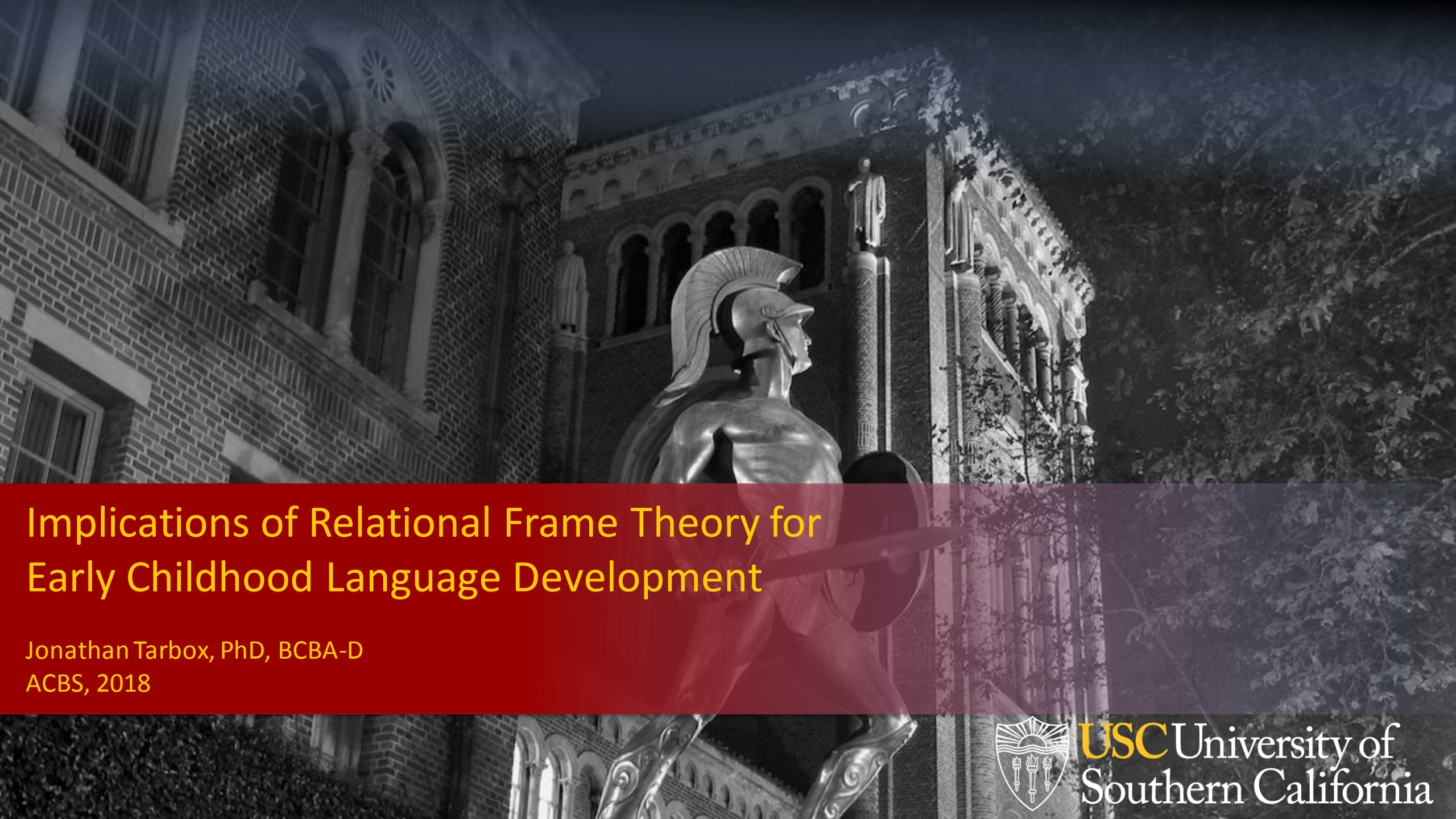

Implications of Relational Frame Theory for Early Childhood Language Development

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ACBS, 2018

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My Value

To Help Build a Bigger, Braver, Bolder, More Flexible, More ***COMPREHENSIVE*** *Science of Human Behavior*

Outline

- Relational Frame Theory
- Multiple Exemplar Training
- Bidirectional Naming
- Perspective taking
- Rule-governed behavior
- Metaphors
- Problem solving

Introduction

- Why the need for a behavioral science of human language and cognition?

Why Do People Do What They Do?

- Why is the child not behaving as he is supposed to?
- Why is the child's language not developing?

Why Do People Do What They Do?

- Non-scientific approach: Put the cause in one of three places:
  1. Moral defect
  2. Mental defect
  3. Personality defect

Behavioral Science Approach

Behavior is affected by the history and current circumstances of the person's environment

Behavior Analytic Principles

- More than 80 years of research
- Reinforcement
- Punishment
- Stimulus control
- Prompting and prompt-fading
- *Generalization*

Relational Frame Theory

- Uses the concept of generalization to understand cognition as learned behavior
- The ability to relate two or more stimuli **is behavior**
- A simple yet revolutionary idea

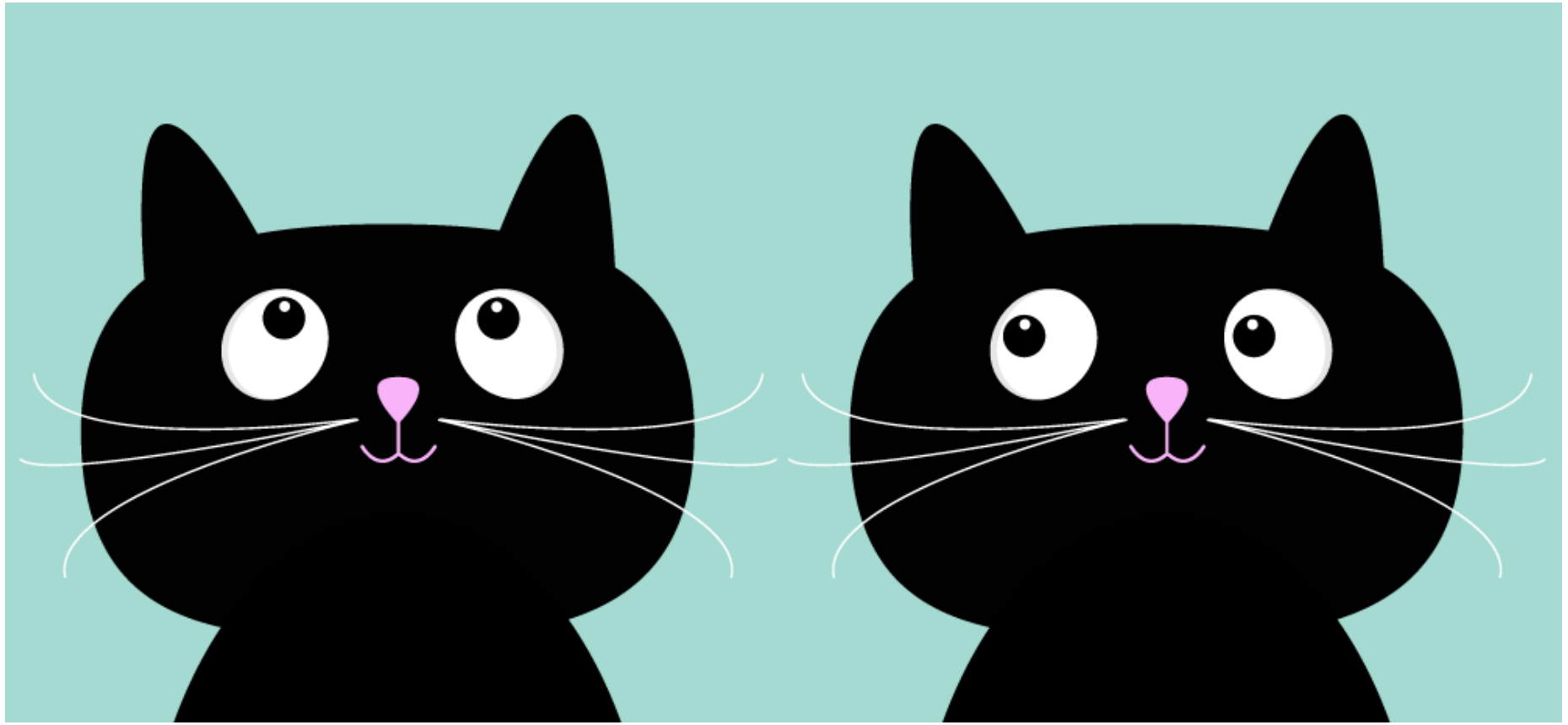
Before Relational Frame Theory


WCBS
880

Communication Problem

- Dermot's periodic table analogy
- Human language IS complex
- But we can't blame the organism
- We must blame the environment
- In science dissemination, the way we communicate our science is the environment

Imitation in Science



The Vision

- The vision of behavior analysis is a comprehensive science of everything people do
- Every single action from birth to death should be understandable with behavioral principles
- The same vision applies to RFT (and psych flex)

Today

- I’m going to talk about RFT a little bit differently
- My story: I’ve been interested in the complex language and cognitive abilities of children (and lately, adults)

Relational Frame Theory

- Relating is generalized operant behavior learned through multiple exemplar training
- Train multiple exemplars until you see generalization to untrained exemplars
- Put simply: Language and cognition consist of behavior that is learned and can be taught

Relational Frames

- Coordination
- Distinction
- Opposition
- Comparison
- Hierarchy
- Temporal
- Causal / conditional
- Deictic
- Relating relations

Now Let's Start Talking About the Skills…

Bidirectional Naming (Generalized Symmetry)

Bidirectional Naming

- The simplest generalized relational operant
- Potentially the basis for human intelligence and generative language

Fiorile and Greer (2007): Bidirectional Naming

- Four two-year-old children with autism
- No preexisting tact repertoire
- Taught tact and listener responses via multiple exemplar training

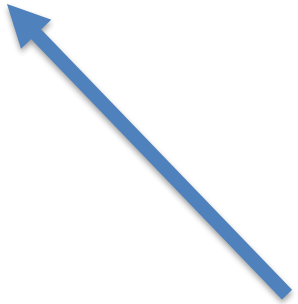
Fiorile and Greer (2007): Bidirectional Naming

- Taught three stimuli at the same time
- Rapidly alternated between three relations:
  1. Matching
  2. Point (receptive listener response)
  3. Tact (expressive label)
- Target stimuli alternated every trial

Fiorile and Greer (2007): Multiple Exemplar Instruction Procedure

Trial 1: Matching

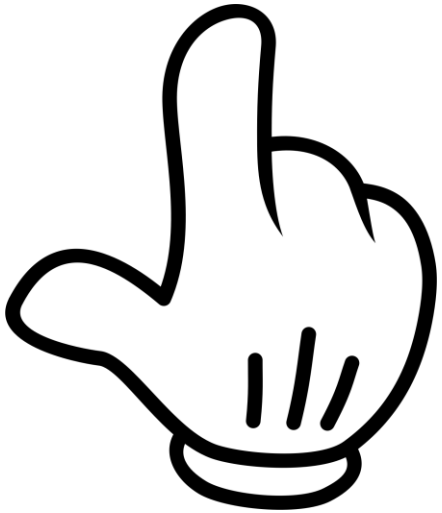
Instruction: "Match"



Fiorile and Greer (2007): Multiple Exemplar Instruction Procedure

Trial 2:
Listener

Instruction:
“Point to dog”



Fiorile and Greer (2007): Multiple Exemplar Instruction Procedure

Trial 3: Tact

Instruction:
No words, just present stimulus

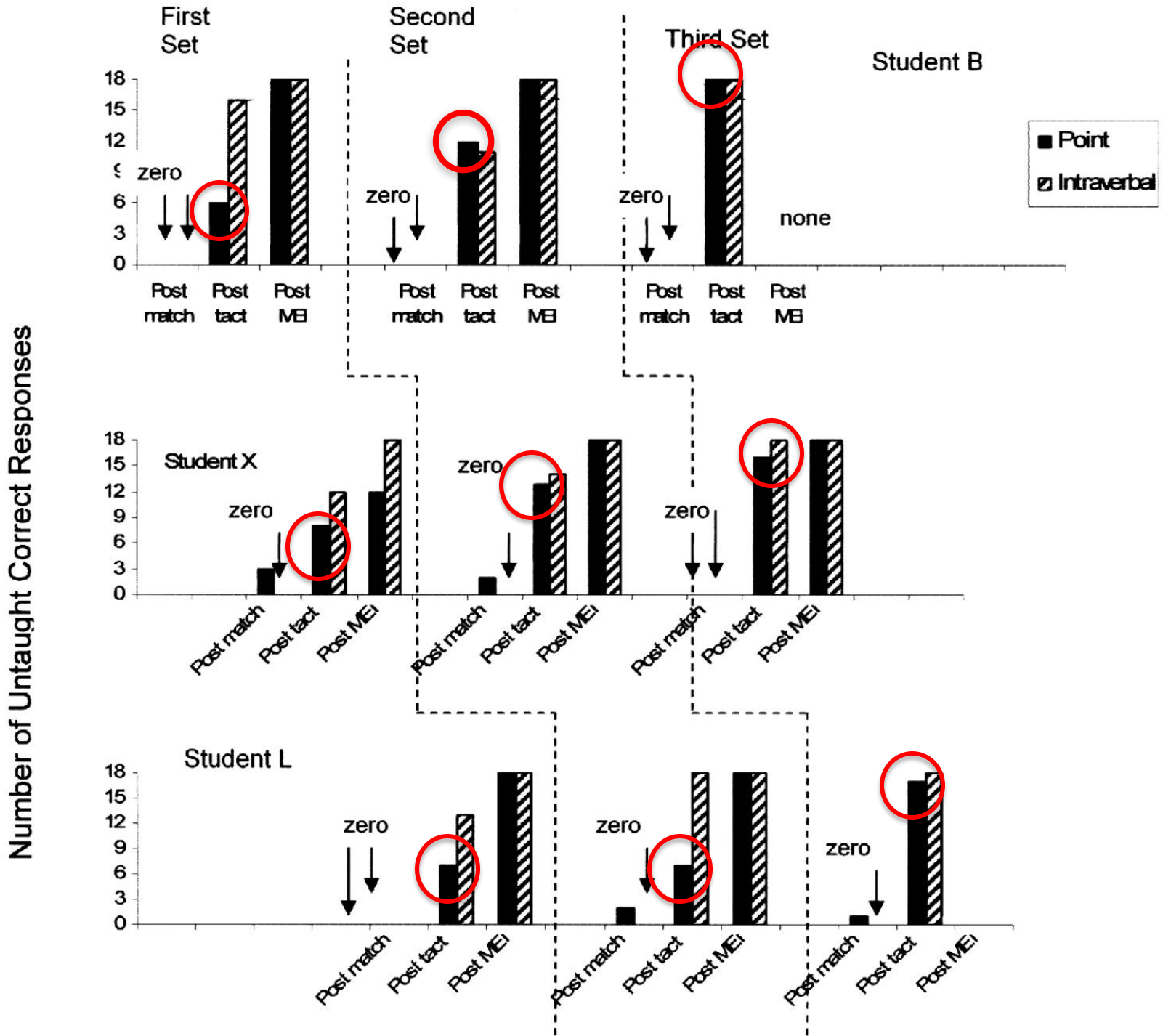
→ **“Apple”**

Trial	Skill	Target
1	Match	Fork
2	Listener	Dog
3	Tact	Apple
4	Match	Dog
5	Listener	Fork
6	Tact	Apple
7	Match	Apple
8	Listener	Dog
9	Tact	Fork

Fiorile and Greer (2007): Multiple Exemplar Instruction Procedure

Fiorile and Greer (2007)

- Listener responding emerged after tact training *only after a history of multiple exemplar training in both directions* across two sets of stimuli



Equivalence

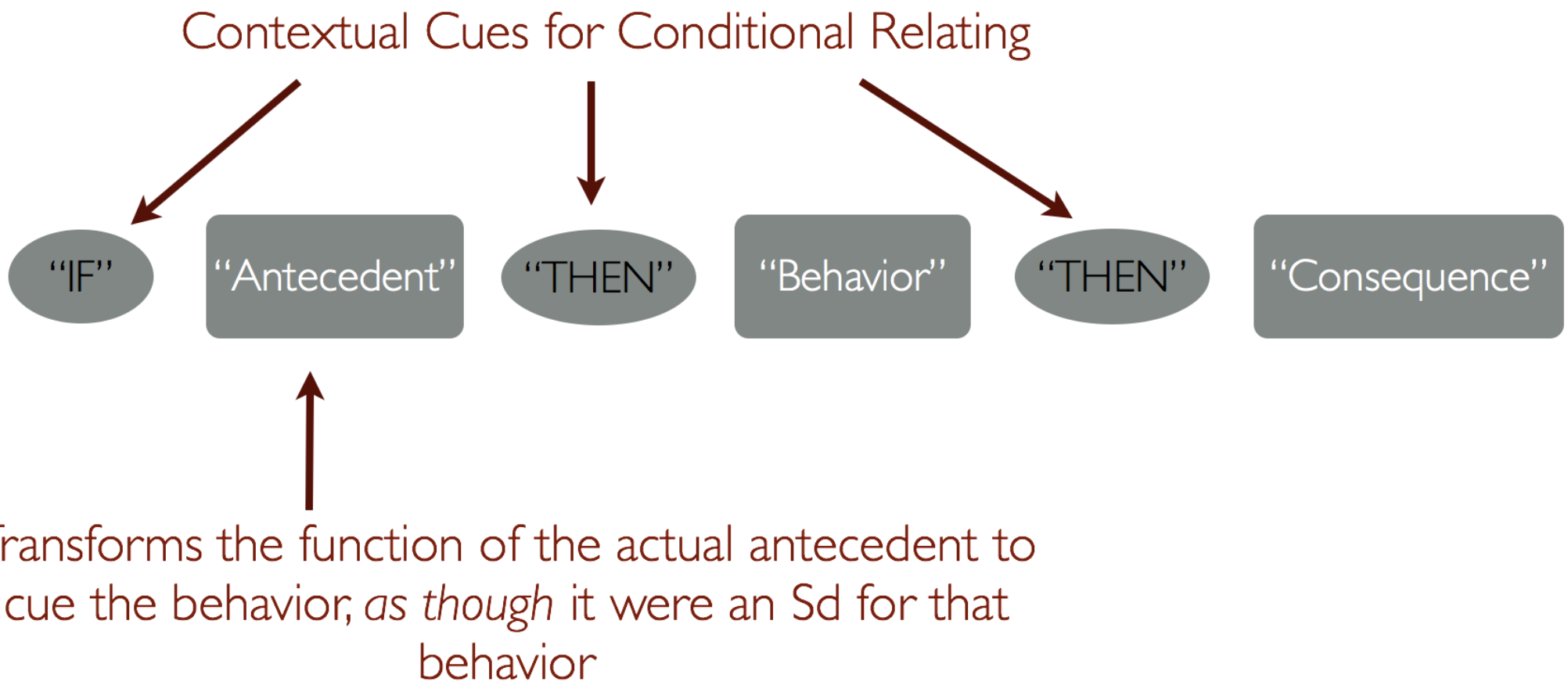
- MANY studies on equivalence and children with autism out of Mark Dixon's lab and Caio Miguel's lab

Rule-Governed Behavior

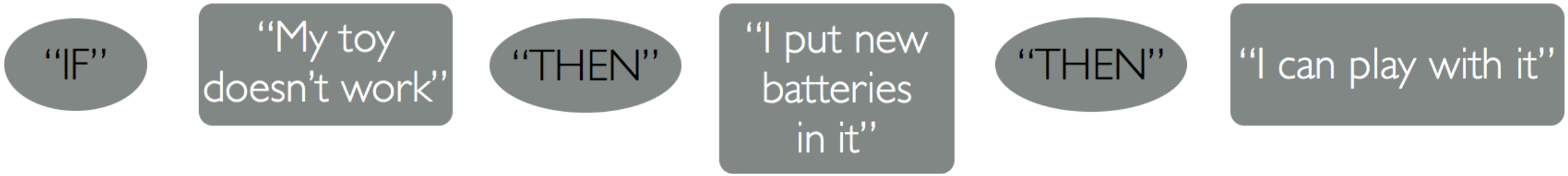
What is Rule-Governed Behavior?

- Behavior that occurs due to contact with rule, NOT contingencies the rule describes
- Rules involve responding **conditionally** between stimuli that describe antecedents, behaviors, and consequences

Rules


Contextual Cues for Conditional Relating
"IF"
"Antecedent"
"THEN"
"Behavior"
"THEN"
"Consequence"
Transforms the function of the actual antecedent to cue the behavior, *as though* it were an Sd for that behavior

Rules


"IF"
"My toy doesn't work"
"THEN"
"I put new batteries in it"
"THEN"
"I can play with it"

Rules

- No previous research on establishing ability to understand and follow rules
- Simplest rule: Describes only antecedent and behavior

Tarbox et al. (2011)

- Multiple exemplar training to teach children with ASD to follow antecedent-behavior rules
  - “If this is a carrot then clap your hands”
  - “Stomp your feet if this is an airplane”
- Multiple exemplar training until generalization to novel rules

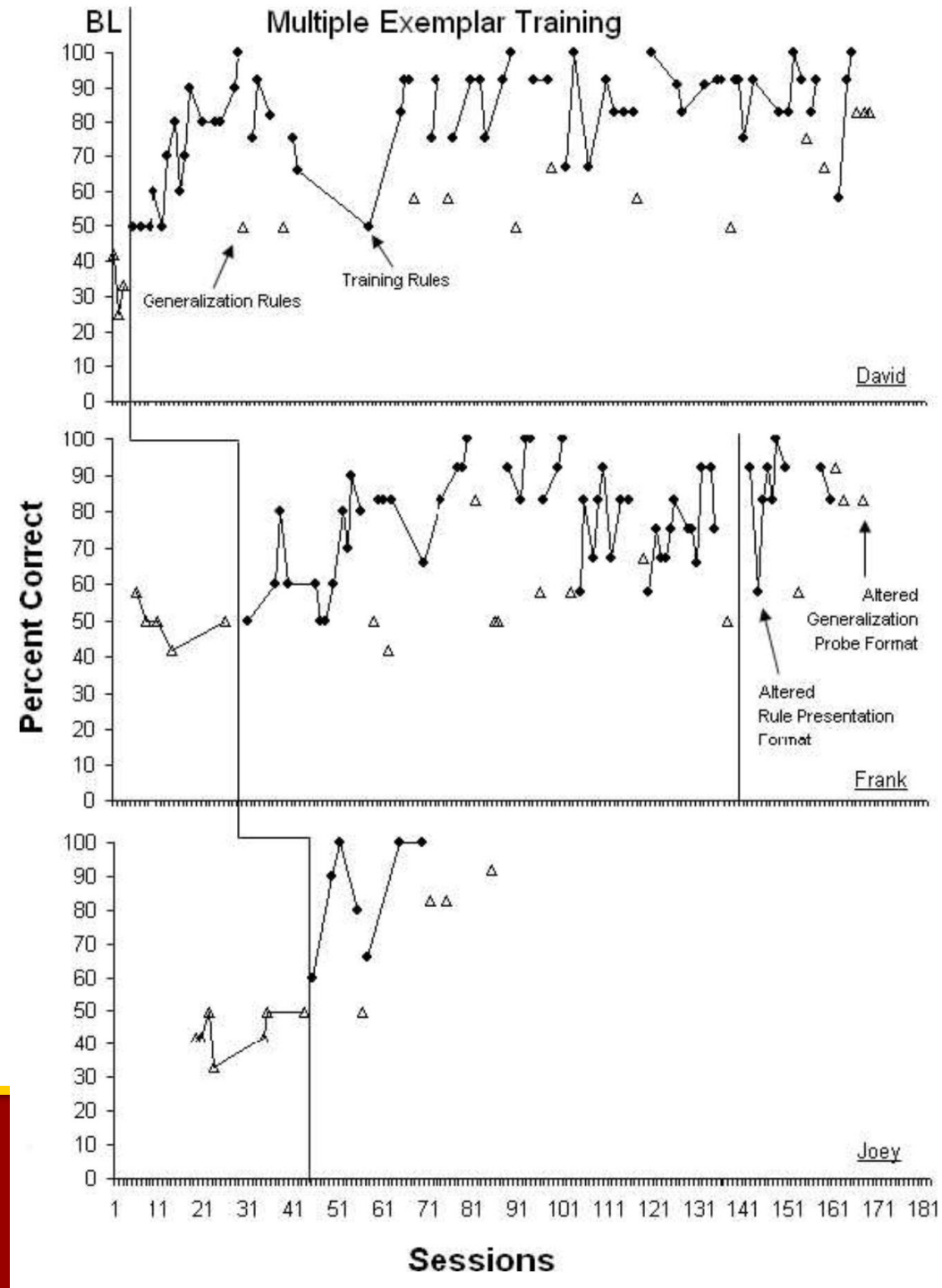
Tarbox and Colleagues (2011)

Rules Presented During Baseline, Training, and Generalization Probes in Experiment 1

Baseline and generalization probes	Directly trained
If this is orange then touch your head	If this is a carrot then clap
If this is a pig then arms up	If this is a triangle then turn around
If this is a shoe then touch the floor	If this is a ball then stomp
If this is a chair then knock	If this is a cookie then jump
If this is a spoon then stand up	If this is a hat then stick out your tongue
If this is a car then wave	If this is a bike then touch your nose
	If this is a cup then show me laughing
	If this is an apple then touch your ears
	If this is a square then clap
	If this is a motorcycle then stomp
	If this is a cracker then turn around

Tarbox and Colleagues (2011)

- **Implications for pliance**



Wymer and Colleagues (2016)

- Replicated and extended Tarbox et al. (2011) to rules describing behaviors and consequences
  - “Clap if you want broccoli”
  - “Clap if you want chocolate”
- Multiple exemplar training until generalization to novel rules

Wymer and Colleagues (2016)

Behaviors

- Stand up
- Stomp feet
- Touch head
- Thumbs up
- Touch ear
- Touch nose
- Wave
- Etc.

Preferred Consequences

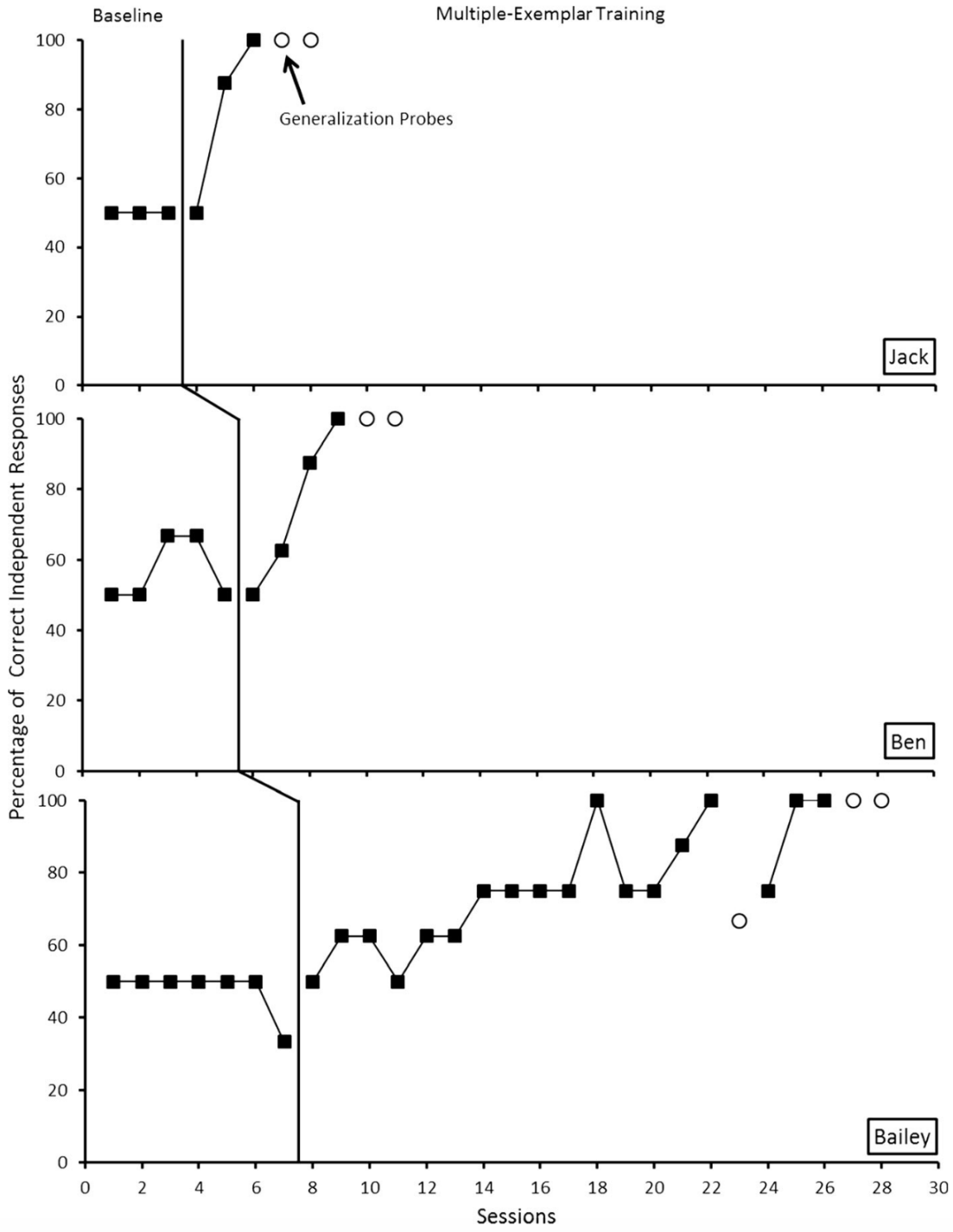
- Ball
- Book
- Bubbles
- Chips
- Drum
- Guitar
- Spin toy

Non-preferred Consequences

- Broccoli
- Carrots
- Celery
- Drawing
- Envelop
- Paper
- Plate
- Trace letters

Wymer and Colleagues (2016)

- Only one set of exemplars need for two participants
- Two sets needed for third
- Implications for tracking



Problem-Solving

What is a Problem?

- Skinner
  - **Problem**: A problem is a situation where a consequence would be reinforcing but the behavior needed to produce it is not available
  - **Problem-solving:** The behaviors one engages in to make the solution available
  - **Solution:** The terminal behavior that results in the reinforcer

Problem-Solving

- Rule-DERIVING
  - The previous two studies taught children with ASD to follow rules given to them by others
  - No research has taught children to derive their own rules in challenging situations

Problem-Solving

- Participants
  - Four children with ASD, 5-9 years old
  - Parents reported they would give up easily when problems occurred
  - Had basic causal relating repertoires already (could identify basic cause-and-effect relations)
  - Could follow basic rules when given to them
  - Could not derive their own rules

Problem-Solving

- Task analyzed problem-solving into steps:
  1. Identify problem
  2. State why it's a problem
  3. State three possible solutions
  4. Pick one solution
  5. Implement it
  6. Identify whether it worked
  7. If it did not work, go back to step three

Problem-Solving

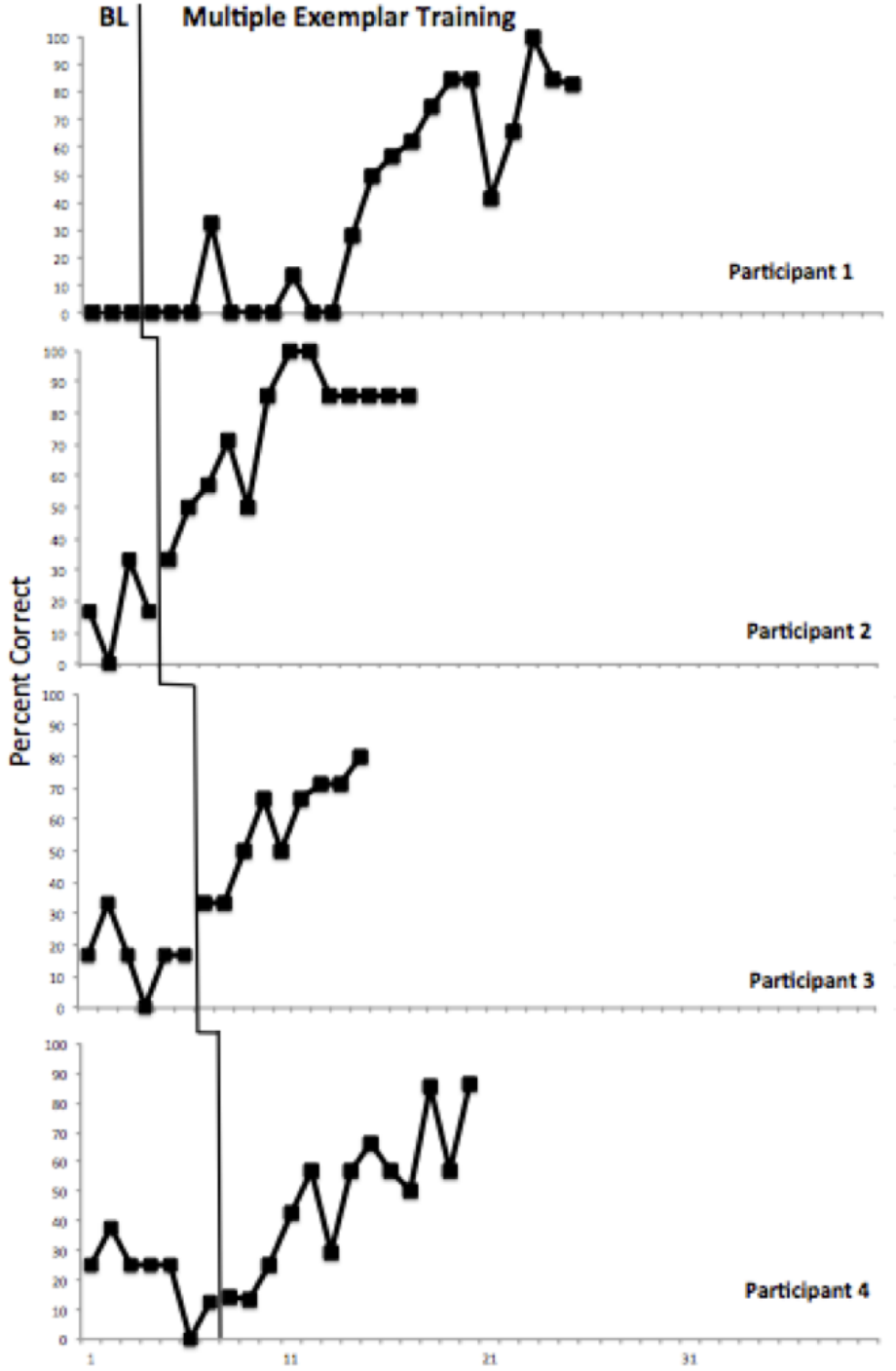
- Problem-solving task analysis examples:
  1. “My toy doesn’t work!”
  2. “This is a problem because we can’t play with it if it’s not working”
  3. “I could check the batteries, ask for help, or pick a different toy to play with”
  4. “I’ll check the batteries”
  5. Checks batteries and replaces with new batteries
  6. “It worked, now I can play with my toy!”

Problem-Solving

- Training procedure
  - ABA therapists created real-life problems without the child knowing
  - When problem came up, prompted child through task analysis to solve it
  - New problems every day
  - Continued training till child could solve untrained problems independently

Problem-Solving

- Generalization to untrained problems for all learners



Problem-Solving

- Szabo and Uribio (in preparation)
  - Taught children with autism to observe problems and derive rules about how to solve them
  - Social and nonsocial

The Self and Perspective-Taking

The Self

- Skinner
  - The verbal community teaches us to notice and respond to our own behavior when it is advantageous for others for us to do so
  - To young children:
    - “What did you just do?”
    - “Why did you do that???”
    - “What were you thinking???”

Perspective-Taking

- Identifying other's private events is very difficult
- Trial-and-error interactions with adults
  - "Why did **you** do that to **me**? If **you** were **me**, how would that make **you** feel?"
- RFT: Multiple exemplars of deictic relating
- Theory of Mind research has documented deficits and associated difficulties in individuals with autism

St. Clair (in preparation)

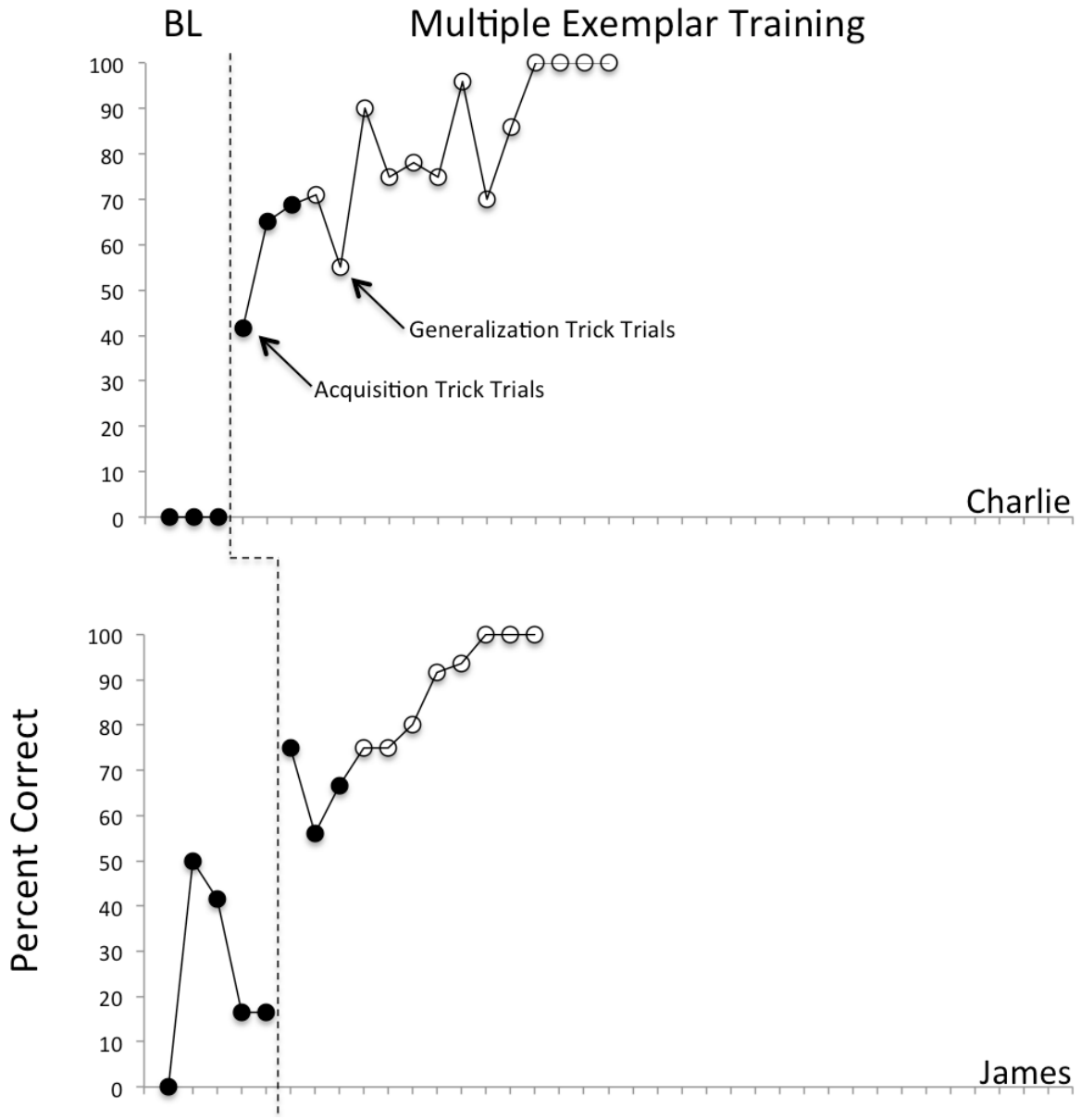
- Fun way to teach perspective taking, creativity, and planning
- Successful trick playing involves
  - Identifying what others know
  - Identifying behaviors that will prevent others from knowing
  - Doing something new that the other person will think is fun
  - And executing all this in a way that maintains the deception

St. Clair (in preparation)

- Clients
  - Highly verbal children with autism who needed to work on perspective taking
  - Couldn’t keep secrets or surprises
- Task analysis
  - Create a new trick
  - Describe it and why it’s a trick
  - Execute without “giving it away”
  - End the trick appropriately, e.g., “Gotcha!” or “Tricked ya!”

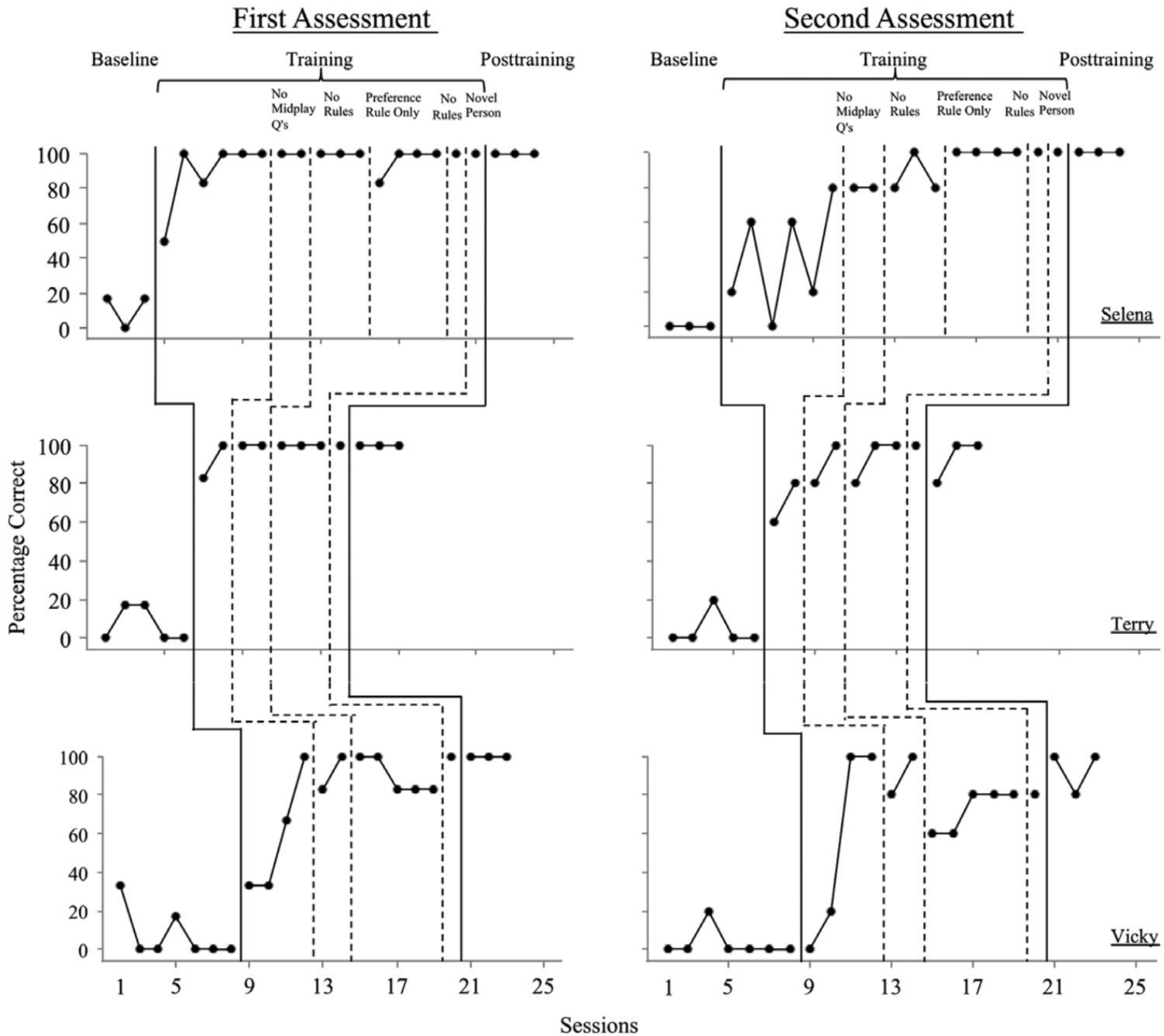
St. Clair (in preparation)

- Taught rule "A trick is when you play a joke on someone for fun
- If you make someone sad, it's mean, it's not a trick"
- Multiple exemplar training across tricks
- Initially taught same tricks
- Then moved to novel tricks every session
- Provided props occasionally



Najdowski et al. (2018)

- Three 5-8 year old children with autism
- Taught identification of others' desires during play
- Discrimination between one's own desires versus others
- "I'm tired of this game, what should we play?"
- Multiple exemplar training
  - Across identification
  - Across offering peers' preference

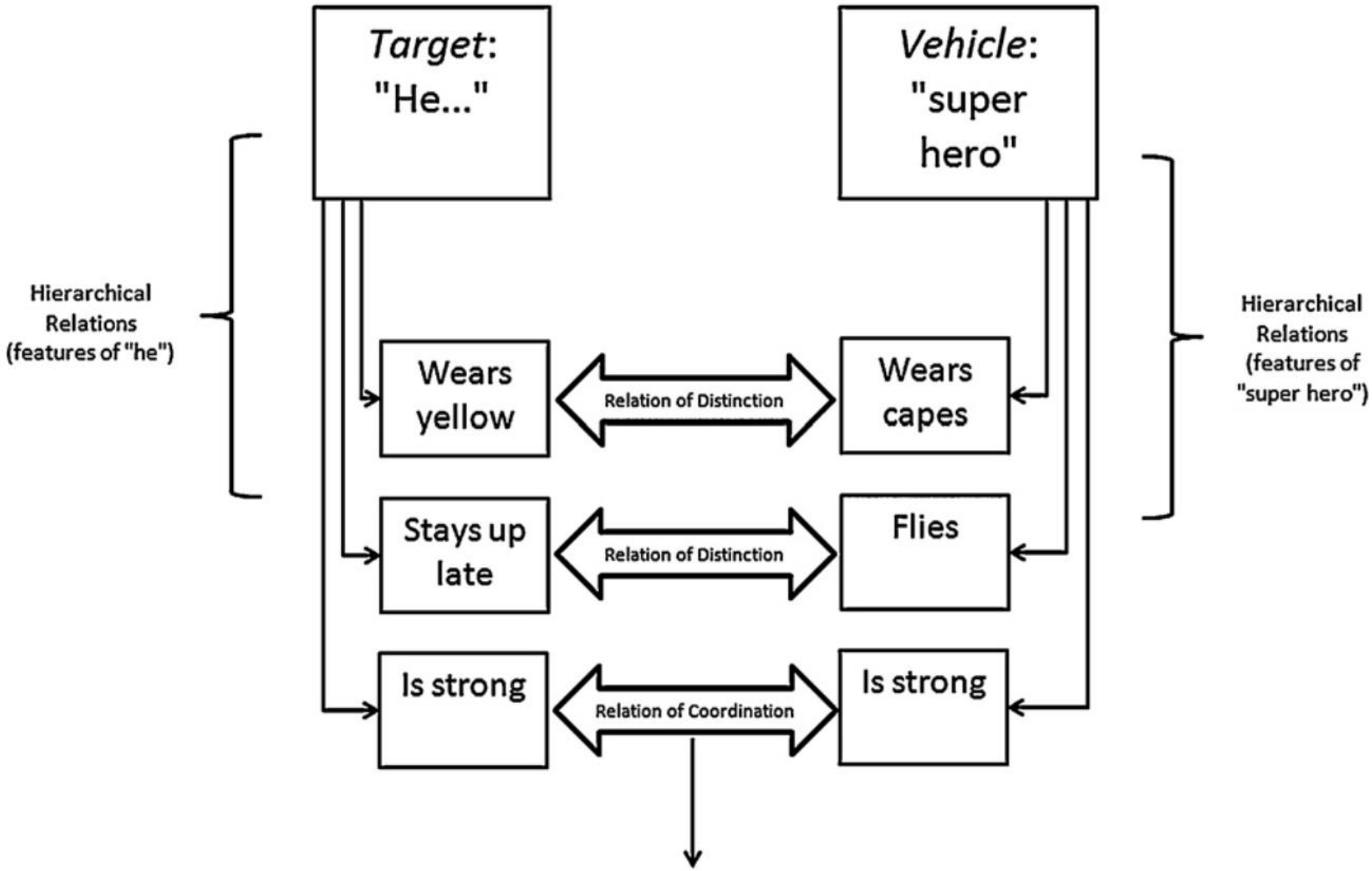

First Assessment
Second Assessment
Baseline
Training
Posttraining
No Midplay Q's
No Rules
Preference Rule Only
No Rules
Novel Person
Selena
Terry
Vicky
Percentage Correct
Sessions
0
20
40
60
80
100
1
5
9
13
17
21
25

Metaphors

Persicke et al. (2012): Metaphors

- Metaphors involve calling a thing something other than what it literally is
- Metaphors refer to some shared property between the thing and the metaphor used to describe it
- In RFT terms, metaphors involve deriving relations between relations

Question: "I once knew a boy who always wore yellow, he liked to stay up late at night, and he was really strong. If I said he is a super hero, what would I mean by that?"



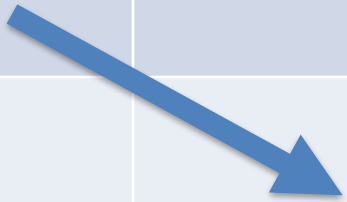
Answer: "You would mean he is really strong"

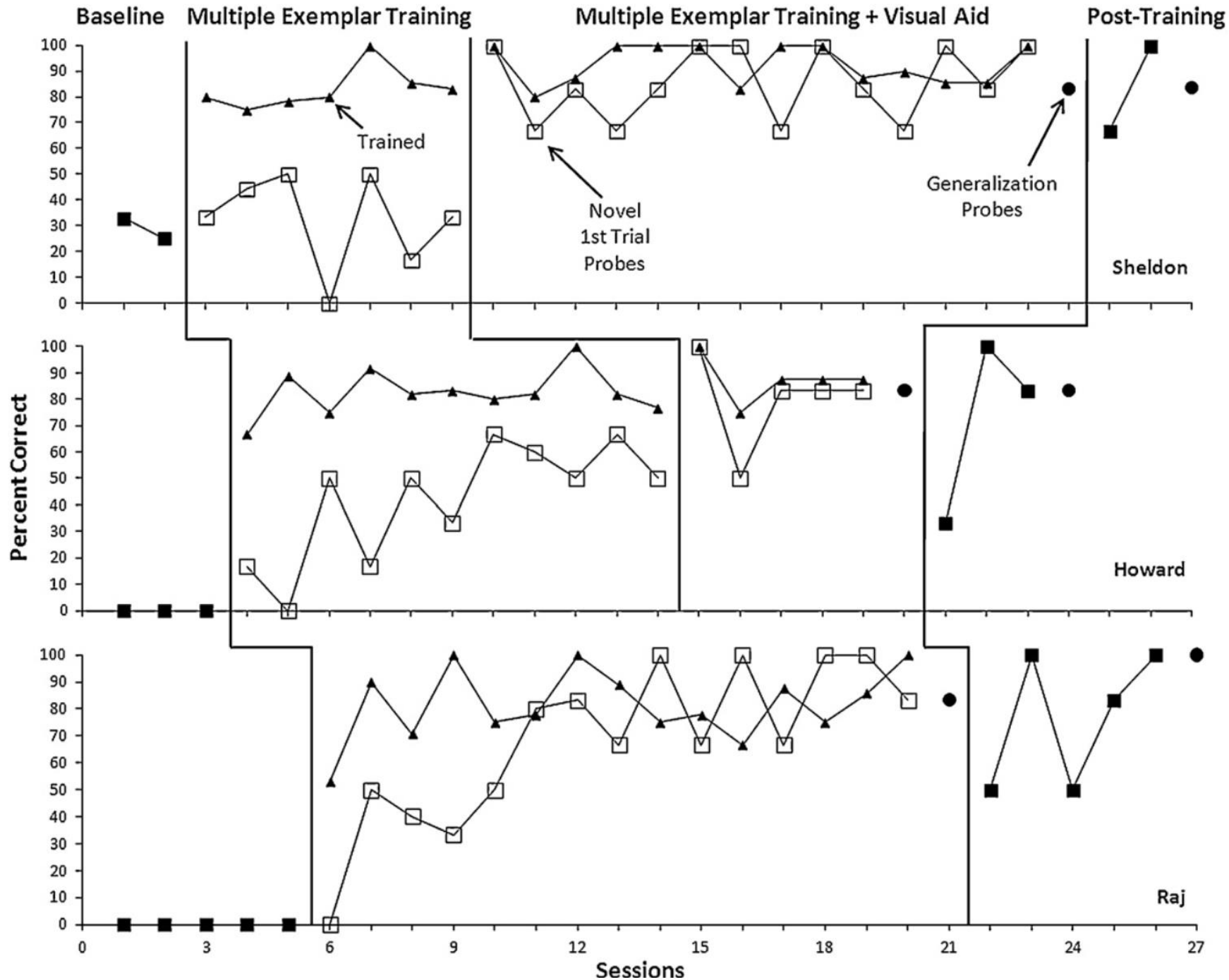
Persicke et al. (2012)

- Presented stories that described a thing or person with three properties
- Presented three metaphorical questions
  - Correct answer required identifying the property that was shared between them
- Multiple exemplar training
- Visual prompt that depicted relations between relations

“Why would I call the boy an owl?”

Boy	Owl
Stays up late at night	Bird
Wears yellow	Flies at night
Really strong	Has big eyes




Baseline
Multiple Exemplar Training
Multiple Exemplar Training + Visual Aid
Post-Training
Trained
Novel
1st Trial
Probes
Generalization
Probes
Sheldon
Howard
Raj
Percent Correct
Sessions
0
10
20
30
40
50
60
70
80
90
100
0
3
6
9
12
15
18
21
24
27

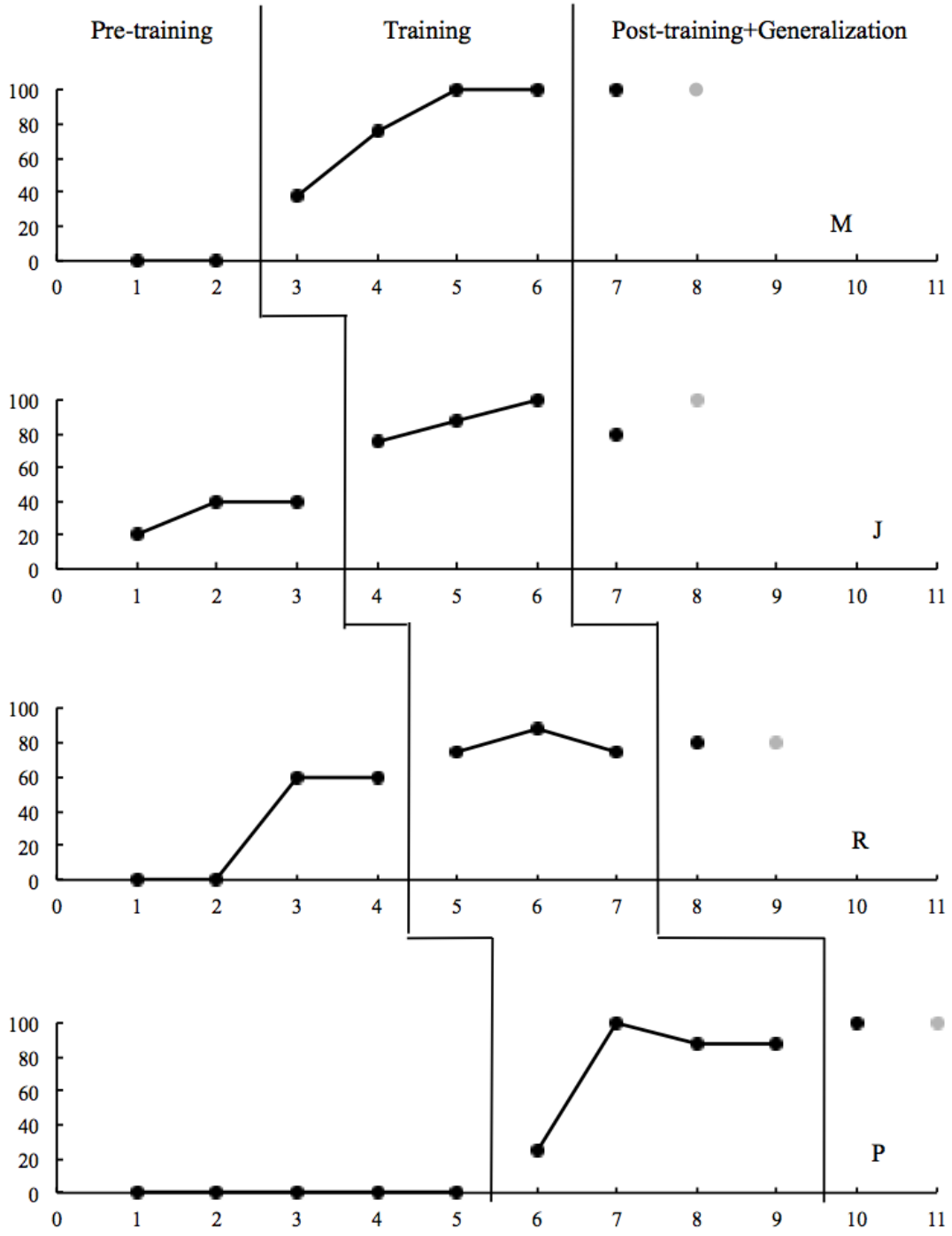
Ana Ramon Cortes (2018)

- No previous research on teaching children to create their own metaphors
- Extended Persicke 2012 to teaching children to create their own metaphors
- Multiple exemplar training until generalization to untrained metaphors
- Five typically developing six-year-old children

Ramon Cortes (2018)

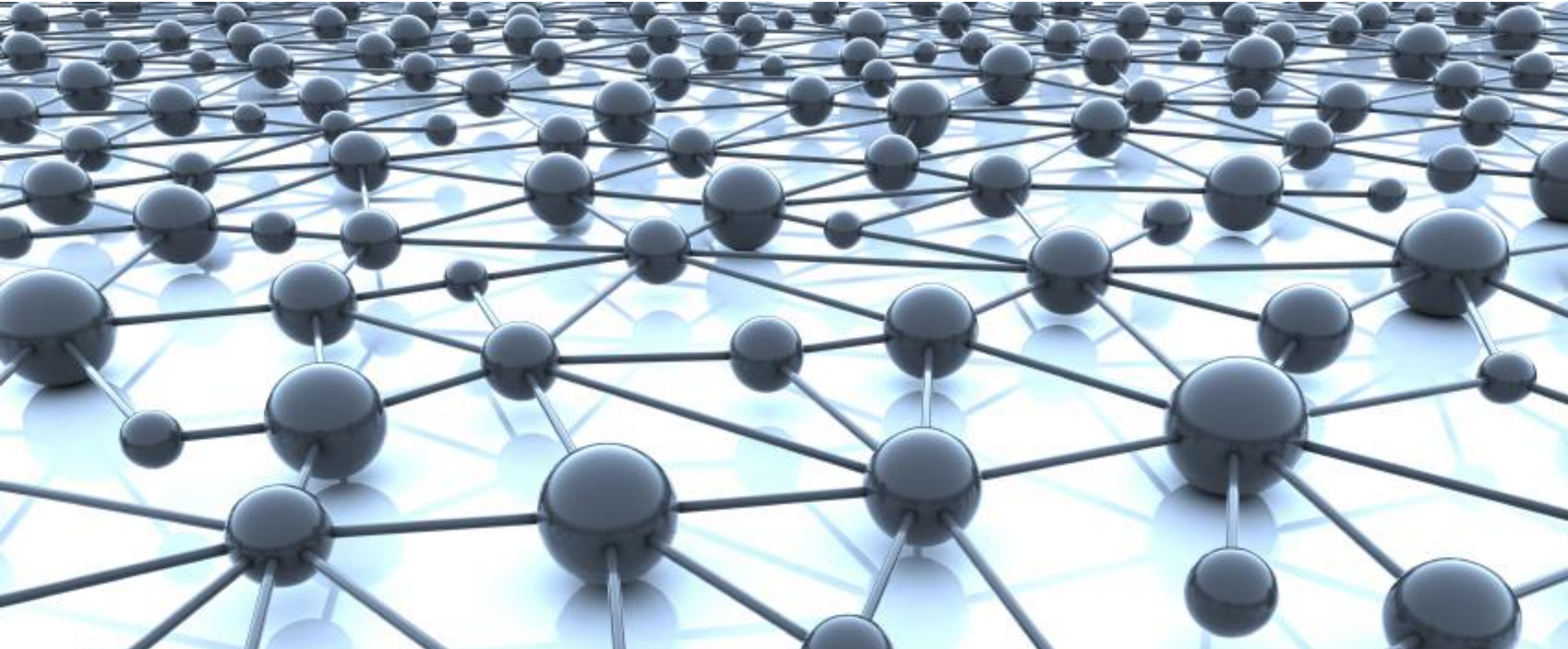
- “Imagine you have a friend who has so many animals at his house. If you wanted to say that but couldn’t say the words ‘so many animals,’ what could you say?”
- Correct answers were any metaphors that had a salient feature of having many animals, for example:
  - “His house was a zoo”
  - “His house was like a jungle”
  - “His house was like a pet store”

Ramon Cortes (2018)



Summing Up

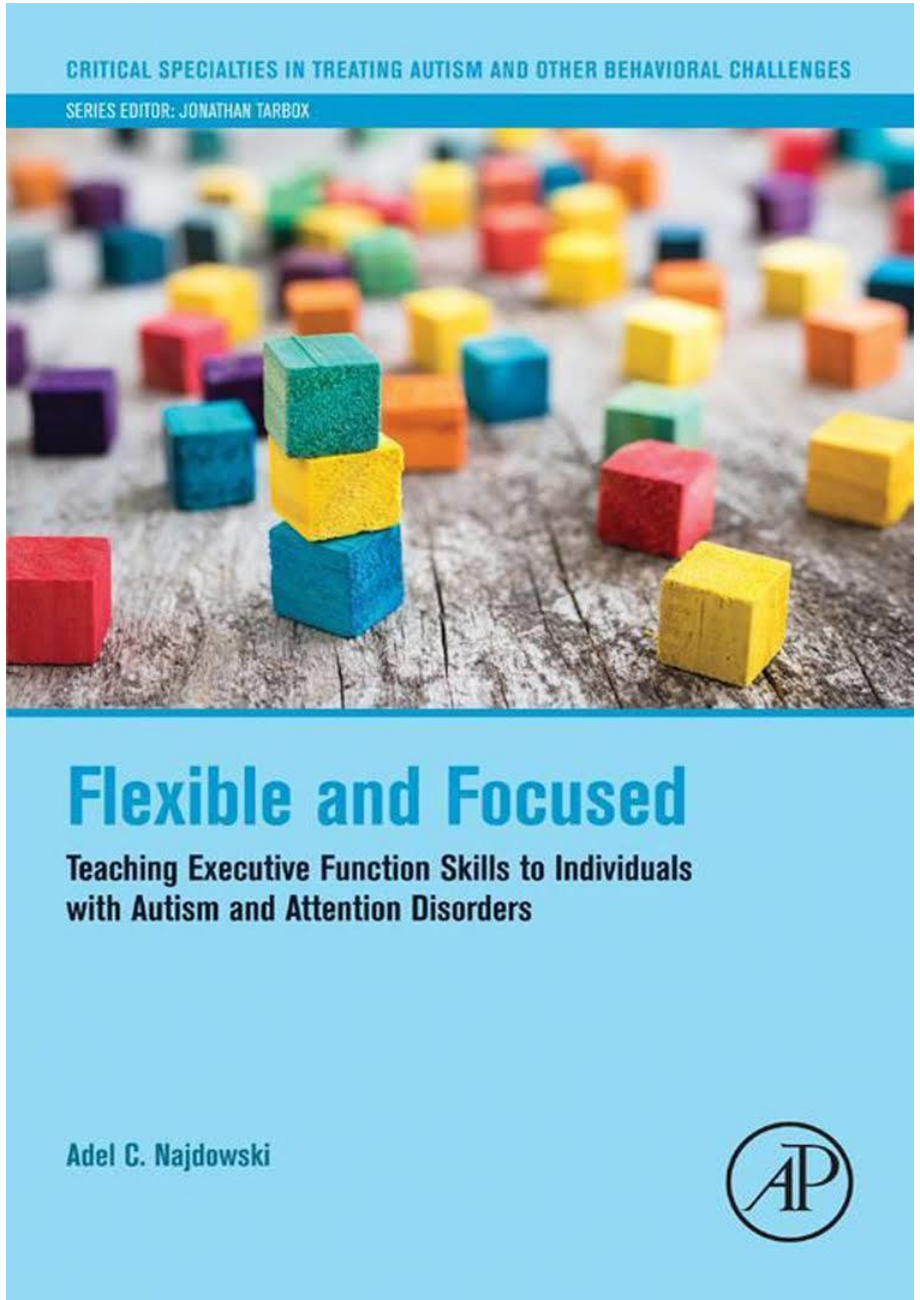
- Where was the A1, B1, C1, D1…..?

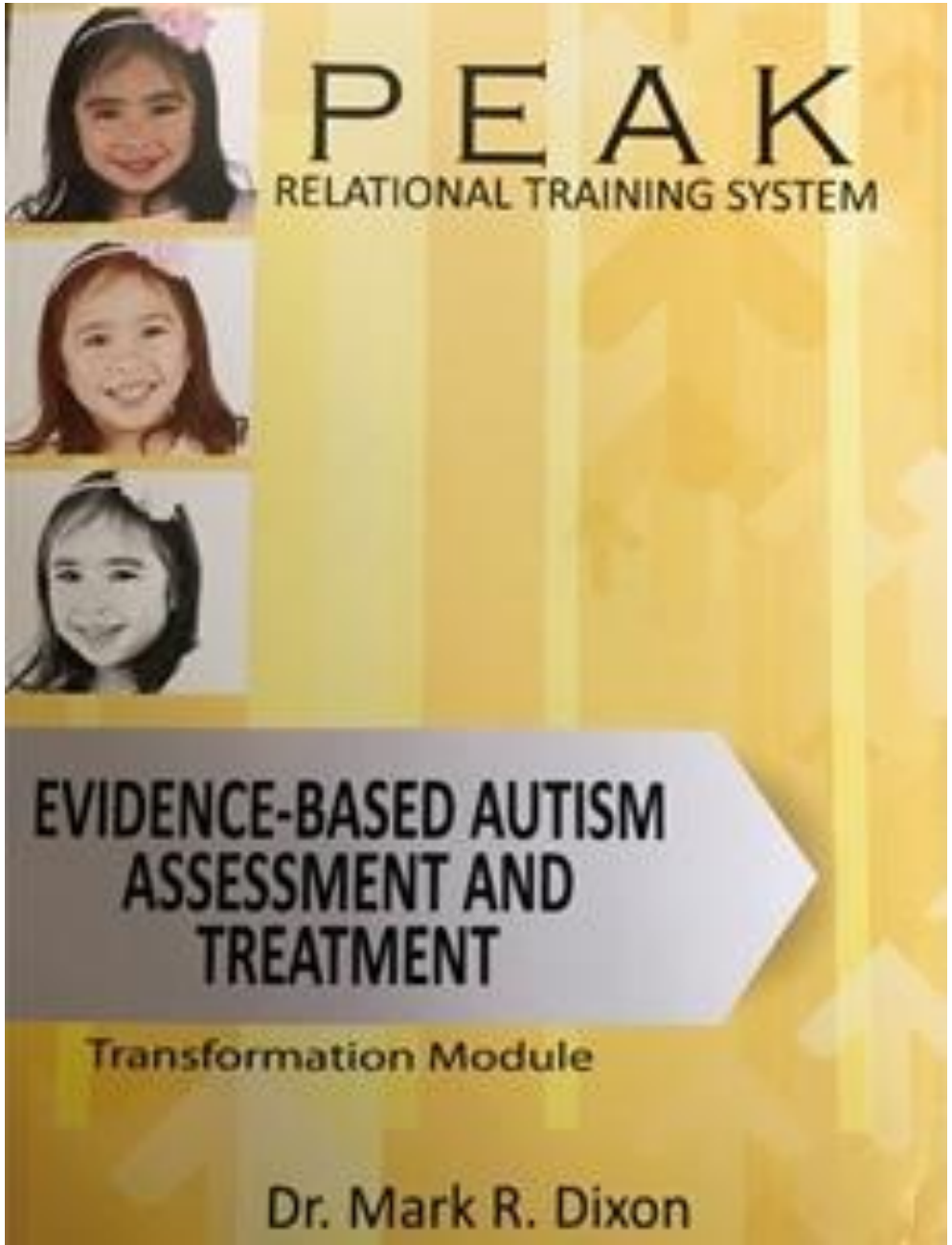


Talking RFT Differently

- Cons:
  - Less precise
  - Less sophisticated
  - Doesn’t advance basic RFT
- Pros:
  - More real life
  - Less waiting

Other Resources





Other Resources

- Rehfeldt, R. A., Fryling, M., Tarbox, J., & Hayes, L. (in press). *Applied Behavior Analysis of Language and Cognition.* Oakland: Context Press.
  - Unofficial sequel to the Cooper, Heron, and Heward "White Book"

Implications for Healthy Verbal Behavior Later…

Where Are We?

- Lots of evidence
- But almost all of it is INITIAL evidence
- Need much more
  - Replication
  - Real-life application