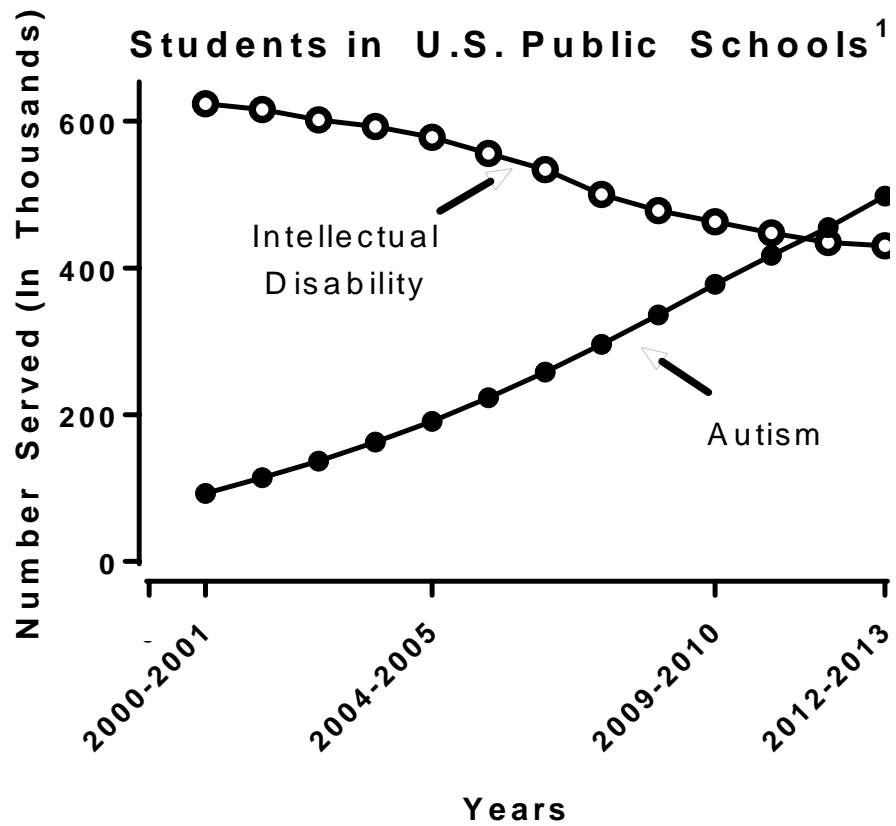


# Disseminating ABA into Public Schools: Prior and Current Research at the University of Houston, Clear Lake

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





<sup>1</sup> 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

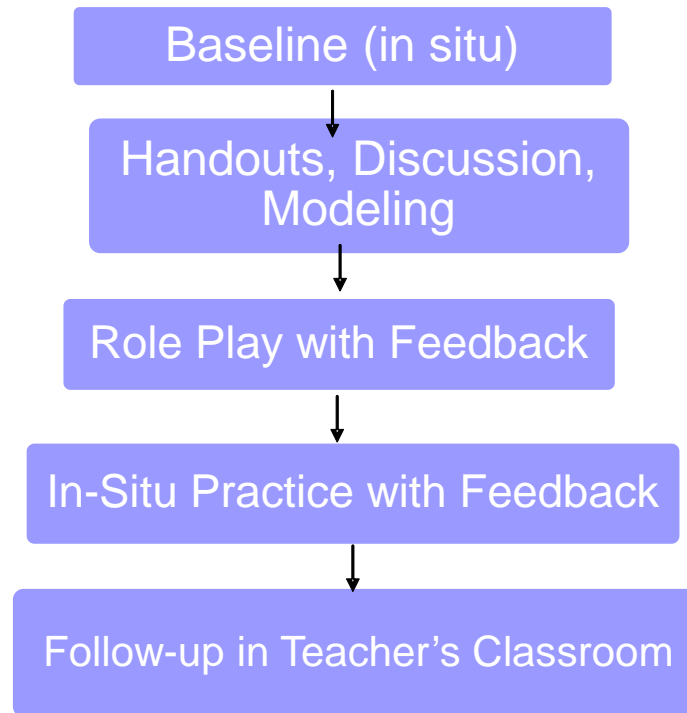
Other topics (token economies, toilet training, visual schedules)

\*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

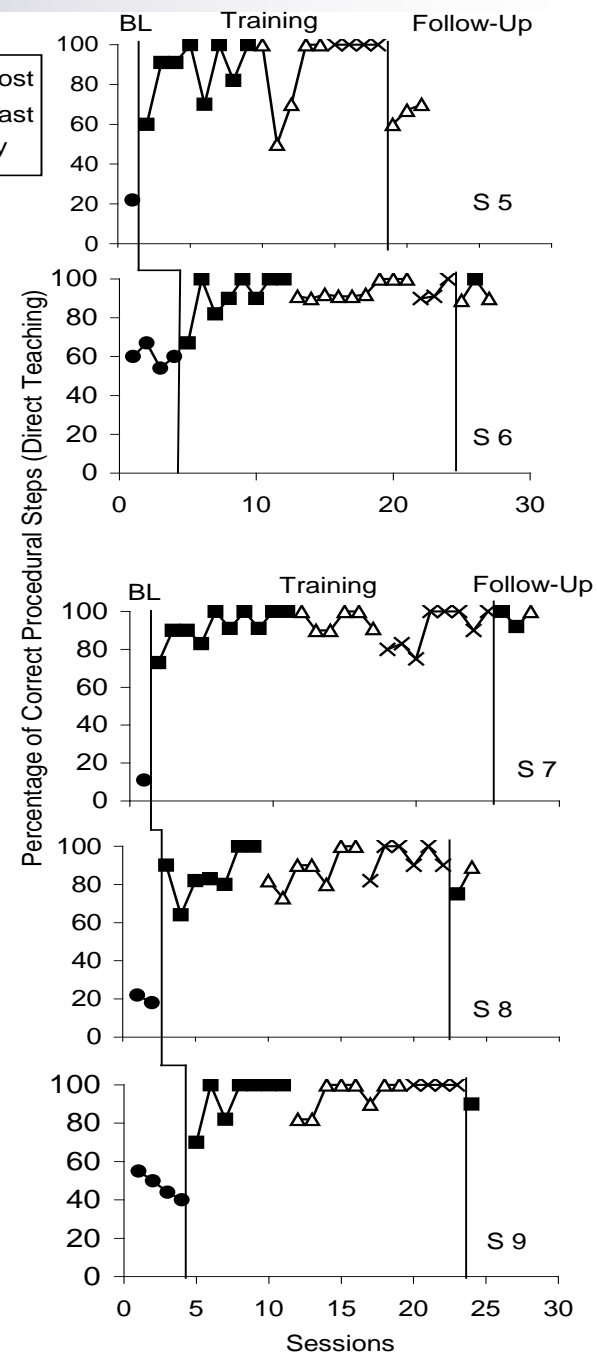
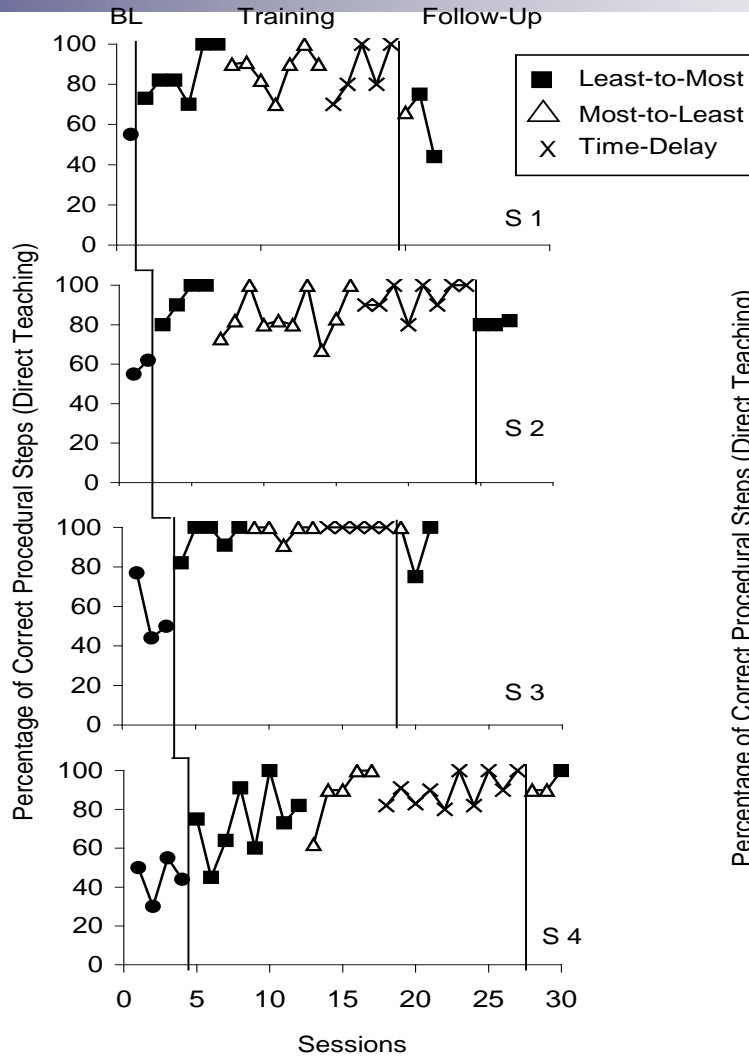
Data collected appropriately.





# Lerman et al. (2008)

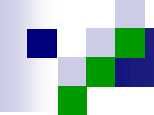
## Discrete Trial Teaching





## Conclusions From Outcome Studies

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



# Pyramidal Training of Paraprofessionals: A Descriptive Analysis

Lerman et al. (in preparation)

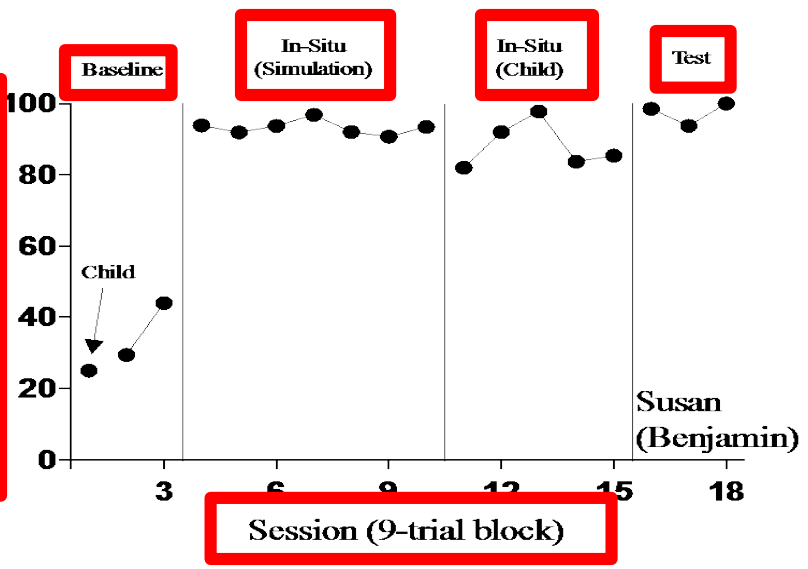
## Goals:

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

## Procedures

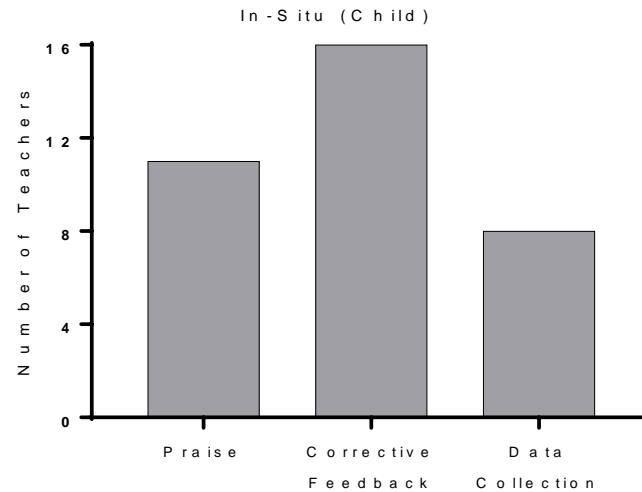
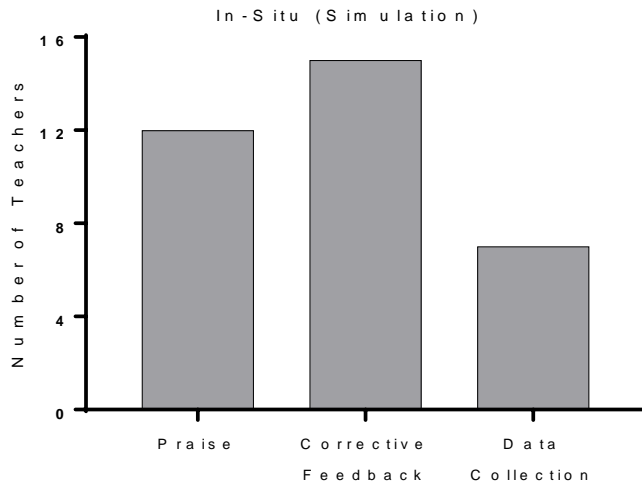
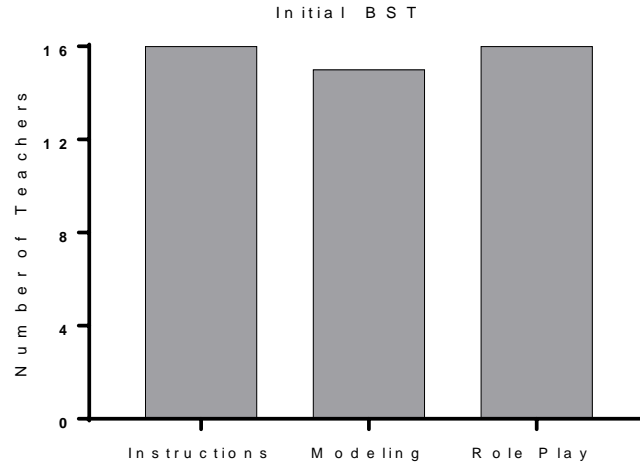
- 16 teacher-paraprofessional pairs
- Targeted Skill: DTT using LTM + Error Correction
- Trained teachers to implement DTT via BST
- Lecture/handout about BST as teaching approach for classroom staff
- Given all necessary materials
- Told “teach as you think practical in classroom”
- Descriptive analysis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

Percentage of Correct Responses



Susan (Benjamin)

# 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



Procedural Integrity Monitoring  
Smothermon, Lerman, & Luck (in preparation)

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





## Procedural Integrity Monitoring Smothermon, Lerman, & Luck (in preparation)

### □ Trial-by-trial vs Whole-Session

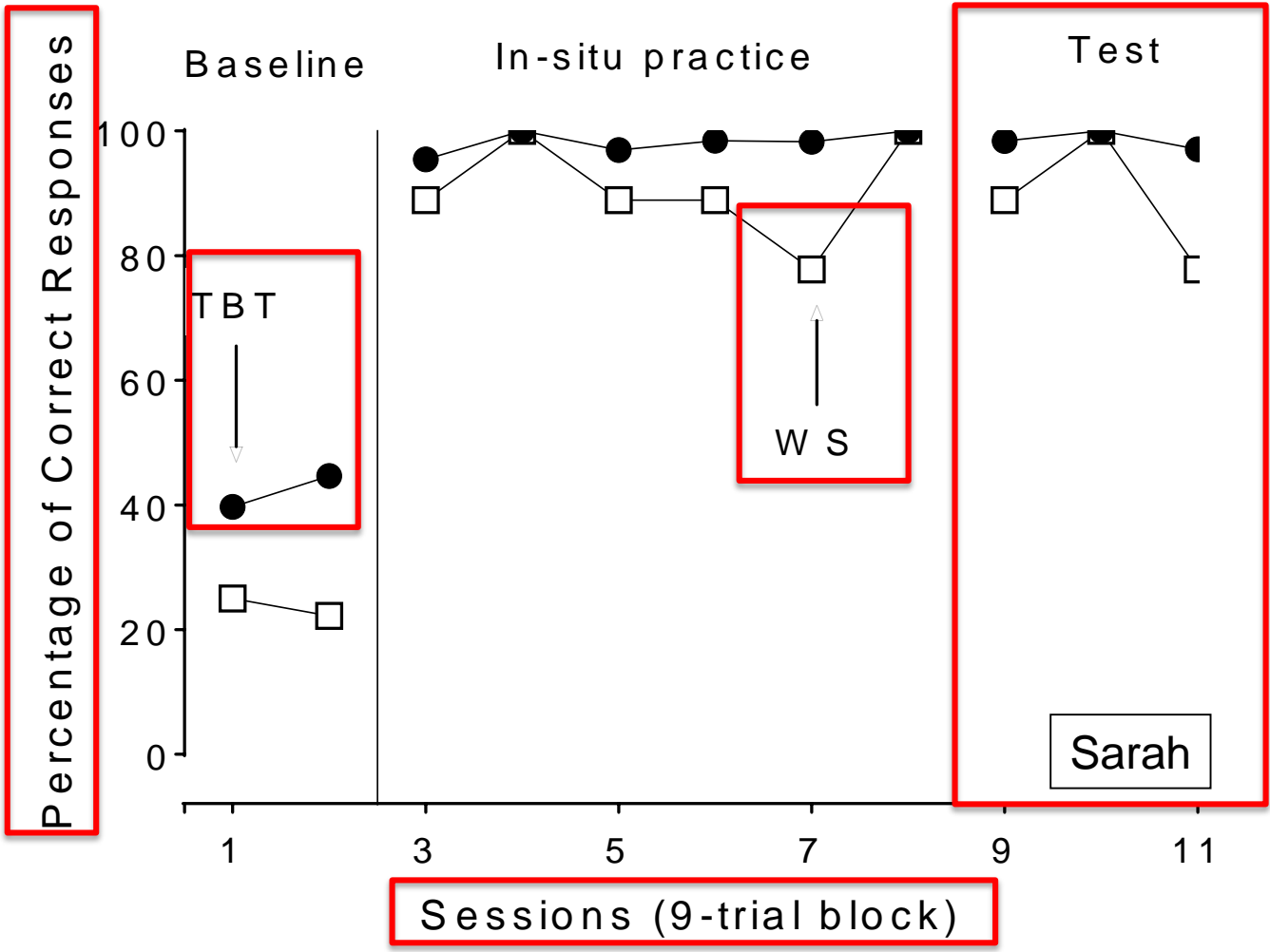
- Trial (TBT): Each component (A-I) scored on each trial

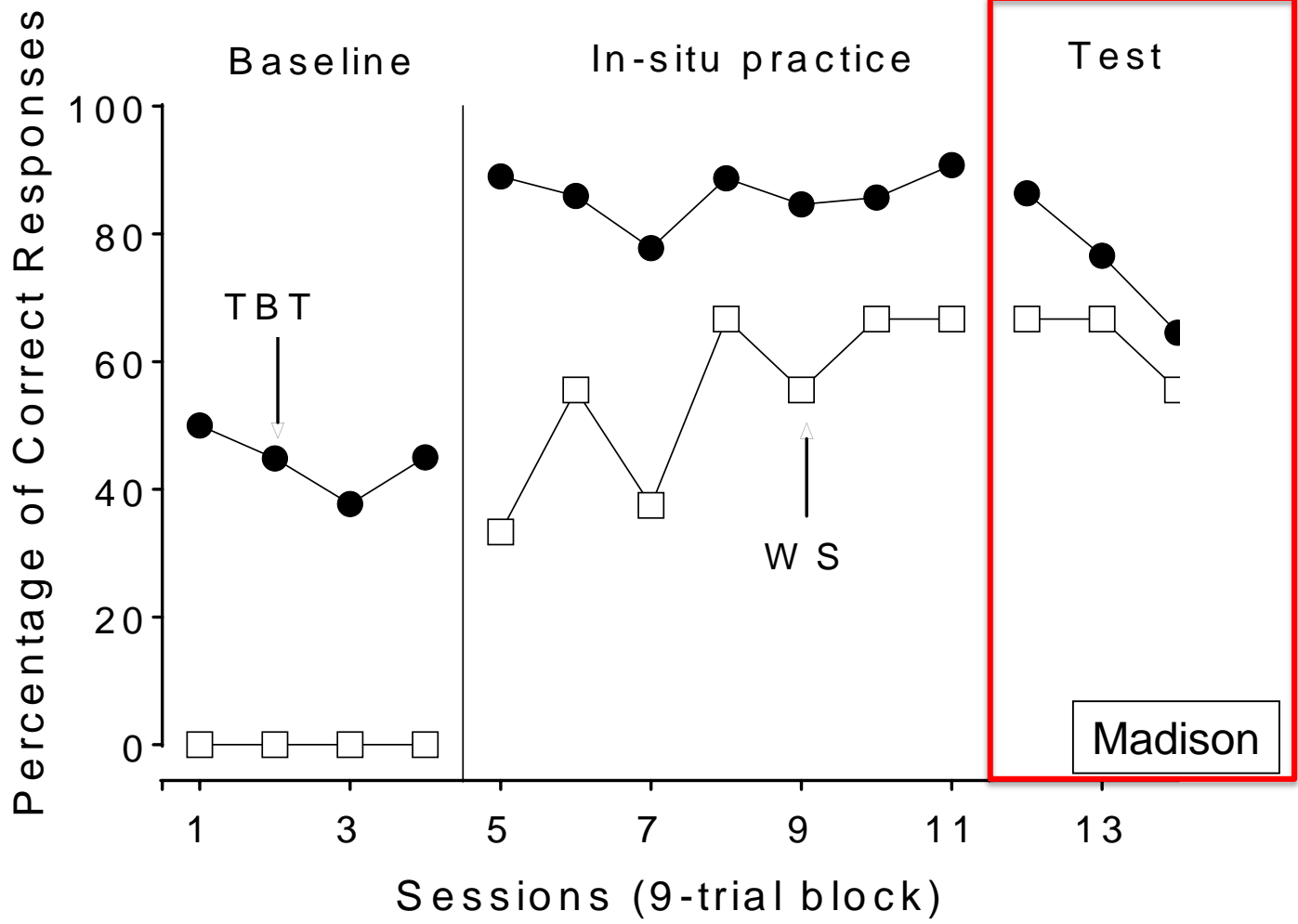
$$\# \text{ correct} / \# \text{ of opportunities} \times 100$$

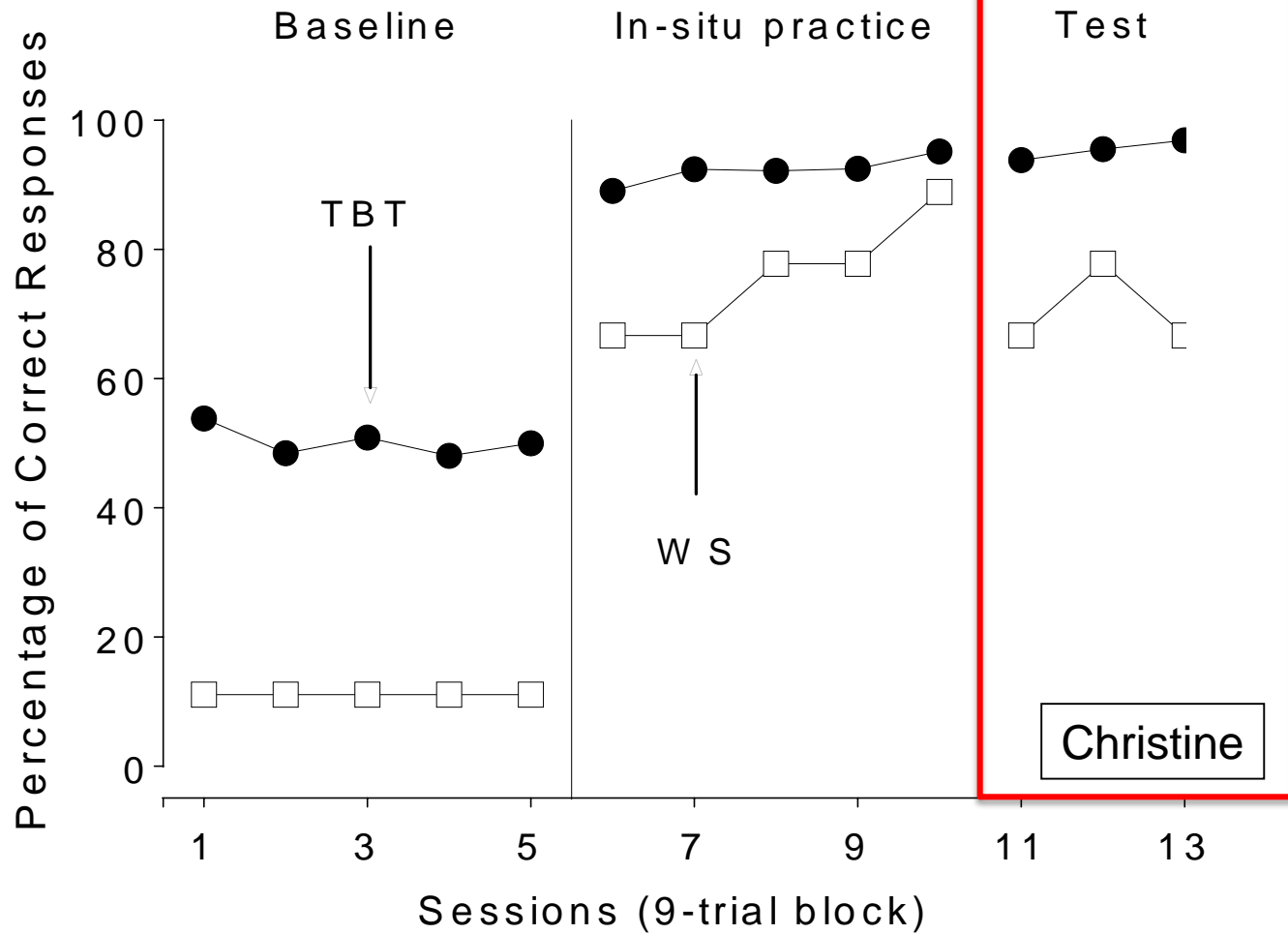
- Whole Session (WS): Each component (A-I) scored as correct if implemented correctly on ALL trials

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

Easier but less precise; likely underestimates integrity









## Summary

- Match - good performance
  - 8 out of 16
- Match - poor performance
  - 4 out of 16
- Miss
  - 4 out of 16
  
- Can we increase precision by examining performance on individual components?

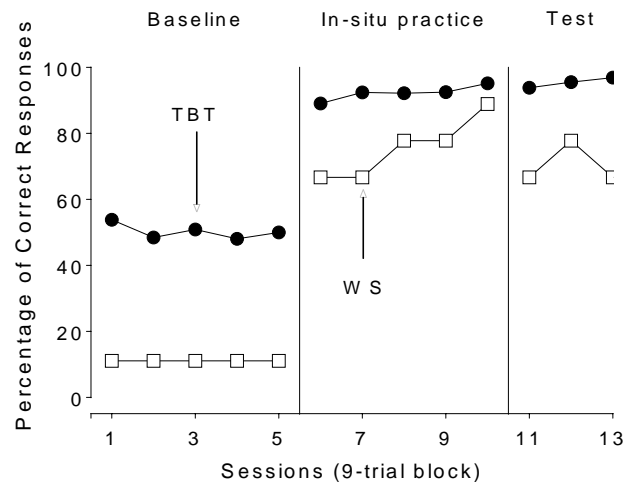
# Global versus Component Data Analysis

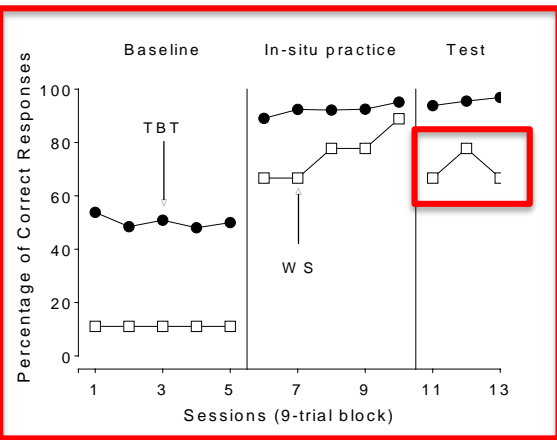
## Global

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

## Component

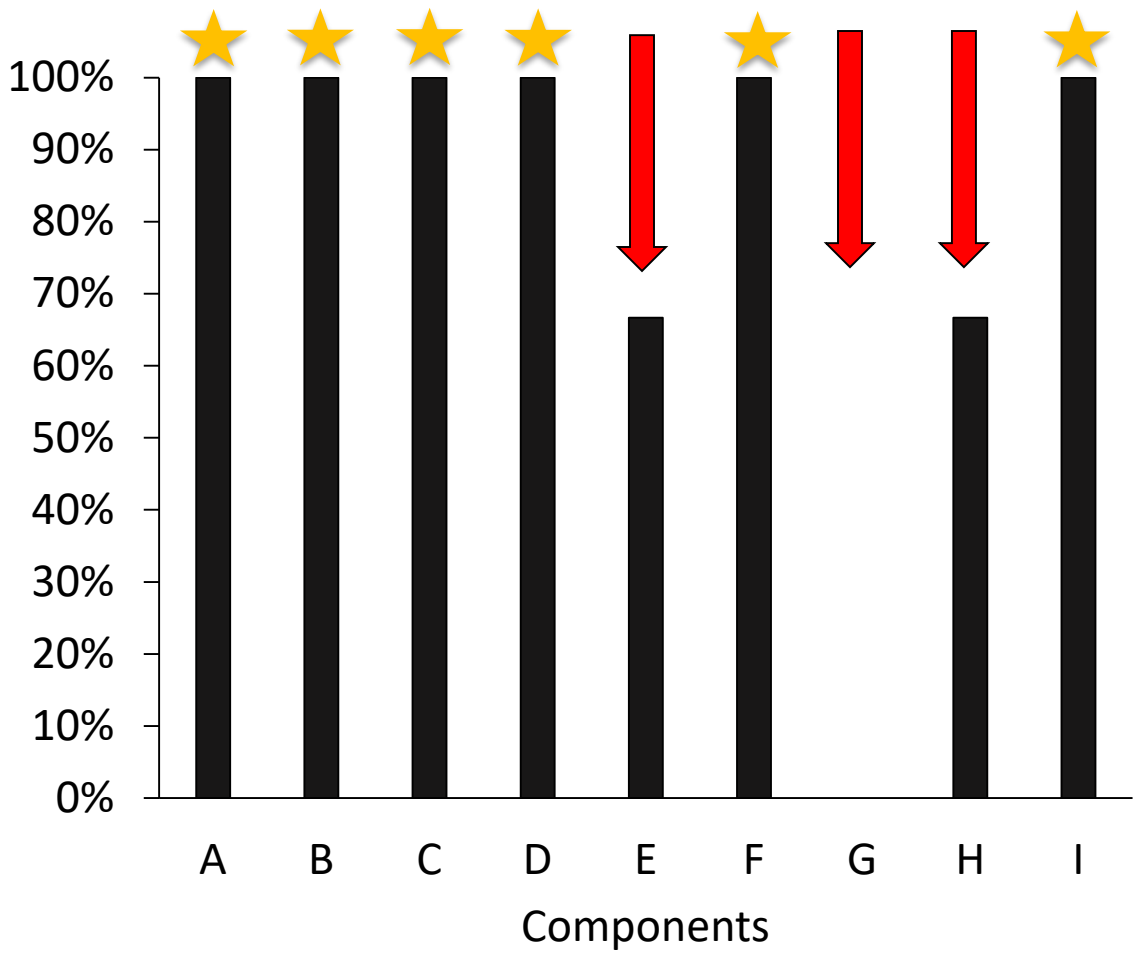
- Components of intervention separated
- Data are examined for each individual component





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

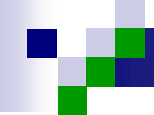
- Simultaneous Events (examples)

- Antecedents:

- demand delivered + tangible removed

- Consequences:

- escape + attention



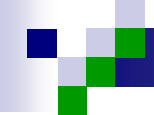
## Computer-Based Training (Scott et al., in press)

### 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
<b>Attention</b>	Teacher discontinues interaction with student by walking away.	Teacher delivers reprimand, tells student to stop.
<b>Tangible</b>	Teacher removes toy in student's possession or stops ongoing activity.	Teacher returns the removed toy or permits resumption of activity.
<b>Escape</b>	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

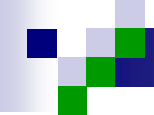
Function	Antecedent	Consequence
<b>Attention</b>	Teacher ignores vocal or physical (hand raise) request for attention.	Teacher delivers statements of concern. Teacher touches student without saying anything.
<b>Tangible</b>	Student attempts to grab item that is out of reach.	Teacher delivers an item that is different than the one desired/requested.
<b>Escape</b>	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:

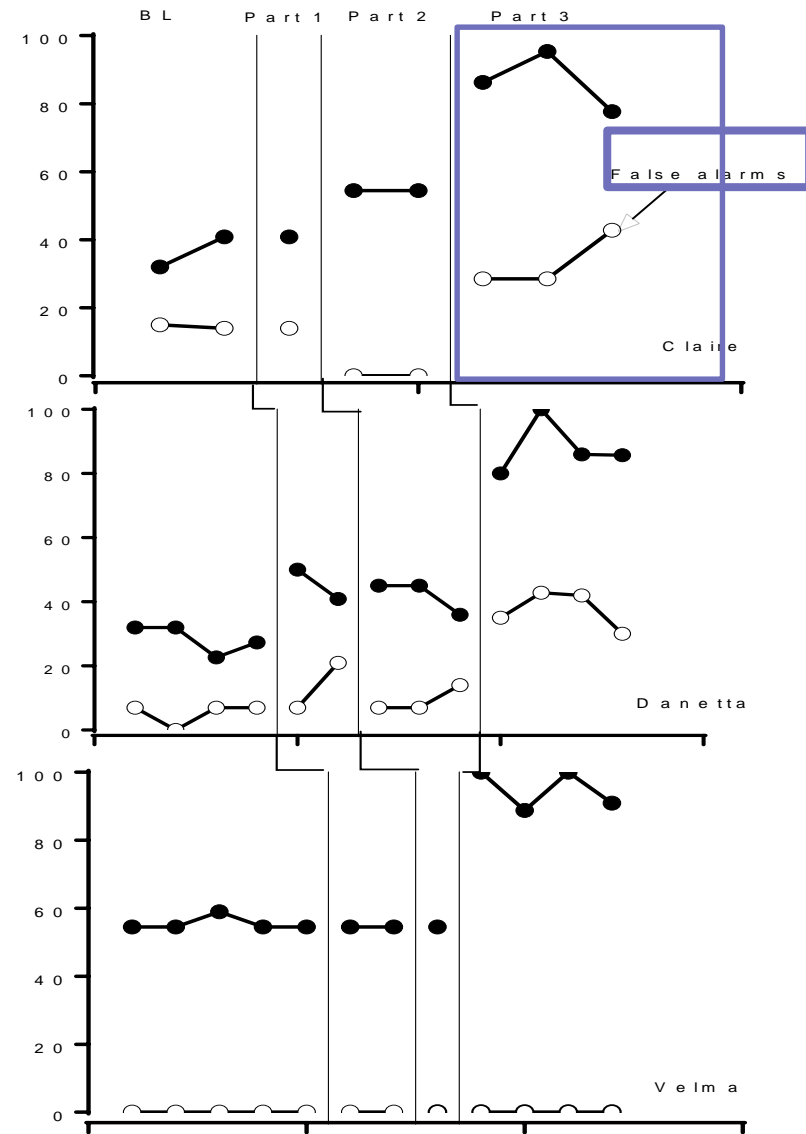
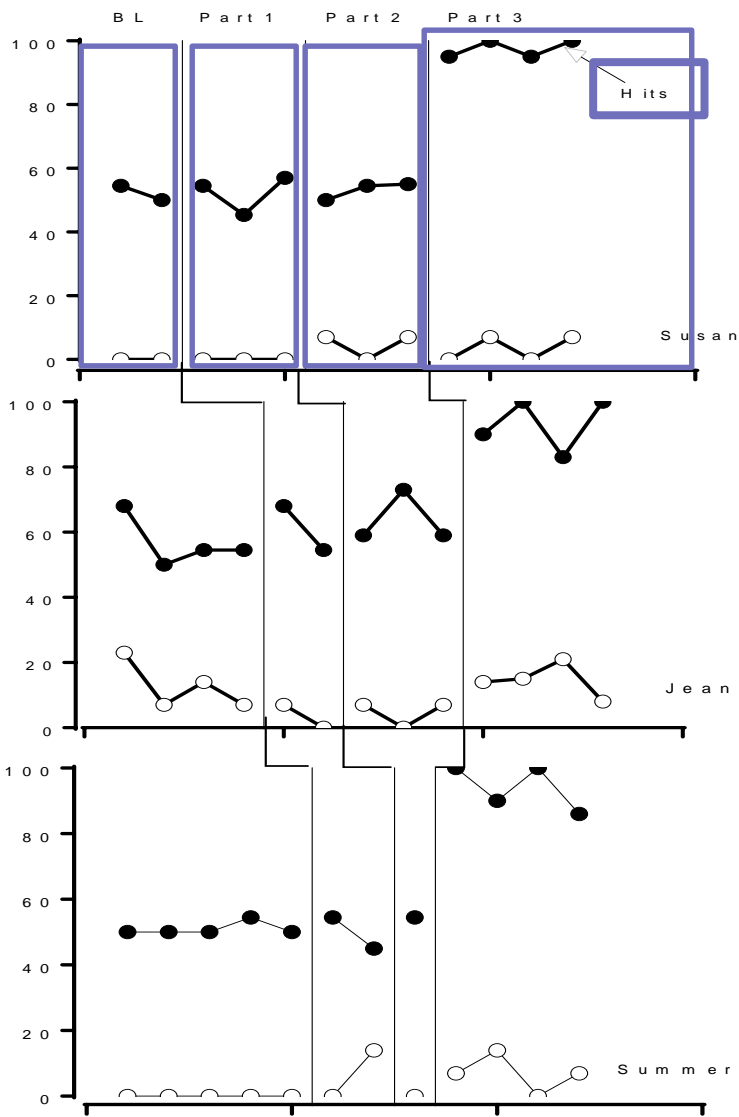
### INSTRUCTIONS

- 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



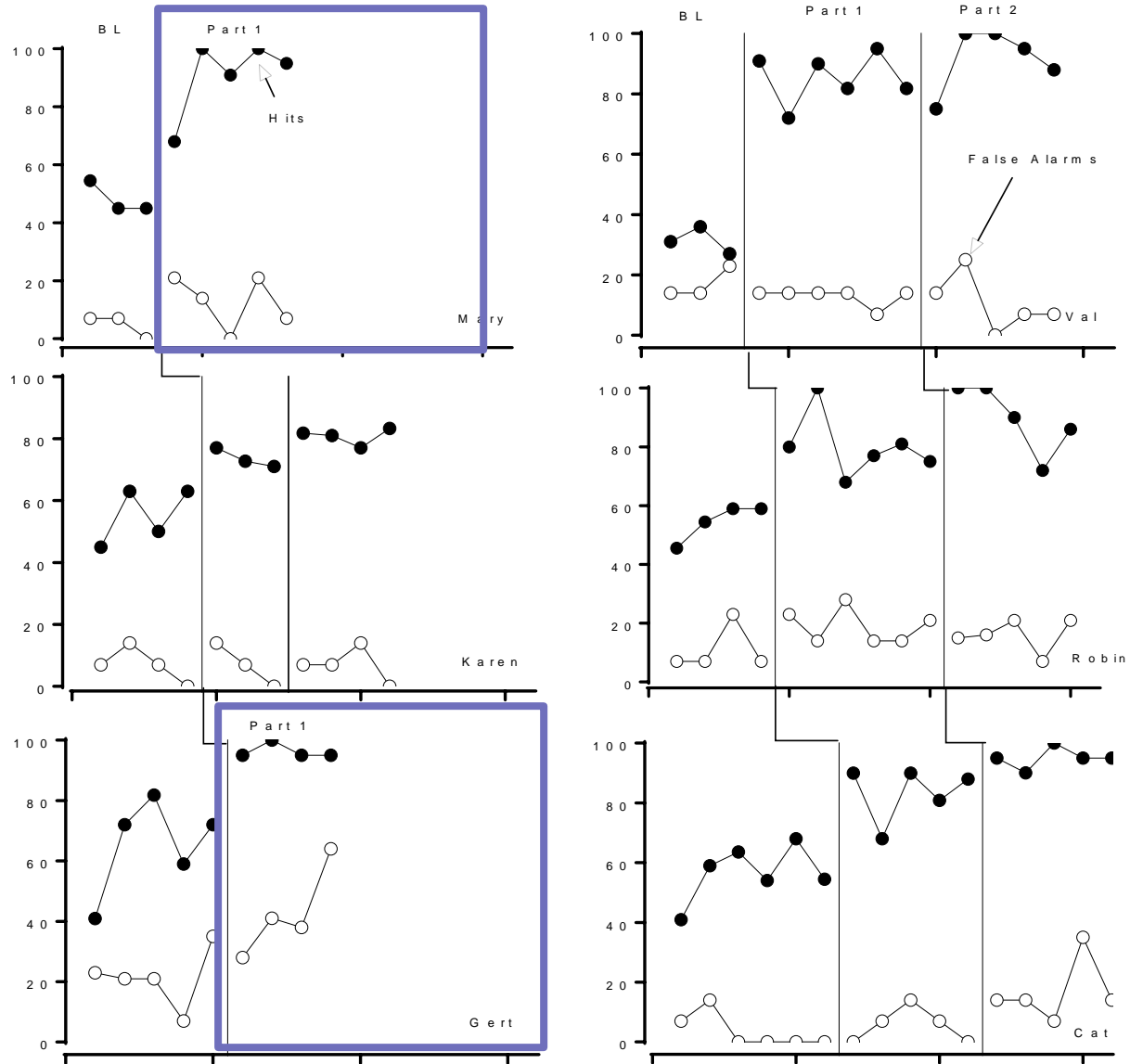
## Computer-Based Training (Scott et al., in press)

- 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

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

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

[lerman@uhcl.edu](mailto:lerman@uhcl.edu)

