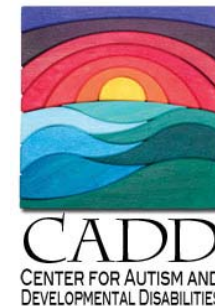
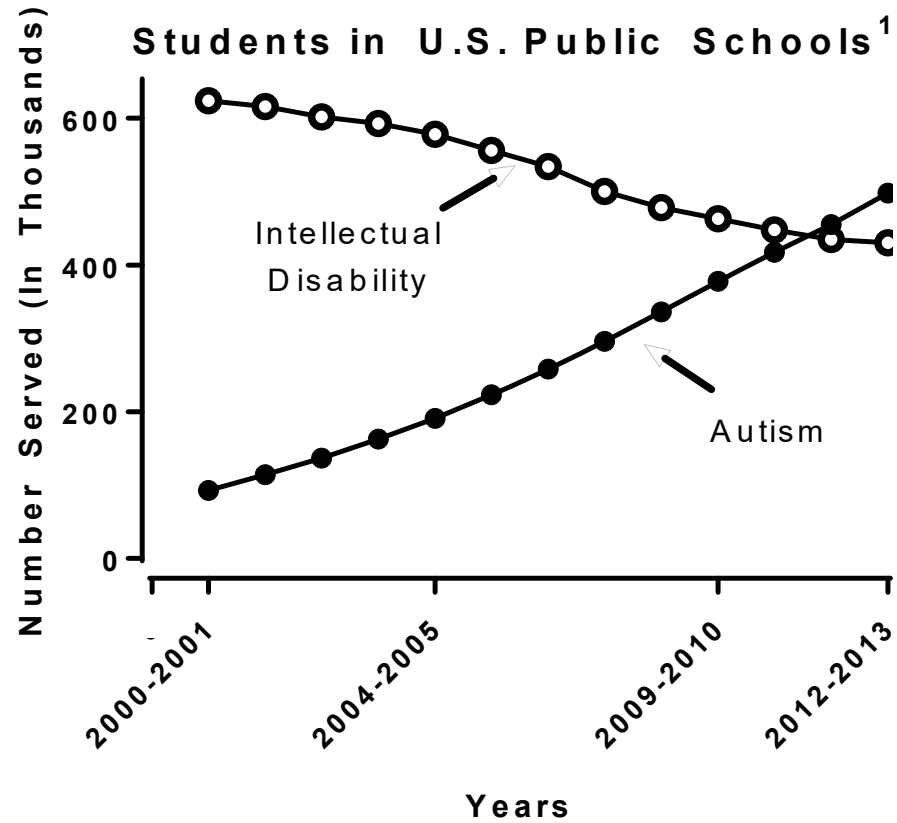


Disseminating ABA into Public Schools: Prior and Current Research at the University of Houston, Clear Lake

Dorothea C. Lerman, Ph.D., BCBA-D





¹ U.S. Department of Education, National Center for Education Statistics. (2016). *Digest of Education Statistics, 2014* (NCES 2016-006), Chapter 2.




Barriers to Dissemination

- Training time
- Resources
- Availability of qualified trainers

Our Model: Focused Training on Core ABA Teaching Procedures

- Outcomes of a five-day summer training program
Lerman, Vorndran, Addison, & Kuhn (2004)
Lerman, Tetreault, Hovanetz, Strobel, & Garro (2008)
- Comparison of written, vocal, and video-assisted feedback
Luck, Lerman, Wu, Dupuis, & Hussein (in press)
- Pyramidal training of paraprofessionals
Lerman, Luck, Smothermon, Zey, Custer, & Smith (in preparation)



Our Model: (continued)

- Comparison of data collection procedures for monitoring procedural integrity

Smothermon, Lerman, & Luck (in preparation)

- Training to detect antecedents/consequences of problem behavior

Lerman, Hovanetz, Stroble, & Tetreault (2009)

Scott, Lerman, & Luck (in press)

Five-Day Focused Training

Topics

Basic Concepts

*Preference Assessments

Behavioral Assessment

*Discrete Trial Teaching

Shaping and Chaining

Generalization and Maintenance of Skills

*Incidental Teaching

IEP Goals/Objectives

Data Collection

*Managing Problem Behavior

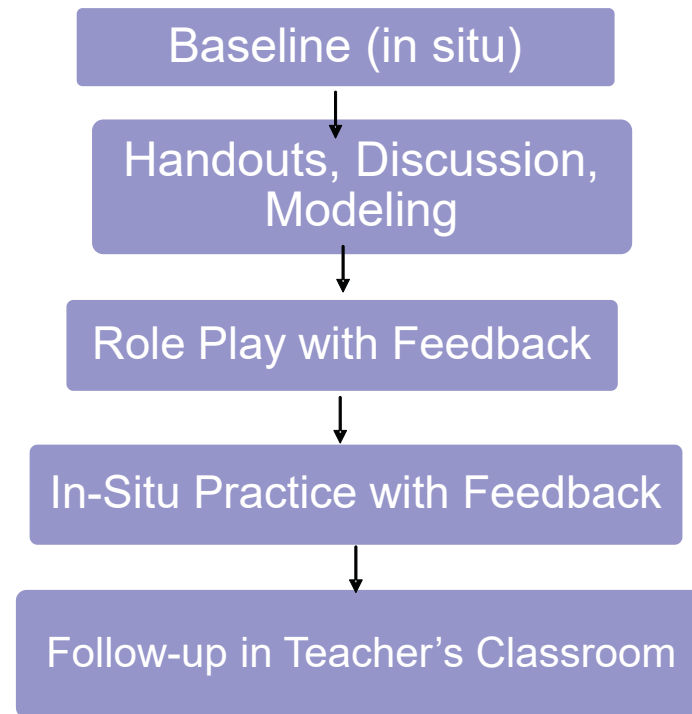
Other topics (token economies, toilet training, visual schedules)

*Includes both didactic and hands-on training



Lerman et al. (2008)

Behavioral Skills Training



“Whole-Session” Data Collection



Check one

Percentage Correct: _____ (# Yes / # Yes + # No)

Yes No N/A

Materials ready/organized

Yes No N/A

Instructions delivered when child attending.

Yes No N/A

Instructions clear, concise, and consistent.

Yes No N/A

Appropriate and consistent prompting strategy

Yes No N/A

Reinforcement delivered immediately for correct responses

Yes No N/A

Highly preferred tangible reinforcers paired with praise

Yes No N/A

Varied reinforcers used.

Yes No N/A

Problem behavior managed appropriately.

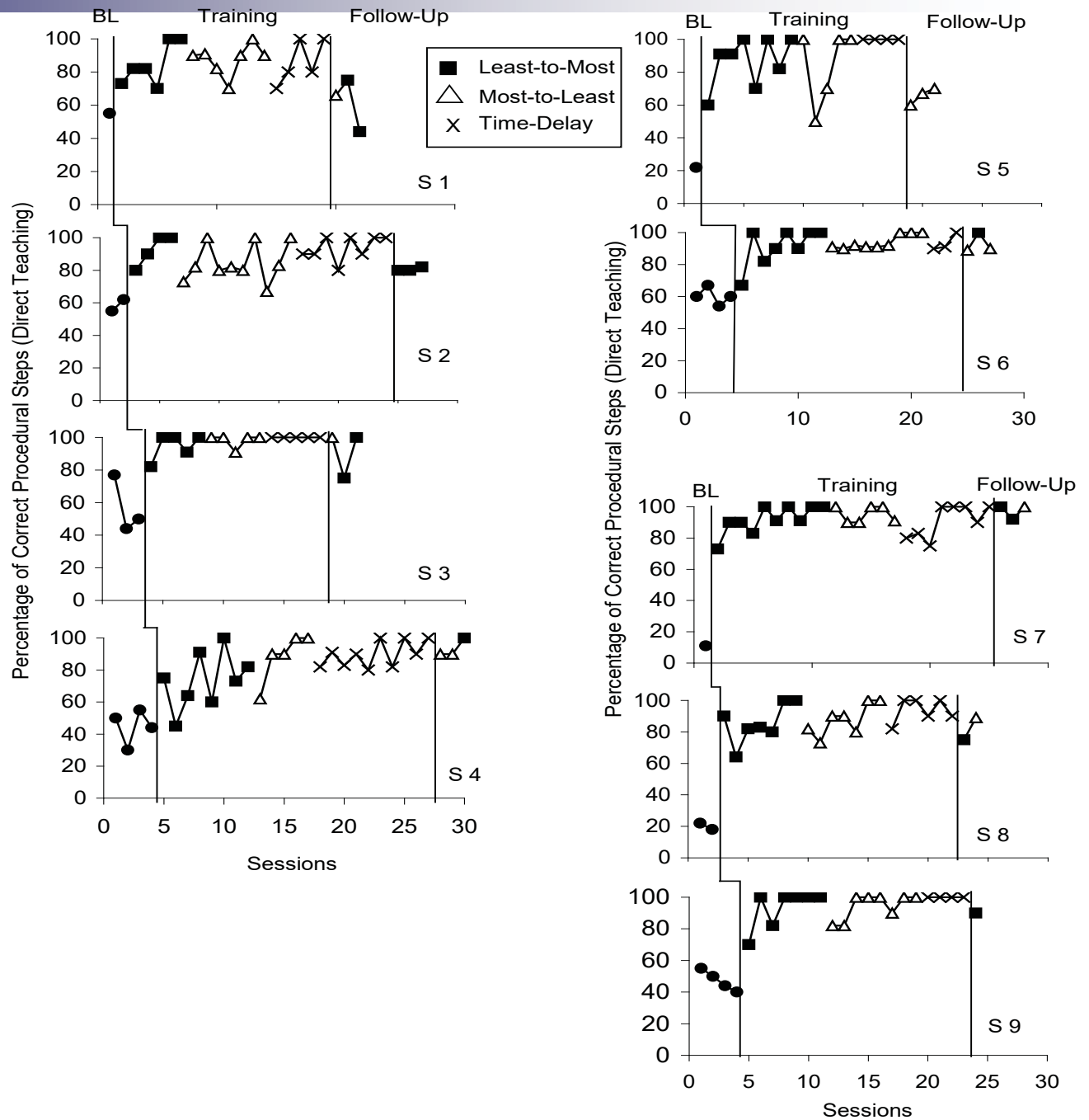
Yes No N/A

Data collected appropriately.



Lerman et al. (2008)

Discrete Trial Teaching



Academic-Year Model

Texas Higher Education Coordinating Board Autism Grant 2016-2018

- Two-day group “pull out”
 - Lecture, discussion, model, role play

- Three individual follow-up visits in classroom
 - Observation and feedback
 - Case consultation


- Training 200 teachers and 400 paraprofessionals serving more than 900 students with autism in three school districts
 - Baseline = 36% accuracy
 - Post training = 95% accuracy
 - Satisfaction survey = mean 5.7 on 6-pt scale





Conclusions From Outcome Studies

- Brief, intensive training effective
- Practical for practitioners
- Monthly feedback sufficient to maintain skills
- What about paraprofessionals?
- Adequate sensitivity of measurement?



Pyramidal Training of Paraprofessionals: A Descriptive Analysis

Lerman et al. (in preparation)

Goals:

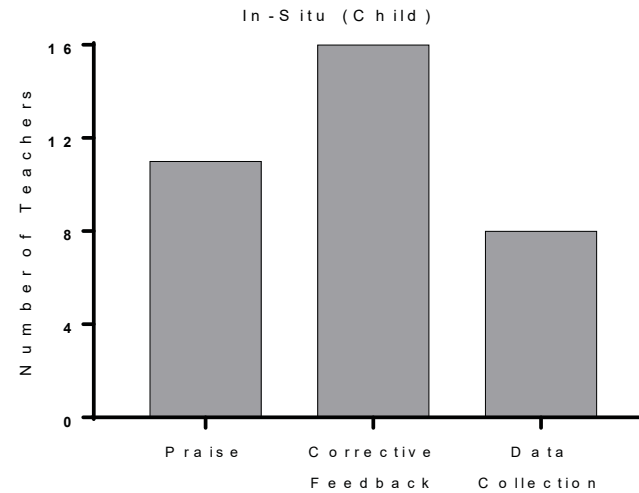
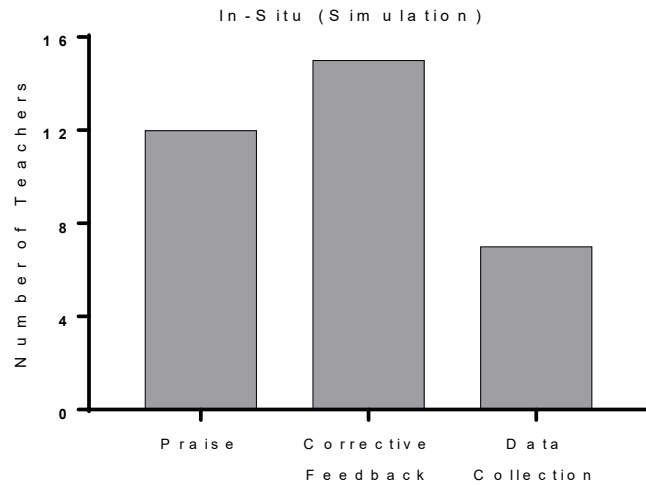
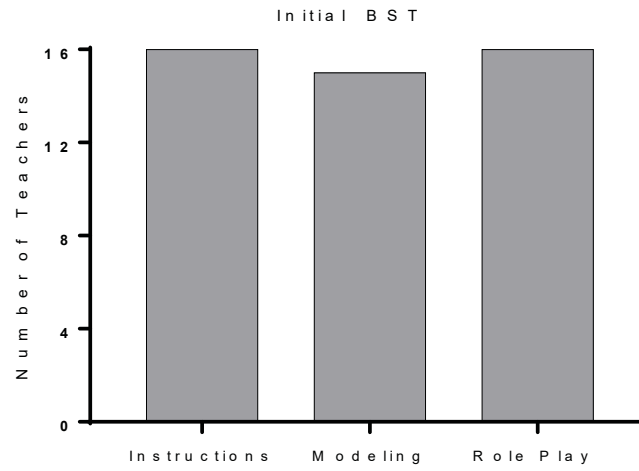
- ❑ Large-N extension of pyramidal training for paraprofessionals
- ❑ Examine objective measure of social validity
- ❑ Evaluate link between training integrity and outcomes

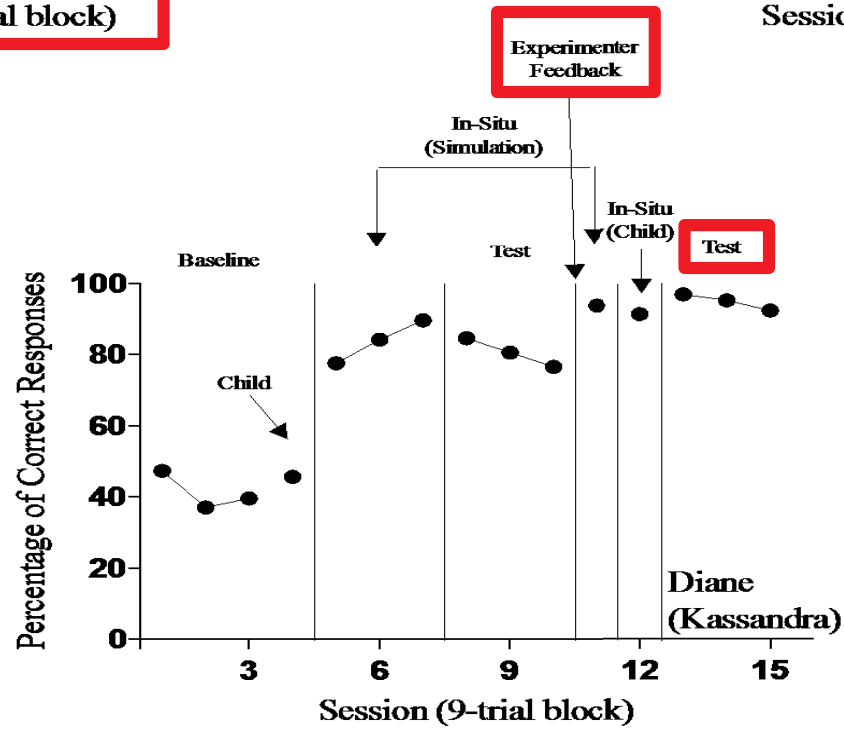
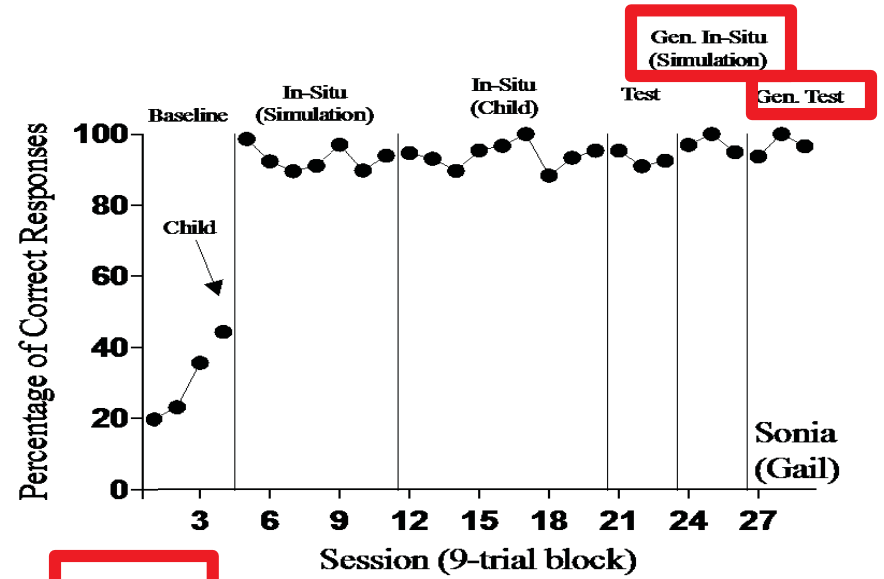
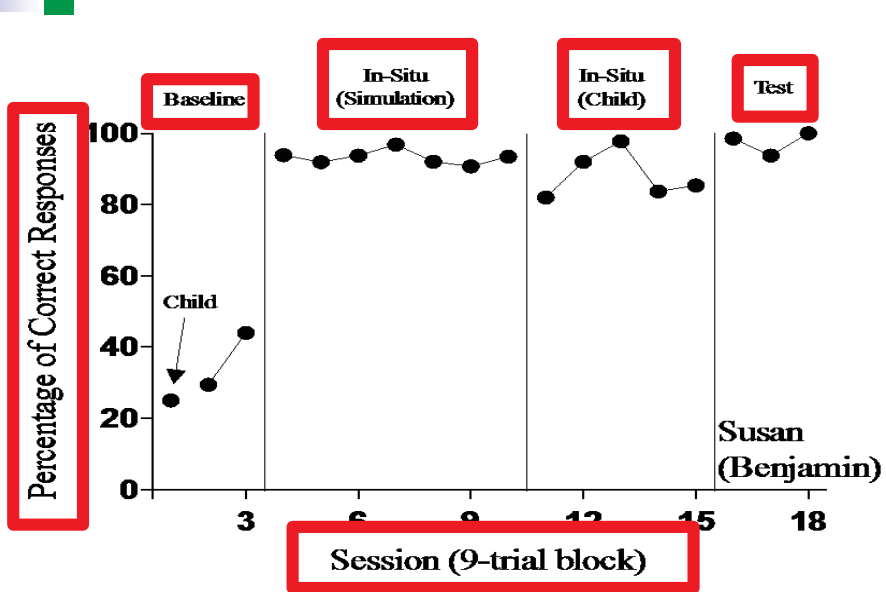
Procedures

- ❑ 16 teacher-paraprofessional pairs
- ❑ Targeted Skill: DTT using LTM + Error Correction
- ❑ Trained teachers to implement DTT via BST
- ❑ Lecture/handout about BST as teaching approach for classroom staff
- ❑ Given all necessary materials
- ❑ Told “teach as you think practical in classroom”
- ❑ Descriptive analysis of outcomes



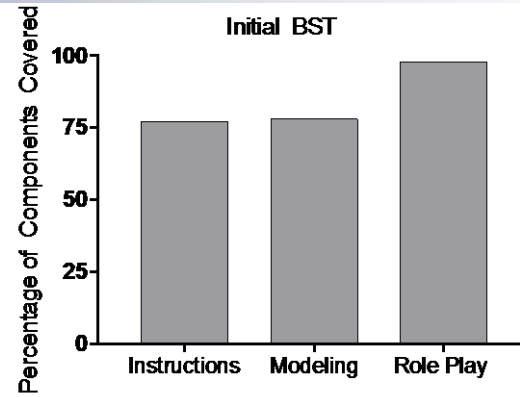
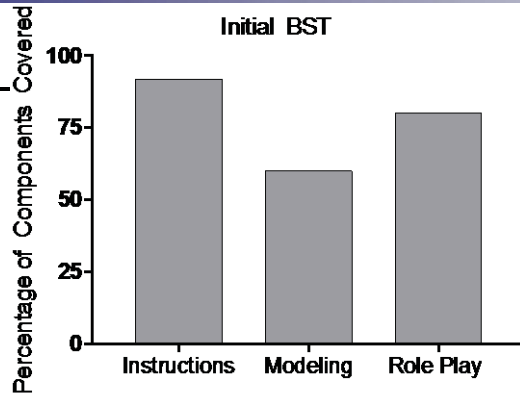
Trainer (Teacher) Integrity – Use of Components



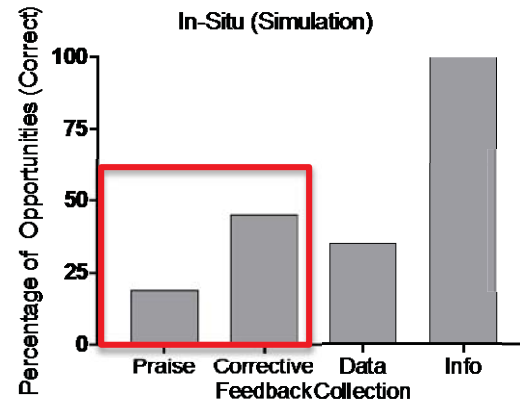
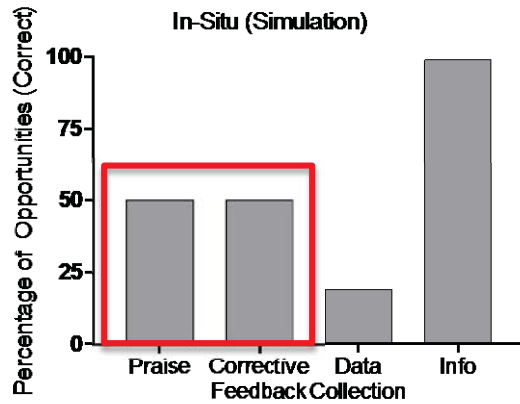




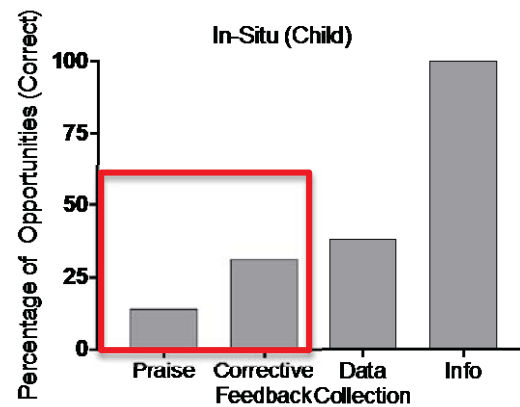
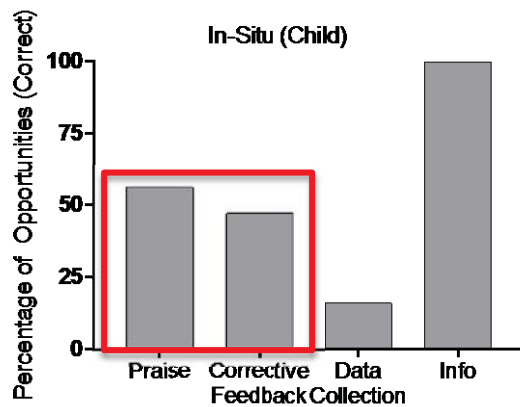
Teacher Integrity Correct Use



Best
Outcomes



Worst
Outcomes





Results

- Average training was 263 min (125-325 min)
- Trainers used essential BST components, BUT
 - Less likely to give feedback for correct than incorrect
 - Least likely to collect integrity data
- “Best” versus “Worst” outcomes → difference in type/frequency of feedback
 - Unrelated to trainer’s collection of integrity data



Sensitivity of Our Measurement:
Procedural Integrity Monitoring
Smothermon, Lerman, & Luck (in preparation)

	Discrete-Trial Training components
A	Materials placed correctly
B	Instructions delivered when learner is attending
C	Instructions clear, concise, consistent
D	Initial instruction presented without prompt
E	Prompts delivered appropriately with instruction
F	Independence probe used correctly
G	Reinforcer delivered correctly
H	Problem behavior is managed appropriately
I	Data collected appropriately



Procedural Integrity Monitoring

Smothermon, Lerman, & Luck (in preparation)

□ Trial-by-trial vs Whole-Session

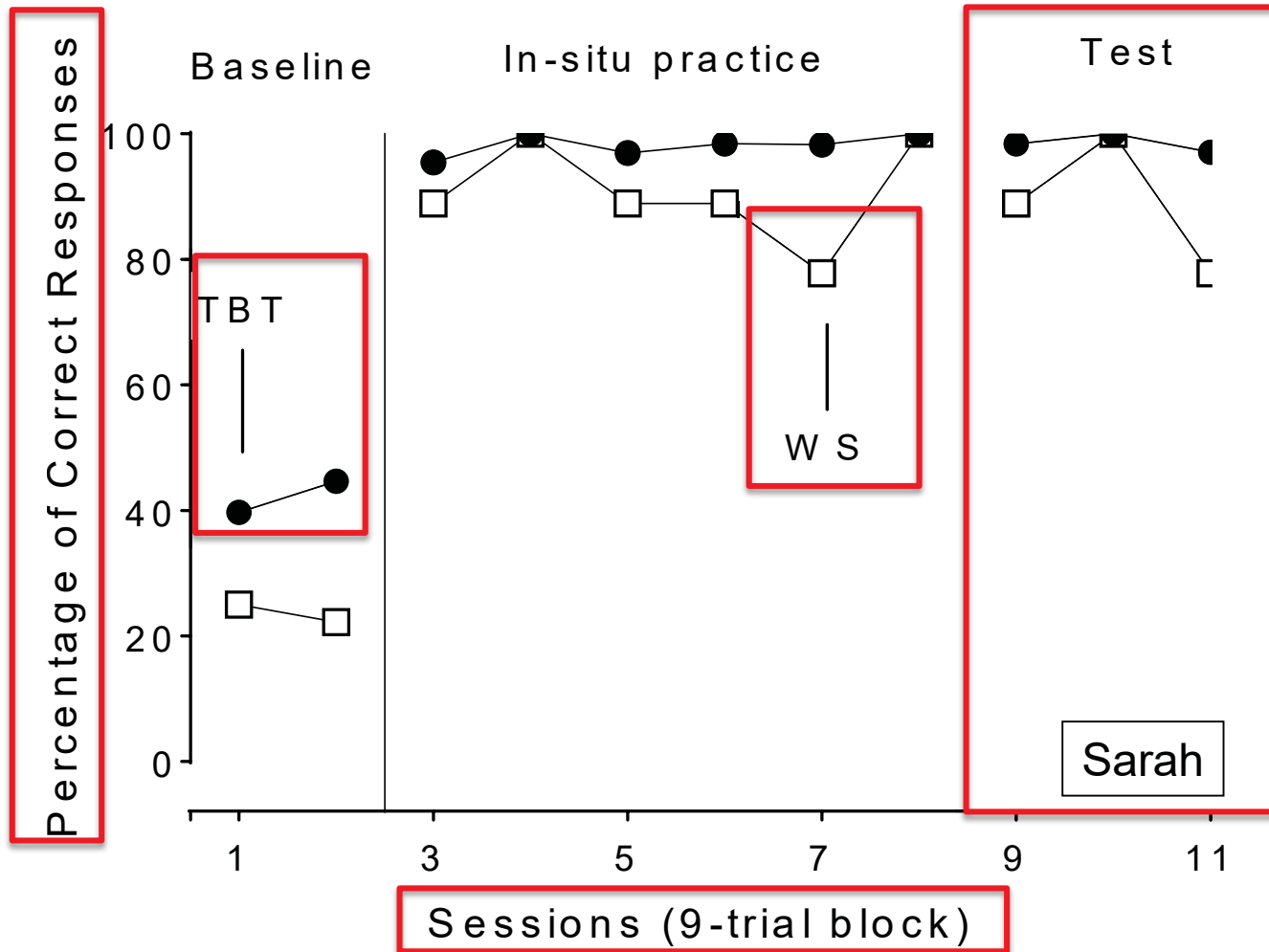
- Trial (TBT): Each component (A-I) scored on each trial

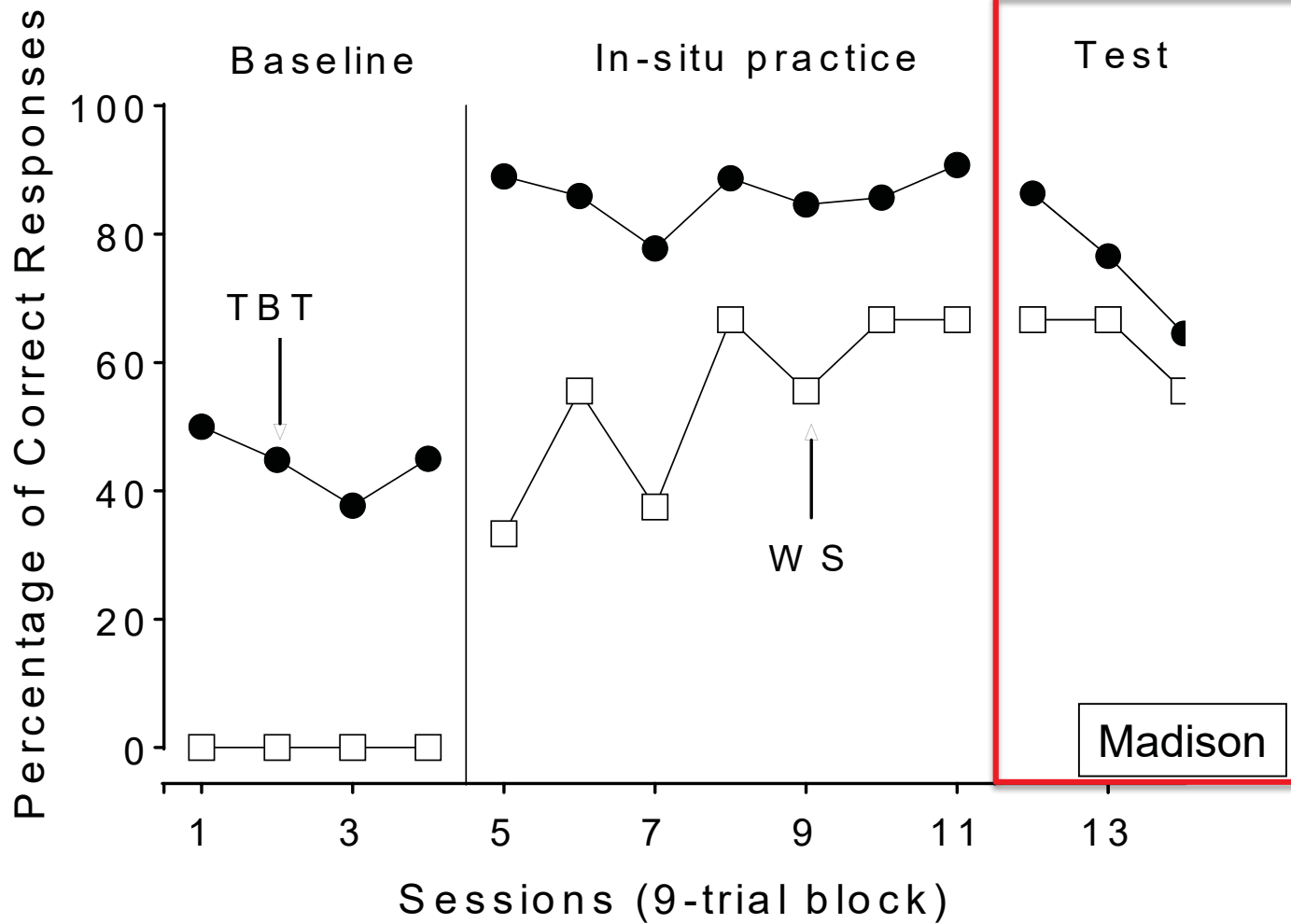
$\# \text{ correct} / \# \text{ of opportunities} \times 100$

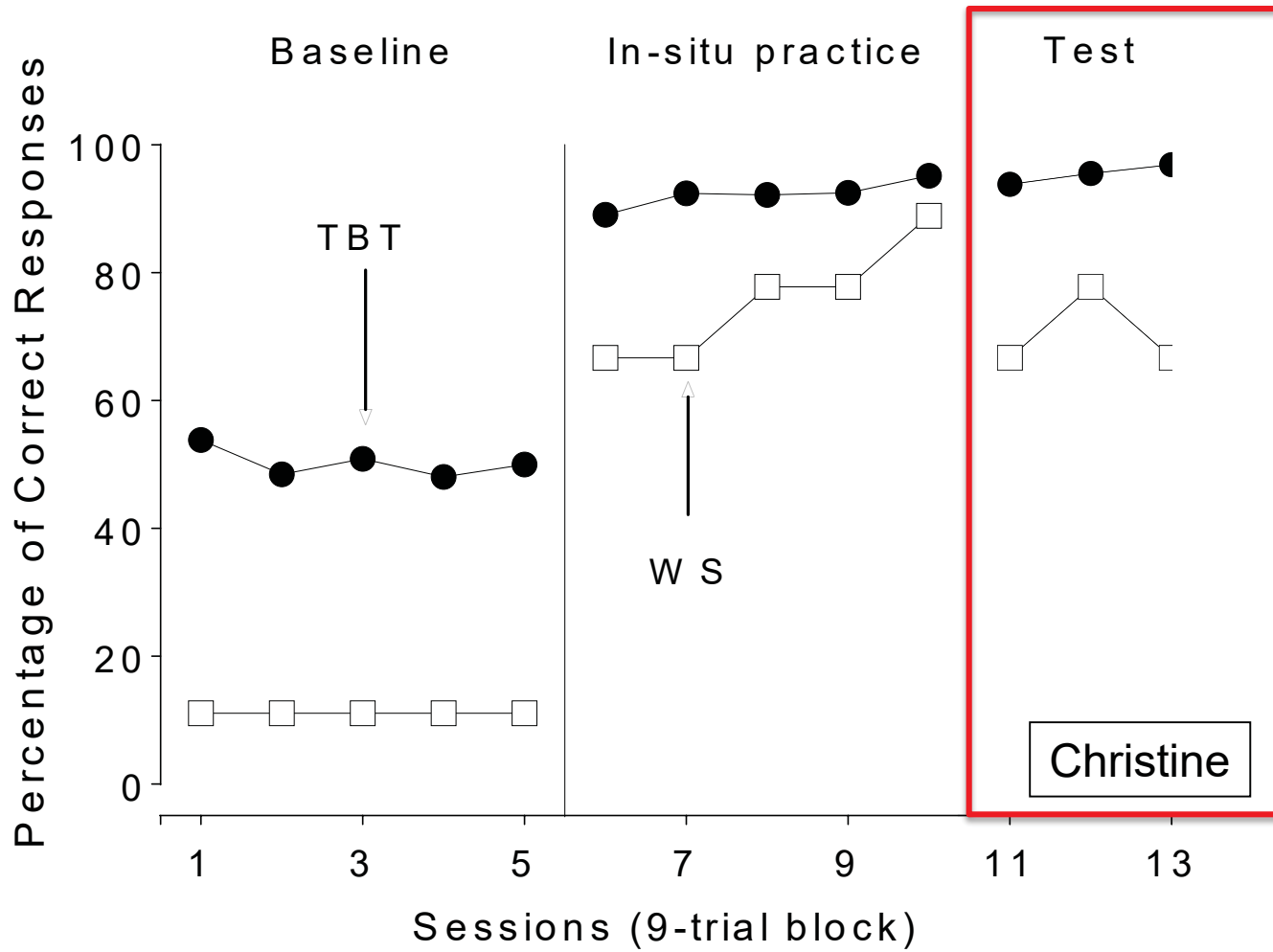
- Whole Session (WS): Each component (A-I) scored as correct if implemented correctly on ALL trials

$\# \text{ components correct} / \# \text{ components} \times 100$

Easier but less precise; likely underestimates integrity









Summary

- TBT and WS Matched
 - 12 out of 16
- WS Underestimated Performance
 - 4 out of 16

- Can we increase precision by examining performance on individual components?
 - Increase training efficiency by focusing on low-integrity components



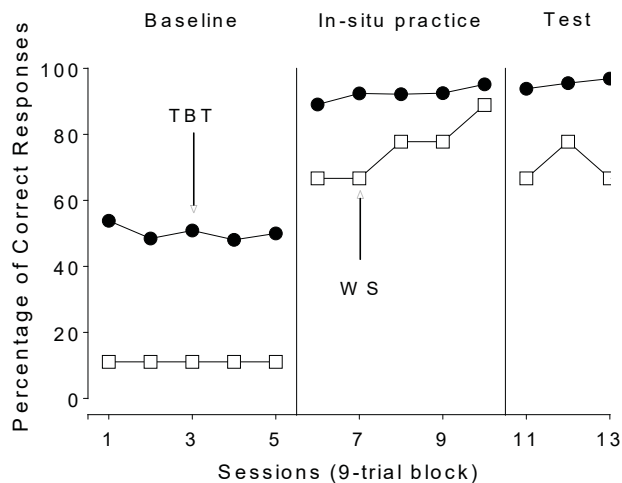
Global versus Component Data Analysis

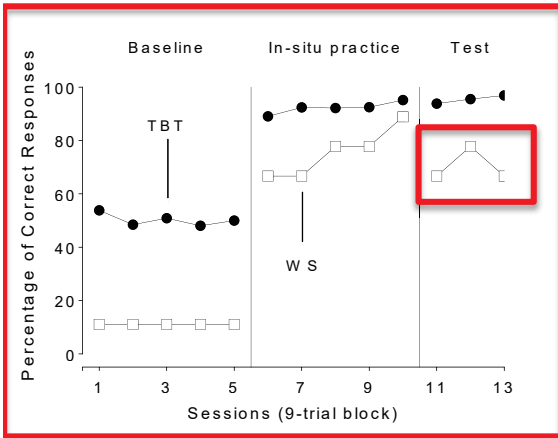
Global

- Components of intervention collapsed
- Data represent an average across components for each session

Component

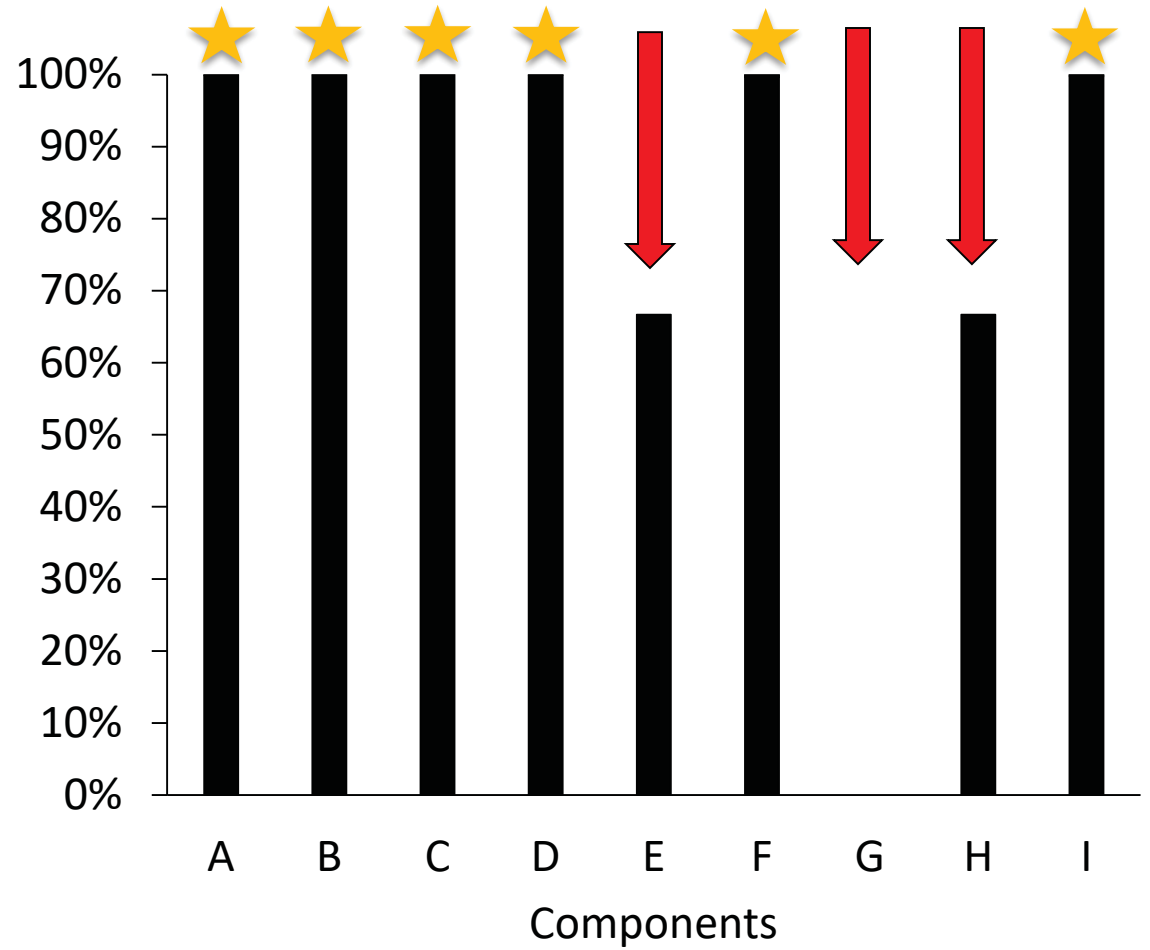
- Components of intervention separated
- Data are examined for each individual component





Christine

Average Percentage of Correct Responses





Conclusions

- Whole-session data collection
 - Adequate sensitivity in most cases
 - Underestimates performance
 - Examine components to increase sensitivity, improve training efficiency




Detecting Antecedents/Consequences of Problem Behavior Through A-B-C Recording

- Teacher-collected A-B-C data provides information to
 - Generate hypotheses
 - Design functional analysis
- Reduces inadvertent reinforcement of problem behavior?

- Narrative vs structured A-B-C recording
 - Lerman, Hovanetz, Strobel, & Tetreault (2009)

- Computer-based training (detection of multiple/subtle events)
 - Scott, Lerman, & Luck (in press)



Computer-Based Training (Scott et al., in press)

- Can we improve the detection of subtle/simultaneous events?

- Subtle Events (examples)

- Antecedents:

- class-wide instruction delivered

- materials presented w/out vocal instruction

- Consequences:

- neutral attention delivered

- demand delayed


- Simultaneous Events (examples)

- Antecedents:

- demand delivered + tangible removed

- Consequences:

- escape + attention



Computer-Based Training (Scott et al., in press)


Goals:

- Evaluate outcomes of a stand-alone computer-based program
Elements of BST (lecture, models, practice)
Progress from simple to more complex:
Single exemplars →



Single Exemplars

Function	Antecedent	Consequence
Attention	Teacher discontinues interaction with student by walking away.	Teacher delivers reprimand, tells student to stop.
Tangible	Teacher removes toy in student's possession or stops ongoing activity.	Teacher returns the removed toy or permits resumption of activity.
Escape	Teacher delivers vocal instruction to student (with or without materials).	Teacher removes task materials, does not follow through with demand.



Computer-Based Training (Scott et al., in press)


Goals:

- Evaluate outcomes of a stand-alone computer-based program
Elements of BST (lecture, models, practice)
Progress from simple to more complex:
Single exemplars → Multiple exemplars →



Additional Exemplars


Function	Antecedent	Consequence
Attention	Teacher ignores vocal or physical (hand raise) request for attention.	Teacher delivers statements of concern. Teacher touches student without saying anything.
Tangible	Student attempts to grab item that is out of reach.	Teacher delivers an item that is different than the one desired/requested.
Escape	Teacher hands task materials to the student with no vocal instruction.	Teacher delays task Student leaves area or activity.



Computer-Based Training (Scott et al., in press)

Goals:

- Evaluate outcomes of a stand-alone computer-based program
 - Elements of BST (lecture, models, practice)
 - Progress from simple to more complex:
Single exemplars → Multiple exemplars → Simultaneous
- Identify necessary & sufficient elements of training
- 20 “Test” Videos:
 - 6 responses (3 single/3 simultaneous)
 - 22 ant/con (4 initial exemplars; 18 additional exemplars)



Computer-Based Training (Scott et al., in press)

- Experiment 1: (N = 19)
 - Part 1: Single Exemplar Training
 - Part 2: Multiple Exemplar Training
 - Part 3: Simultaneous Event Training



STRUCTURED ABC DATA ANALYSIS FORM

Date:	Name:
-------	-------

INSTRUCTIONS

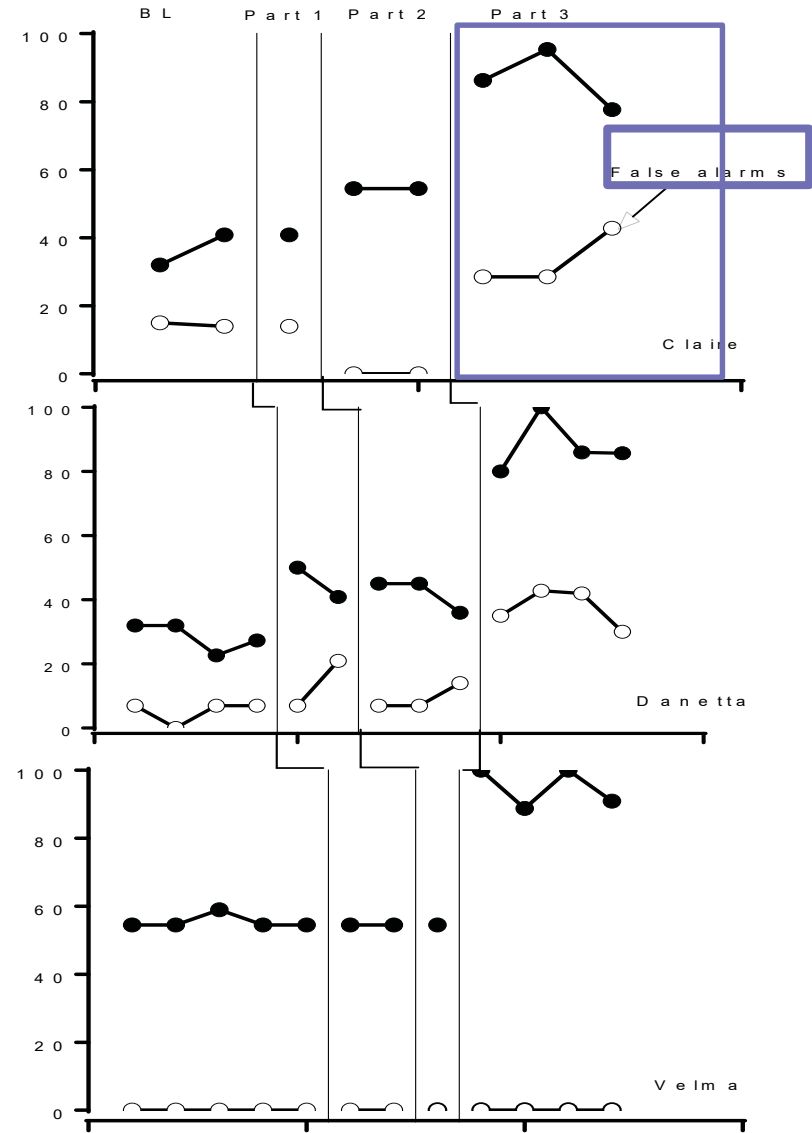
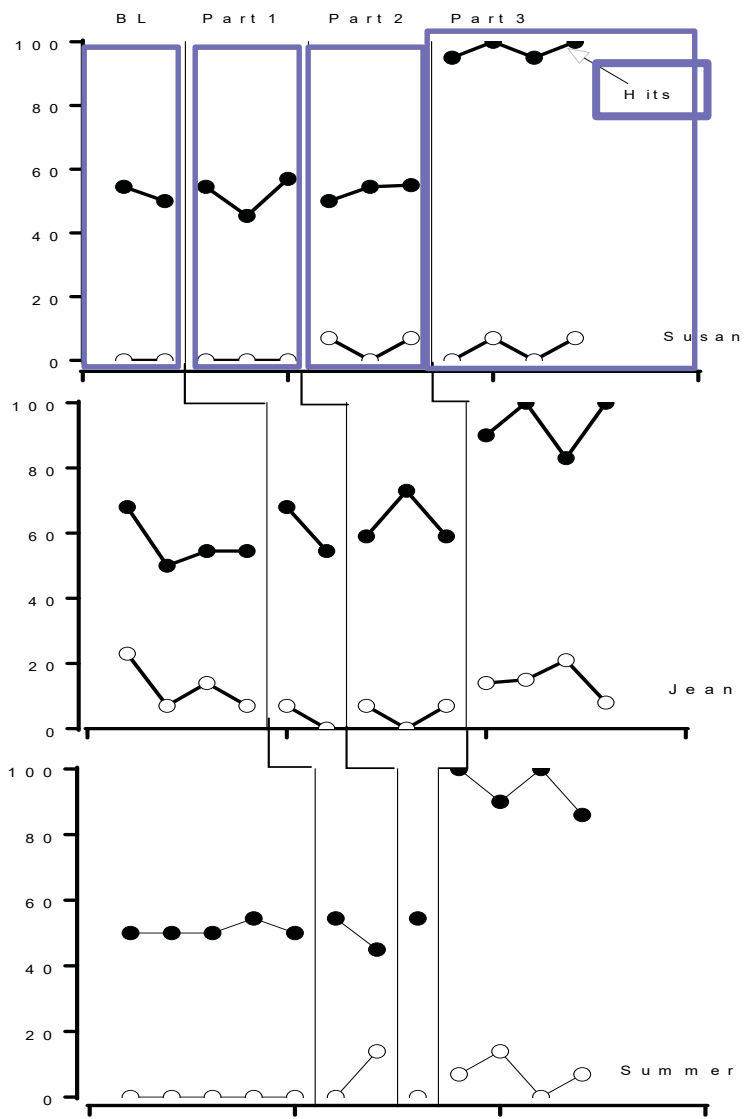
- Each row represents an EPISODE of behavior.
- Document any antecedents and/or consequences that occur within 10s of the target behavior by placing an 'X' in the corresponding box.

Target Behavior: Screaming – Any sound that is not a clear word and is vocalized above conversation level.

Antecedent (Before Behavior)		Consequence (After Behavior)	
1	Demand Placed Attention Withheld Tangible/Activity Withheld None	Escaped Demand Got Attention Got Tangible/Activity None	



Percentage of Antecedents and Consequences



Test Sessions



Computer-Based Training (Scott et al., in press)

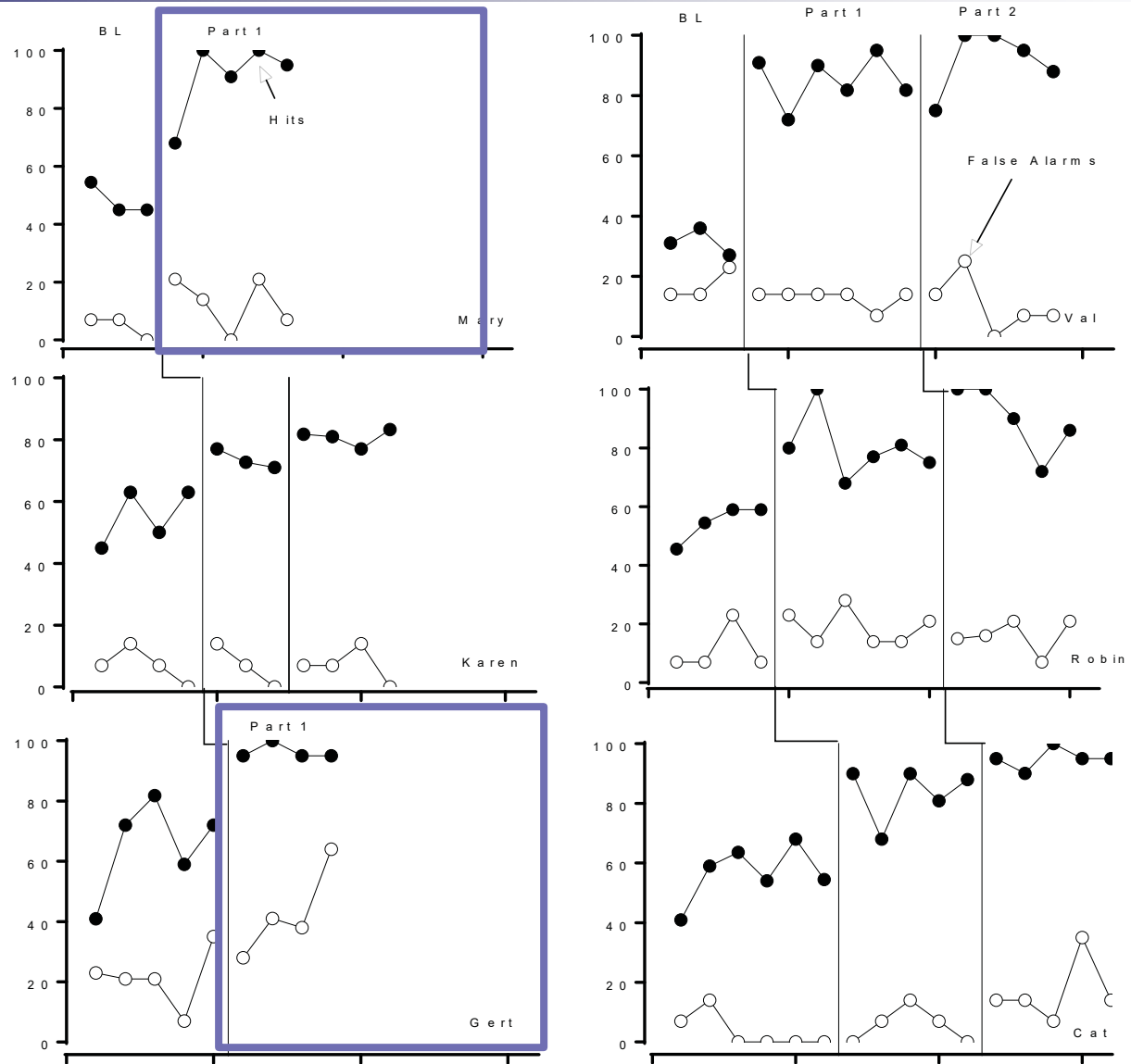
- Experiment 2: (N = 20)

Was multiple exemplar training critical to success of training on simultaneous events?

- Part 1: Simultaneous Single Exemplar Training
- Part 2: Multiple Exemplar Training



Percentage of Antecedents and Consequences



Test Sessions



Conclusions

- Efficient alternative to traditional BST
- Training on simultaneous events critical
- But false alarms!
- Improves detection in the classroom?



Take-Home Points

- Integrate ABA practices into more teacher preparation programs
- Prioritize paraprofessional training
- Use “bootcamps” to disseminate and maintain effective practices

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