g., 0-2)
- **Checklist**
 - Dichotomous (i.e., yes/no)
 - Multiple choice
 - Fill in the blank

Recording Systems

- **Frequency Count (tally)**
- **Duration Recording (timing)**
- **Time Sampling**
 - Momentary
 - Partial Interval
 - Whole Interval



What is right
for my
school?

Tailoring Fidelity Assessments Across Tiers

- Let's walk through an example of a Tier 1 classroom management system and a Tier 2 Check-In/Check-Out system to see how fidelity assessments can be effectively employed.

Tailoring Fidelity Assessments Across Tiers

- A 4th grade teacher is using the Good Behavior Game. Teams of students are awarded points for pro-social behaviors
 - (e.g., peer cooperation and participation).
- The team with the most points at the end of the week can earn a preferred reinforcer
 - (e.g., homework pass, tokens to be exchanged for individual incentives, preferred seating, etc.)

Tier 1 Example

1. List intervention steps

Post rules with positively worded behavior expectations

Assign teams

Award points for peer cooperation and class participation

2. Choose an assessment method

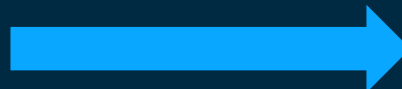
Frequency count

Checklists

3. Identify rating options

Multiple choice (implemented well, partially implemented, not implemented)

4. Develop the form



Tier 1 Form Example

Good Behavior Game Implementation Form

Checklist

1. Rules clearly posted using positively worded behavior expectations
 - a. Implemented well
 - b. Partially implemented
 - c. Not implemented
2. All students clearly assigned to a team
 - a. Implemented well
 - b. Partially implemented
 - c. Not implemented

Frequency Count

Observed instances of peer cooperation	
Observed instances of point(s) awarded	
Observed instances of class participation	
Observed instances of point(s) awarded	

Tier 2 - Try it out!

A 3rd grade teacher is using a Check-In/ Check-Out (CICO) system with one of her students to work on increasing work completion. She checks in with the student at the beginning of the day and checks out with them at the end of the day. The teacher has brief check-ins at the end of each academic activity on the classroom schedule.

1. List intervention steps
2. Choose an assessment method
3. Identify rating options
4. Develop the form

Tier 2 Example

1. List intervention steps

9 am check-in, post-activity check-ins (5 opportunities), 3 pm check-out

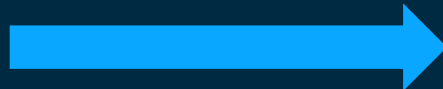
2. Choose an assessment method

Observe check-out for quality info and ask teacher how many of the five check-ins she remembered that day

3. Identify rating options

Adherence (3-5 check-ins), Quality of check-out (1-3)

4. Develop the form



Tier 2 Example Form

Teacher Fidelity to CICO System	
Morning Check-in (Y/N)	Y
Post-Activity Check-ins (Total #)	0
EOD Check-in (Y/N)	Y
Total Number of Check-Ins Completed	2

How could this system be modified to gain quality data for check-ins?

Tier 2 Example Form

Teacher Fidelity to CICO System	Yes/No	Quality (0, 1, or 2)
Morning Check-in		
Post-Activity Check-in 1		
Post-Activity Check-in 2		
Post-Activity Check-in 3		
Post-Activity Check-in 4		
Post-Activity Check-in 5		
EOD Check-in		

Quality Ratings: 0 = Poor, 1 = Fair, 2 = Good

Quality Indicators:

- Tone of voice, appropriate non-verbal behavior
- Specificity of praise and/or feedback
- Appropriate timing of check-ins

Discussion Questions

In small groups, discuss the following before a whole-group discussion:

After seeing examples of fidelity monitoring at all three tiers, how do you see this fitting into your school?

How can monitoring implementation fidelity promote positive outcomes for students in your school?

Putting it all together

	Low Levels of Fidelity	High Levels of Fidelity
Student Outcomes Not Improving		
Student Outcomes Improving		

Utilizing Fidelity Data

Research consistently finds that student outcomes improve with increased implementation fidelity.

Implementation data collected over time can be used to determine potential implementation supports.

Connecting Fidelity Data & Implementation Supports

Tier 1 Implementation Supports

- **Universal** supports provided to all implementers
- High quality training
 - Proactive strategies
- Fidelity data collection
- Analysis of possible barriers to successful implementation
- Examples: *intervention scripts or manuals, direct training, implementation planning*

Tier 1 Support Strategies



Intervention
Scripts/Manuals



Direct Training



Implementation
Planning

Intervention Scripts/Manuals

- Manuals contain a detailed description of the intervention and all relevant components
- Scripts include written instructions for intervention steps
 - Shorter than manuals

Direct Training

- Opportunity for the teacher to practice skills needed to deliver the interventions
- School psychologist:
 - Review intervention steps
 - Provide rationale
 - Model
- Teacher practices and receives feedback from school psychologist

Implementation Planning

Action Planning

- Work with a consultee to identify intervention logistics & modify the plan to fit the unique classroom context

Coping Planning

- Proactively brainstorm potential barriers to implementation and collaboratively problem-solving

Tier 2 & 3 Implementation Supports

- Targeted supports
- Utilized when implementation is insufficient
- Skill deficit versus performance deficit
 - “*Can’t do*” – instructional approaches to ameliorate the skill deficit
 - “*Won’t do*” – increase motivation or provide feedback to improve performance

Fidelity Patterns



Skill Deficit: data suggests the implementer is unable to deliver specific intervention steps correctly or fluently

- Some steps are not implemented
- Low levels of quality

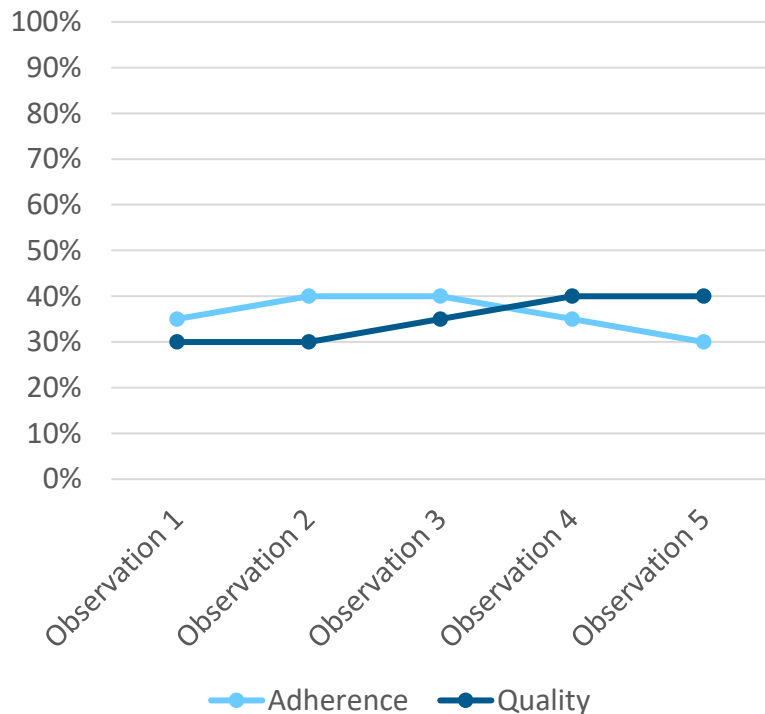
Performance Deficit: implementer is not delivering intervention steps consistently

- Inconsistencies in fidelity data pattern
- Fidelity has decreased or become variable over time
- Low levels of exposure

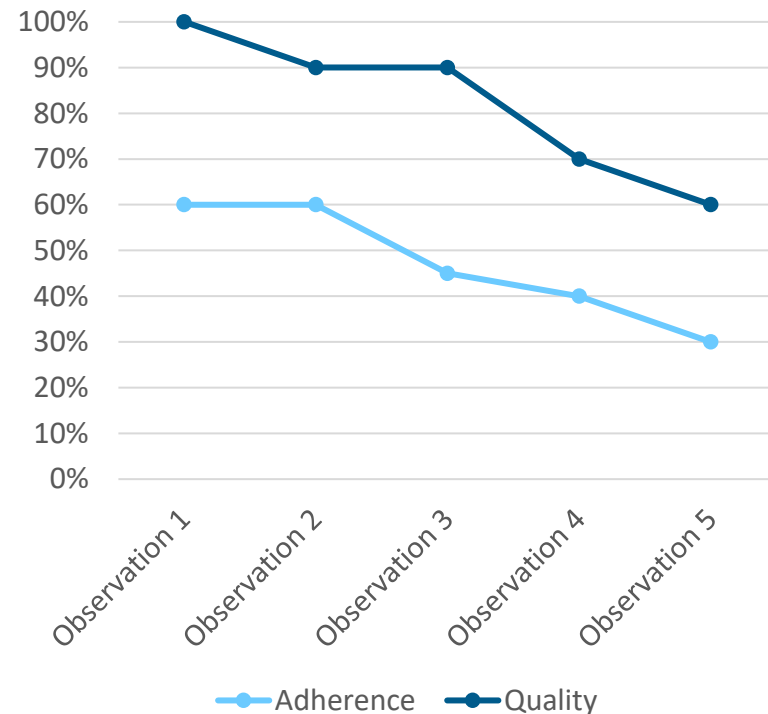
Sanetti & Collier-Meek 2019

Fidelity Patterns

Session Adherence and Quality



Session Adherence and Quality



Skill Deficit

Direct
Training

Participant
Modeling

Role Play

Performance Deficit

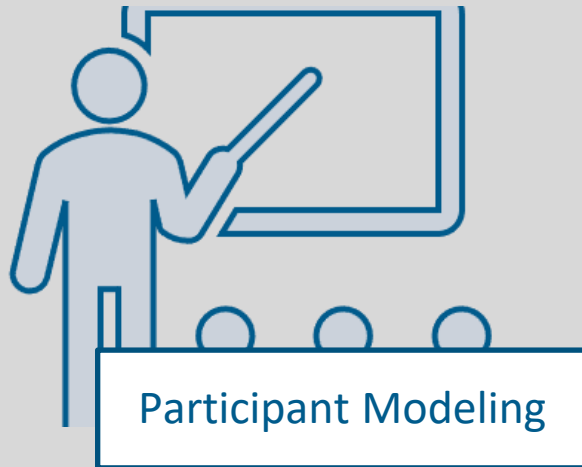
Implementation
Planning

Self-
Monitoring

Performance
Feedback

Motivational
Interviewing

Skill Deficit



Modeling

- Consultant models implementing the intervention in vivo
 - Classroom
- Opportunity for implementer to practice and receive feedback
- Implementer practice with *no feedback*
 - Self-evaluate

(Sanetti & Collier-Meek, 2019; Tschannen-Moran & McMaster, 2009)

Role Play

- Similar to modeling
- *Not* in vivo
- Consultant acts as the implementer
 - The implementer acts as student
- Model treatment components
- Opportunity for practice and feedback
- continue until mastery and implementer independence

(Sanetti & Collier-Meek, 2019; Trevisan, 2004)

Participant Modeling

Inside the Classroom

Consultant acts as implementer with target student



Consultant models the intervention step



Consultee practices the intervention step



Consultant provides feedback on practice



Consultee practices and self-evaluates

Role Play

Outside the Classroom

Consultant acts as implementer and consultee as student



Consultant models the intervention step



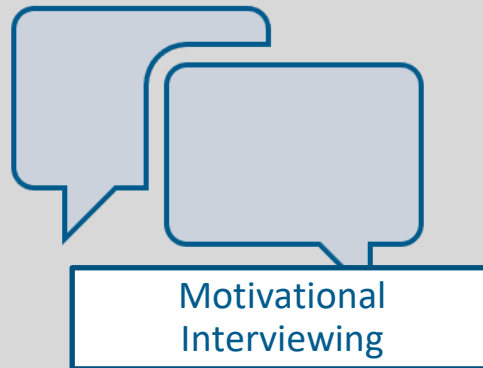
Consultee practices the intervention step



Consultant provides feedback on practice



Performance Deficit



Motivational Interviewing

- Increase implementer commitment
- Motivational consulting
 - Elicit implementers impressions of intervention
 - Discuss importance of fidelity, benefits, and planning for change

(Sanetti & Collier-Meek, 2019)

Performance Feedback

- Brief meetings
- Consultant reviews implementation data
 - Verbal and visual
- Praise
- Corrective feedback

(Solomon et al., 2012)

Self-Monitoring

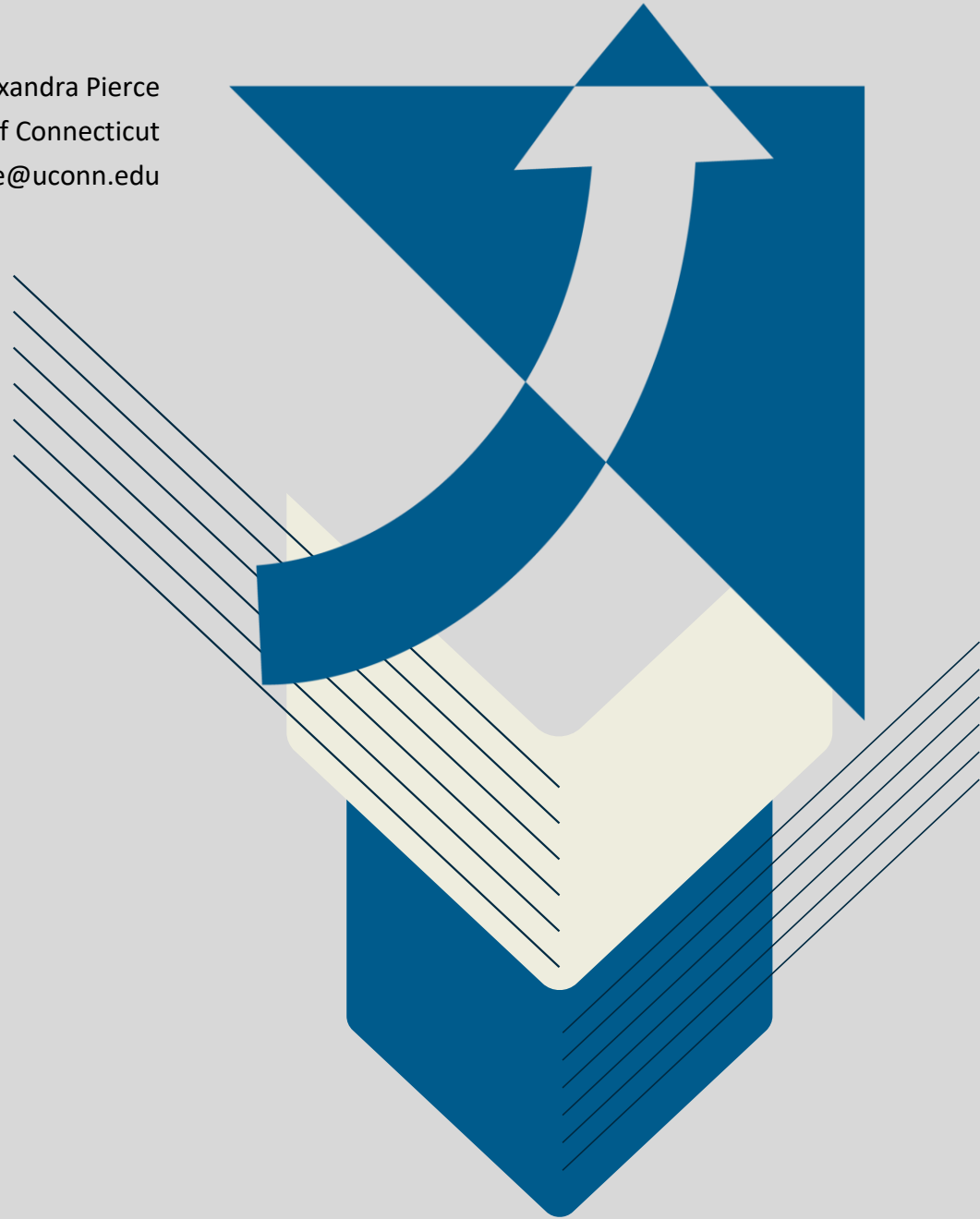
- Provide implementer checklists
- Implementer completes during or after implementation
- Individualized feedback on components of intervention plan

(Simonsen et al., 2013)

Key Takeaways

- Consistent **monitoring of implementation fidelity** is crucial for promoting positive student outcomes
- There are a number of ways to assess implementation fidelity; it is important to consider your **school context, the consultee's skill level, and the student's goal(s)**
- A variety of **implementation supports** can assist teachers in using interventions as intended so benefits are fully realized

Alexandra Pierce
University of Connecticut
alexandra.pierce@uconn.edu



Thank You!

Questions/Comments?

References

- Akiba, C.F., Powell, B. J., Pence, B. W., Nguyen, M. X. B., Golin, C., & Go, V. (2022). The case for prioritizing implementation strategy fidelity measurement: benefits and challenges. *Translational Behavioral Medicine*, 12(2), 335–342. <https://doi.org/10.1093/tbm/ibab138>
- Cochrane, W. S., Sanetti, L. M. H., & Minster, M. C. (2019). School psychologists' beliefs and practices about treatment integrity in 2008 and 2017. *Psychology in the Schools*, 56(3), 295-305. <https://doi.org/10.1002/pits.22177>
- Crawford, L., Carpenter, D. M., Wilson, M. T., Schmeister, M., & McDonald, M. (2012). Testing the relation between fidelity of implementation and student outcomes in math. *Assessment for Effective Intervention*, 37(4), 224–235. <https://doi.org/10.1177/1534508411436111>
- Fryling MJ, Wallace MD, Yassine JN. Impact of treatment integrity on intervention effectiveness. *J Appl Behav Anal*. 2012 Summer;45(2):449-53. doi: 10.1901/jaba.2012.45-449. PMID: 22844155; PMCID: PMC3405943.
- Noell, G. H., & Gansle, K. A. (2002). Does treatment integrity matter? A preliminary investigation of instructional implementation and mathematics performance. *Journal of Behavioral Education*, 11, 51–67.
- Sanetti, L. M. H. & Collier-Meek, M. A. (2019). *Supporting successful interventions in schools: Tools to plan, evaluate, and sustain effective implementation*. The Guilford Press.
- Scott, T. M., Gage, N. A., Hirn, R. G., Lingo, A. S., & Burt, J. (2019). An examination of the association between MTSS implementation fidelity measures and student outcomes. *Preventing School Failure*, 63(4), 308–316. <https://doi.org/10.1080/1045988X.2019.1605971>
- Simonsen, B., MacSuga, A. S., Fallon, L. M., & Sugai, G. (2013). Teacher self-monitoring to increase specific praise rates. *Journal of Positive Behavior Interventions*, 15, 3–13. doi: 10.1177/1098300712440453
- Solomon, B. G., Klein, S. A., & Politylo, B. C. (2012). The effect of performance feedback on teachers' treatment integrity: a meta-analysis of the single-case literature. *School Psychology Review*, 41(2), 160+. <https://link-gale-com.ezproxy.cul.columbia.edu/apps/doc/A294902860/ITOF?u=columbiau&sid=summon&xid=509815fd>
- Trevisan, M. S. (2004). Practical training in evaluation: A review of the literature. *American Journal of Evaluation*, 25(2), 255-272.
- Tschannen-Moran, M., & McMaster, P. (2009). Sources of Self-Efficacy: Four Professional Development Formats and Their Relationship to Self-Efficacy and Implementation of a New Teaching Strategy. *The Elementary School Journal*, 110(2), 228–245. <https://doi.org/10.1086/605771>
- Wilder, D. A., Atwell, J., & Wine, B. (2006). The effects of varying levels of treatment integrity on child compliance during treatment with a three-step prompting procedure. *Journal of Applied Behavior Analysis*, 39(3), 369–373. <https://doi.org/10.1901/jaba.2006.144-05>