The background of the slide is a photograph of a desk. On the left, there is a spiral-bound notebook with a silver metal spiral binding. In the center, a blue pencil with a white eraser tip lies diagonally. To the right of the pencil, a pair of dark red-rimmed glasses is placed. A red highlighter is also visible, lying diagonally across the top right portion of the image. The entire scene is dimly lit, creating a soft, academic atmosphere.

Jennifer Ledford

June 2022

# Single Case Research

# Feedback

- I hear you about visual analysis—more coming, including activities!
- How have single case designs informed real world practice?



# Rapid Iterative Alternation

01

Alternating  
Treatments

- Reversible behaviors

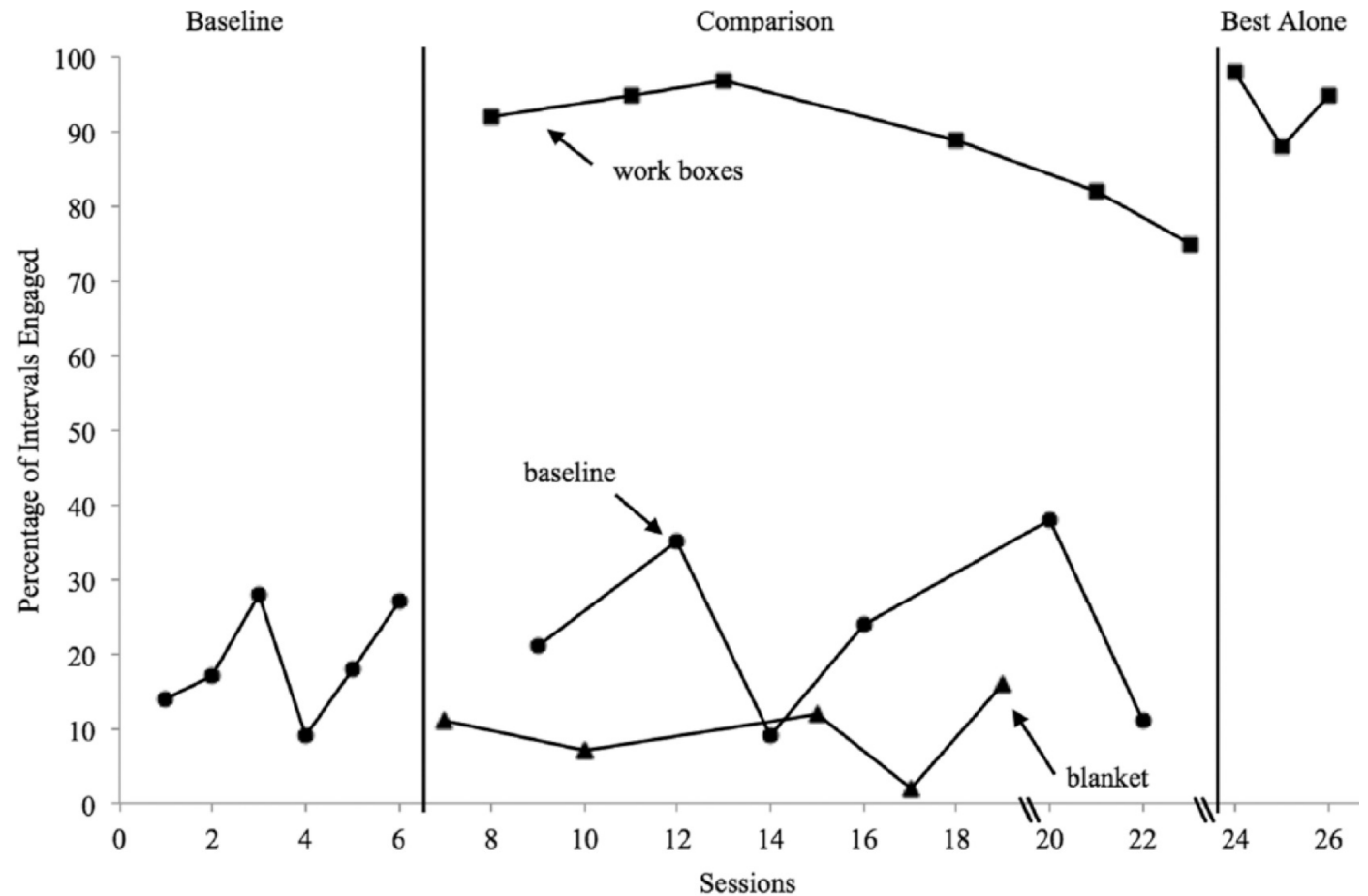
02

Adapted Alternating  
Treatments

- Non-reversible behaviors

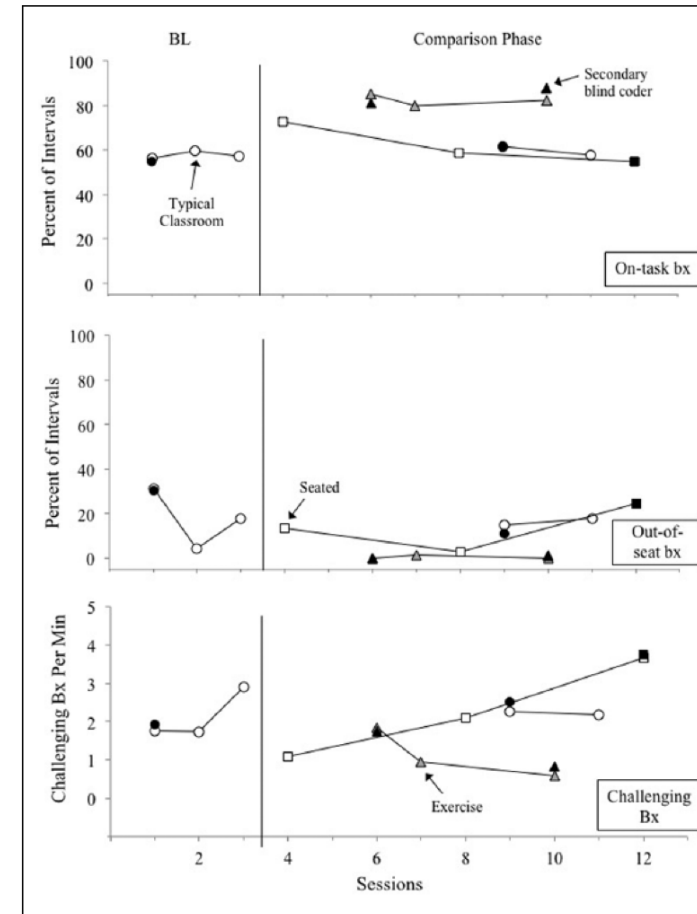
# Alternating Treatments (ATD)

- \*Zimmerman, K. N., Ledford, J. R., & \*Severini, K. E. (2019). Brief report: The effects of a weighted blanket on engagement for a student with ASD. *Focus on Autism and other Developmental Disabilities, 34*, 15-19.



# ATD

- \*Chazin, K. T., Ledford, J. R., Barton, E. E., & \*Osborne, K. O. (2018). The effects of antecedent exercise on engagement during large group activities for young children. *Remedial and Special Education, 39*, 158-170.

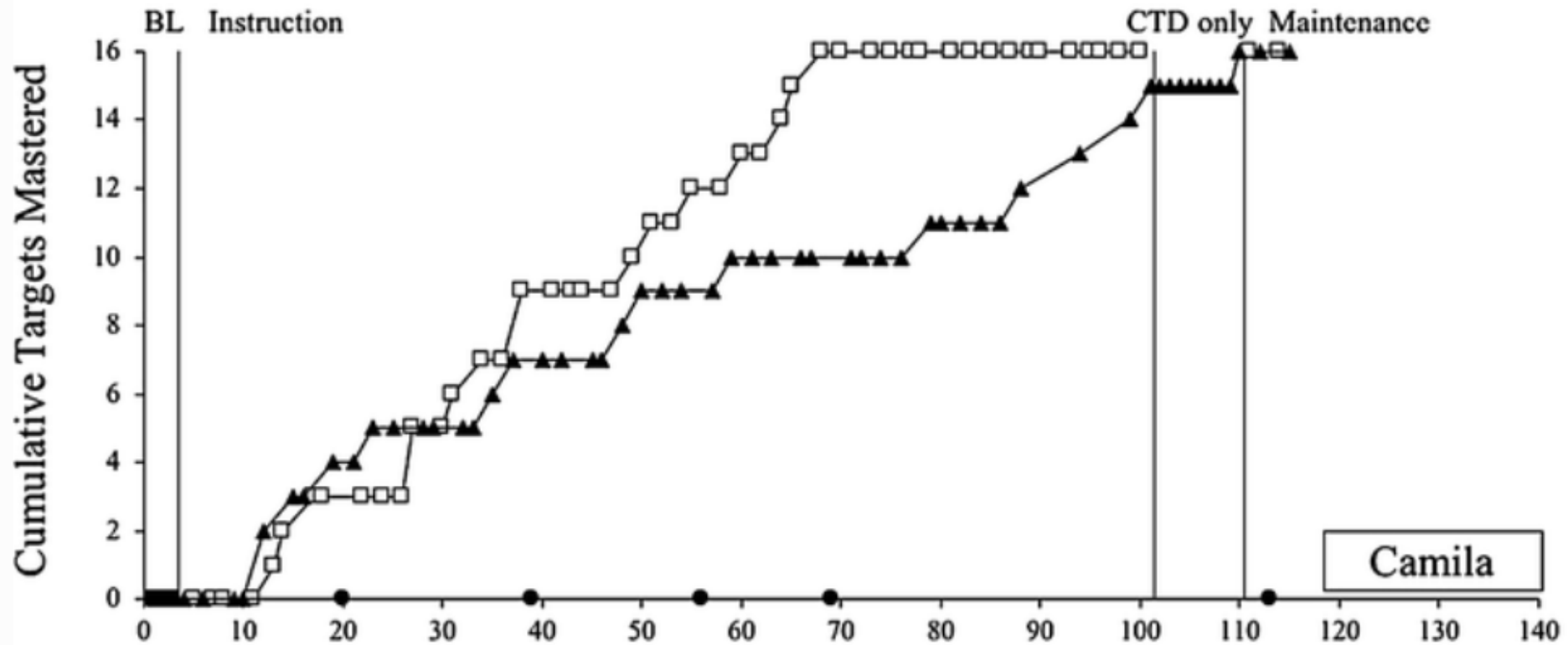


**Figure 1.** Percentage of intervals with on-task behavior (top panels), percentage of intervals with out-of-seat behavior (middle panels), and rate of challenging behaviors (bottom panels) across 10- to 12-min circle time for Aaron during all phases and conditions.

Note. Aaron was withdrawn from the study when he transferred schools. Data collected by unblinded primary coder (gray and open shapes) and blind secondary coder (closed shapes). BL = baseline; bx = behavior.

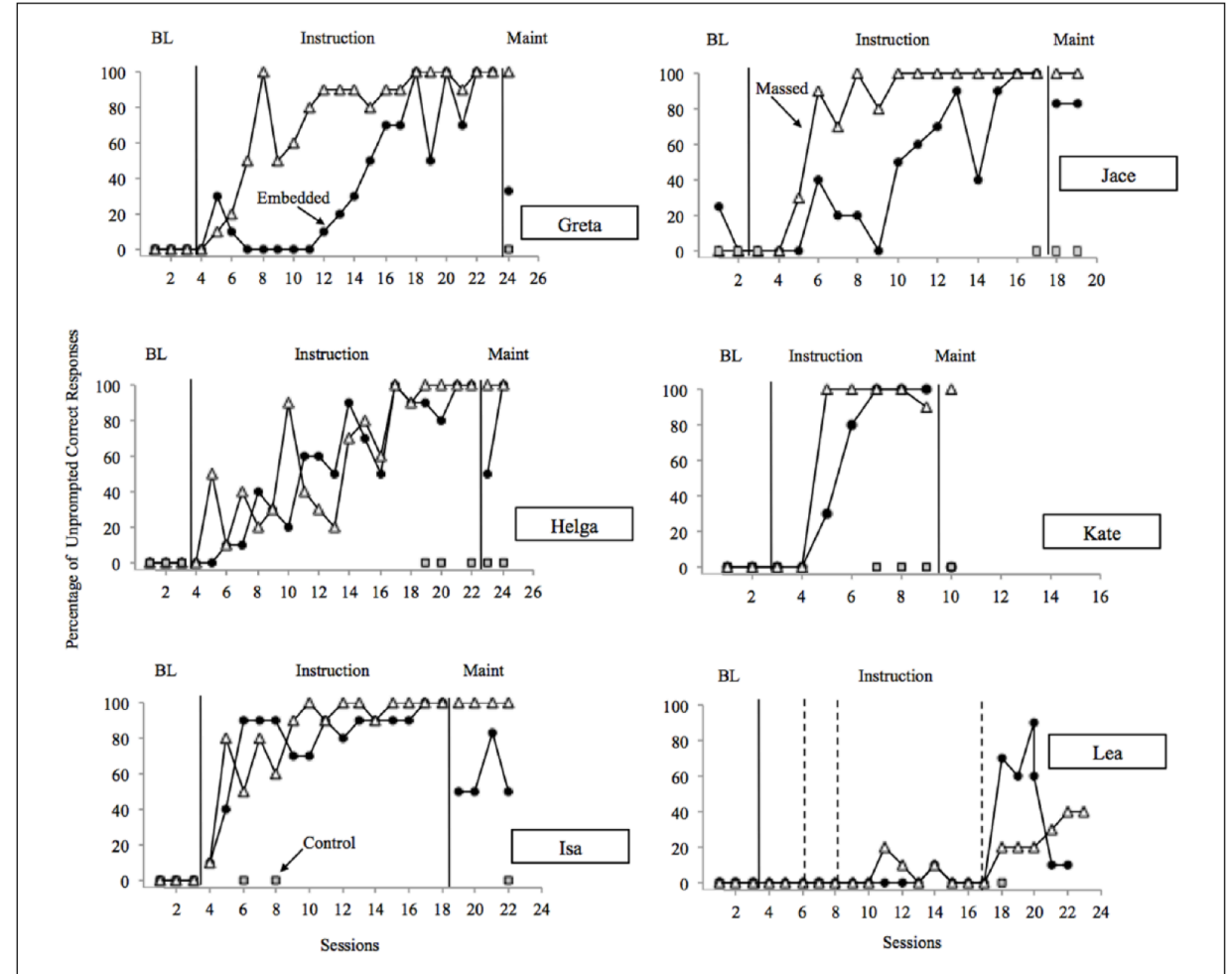
# Adapted Alternating Treatments (AATD)

- \*Chazin, K. T., & Ledford, J. R. (in press). Constant time delay and system of least prompts: Efficiency and child preference. *Journal of Behavioral Education*. doi: [10.1007/s10864-020-09396-0](https://doi.org/10.1007/s10864-020-09396-0)

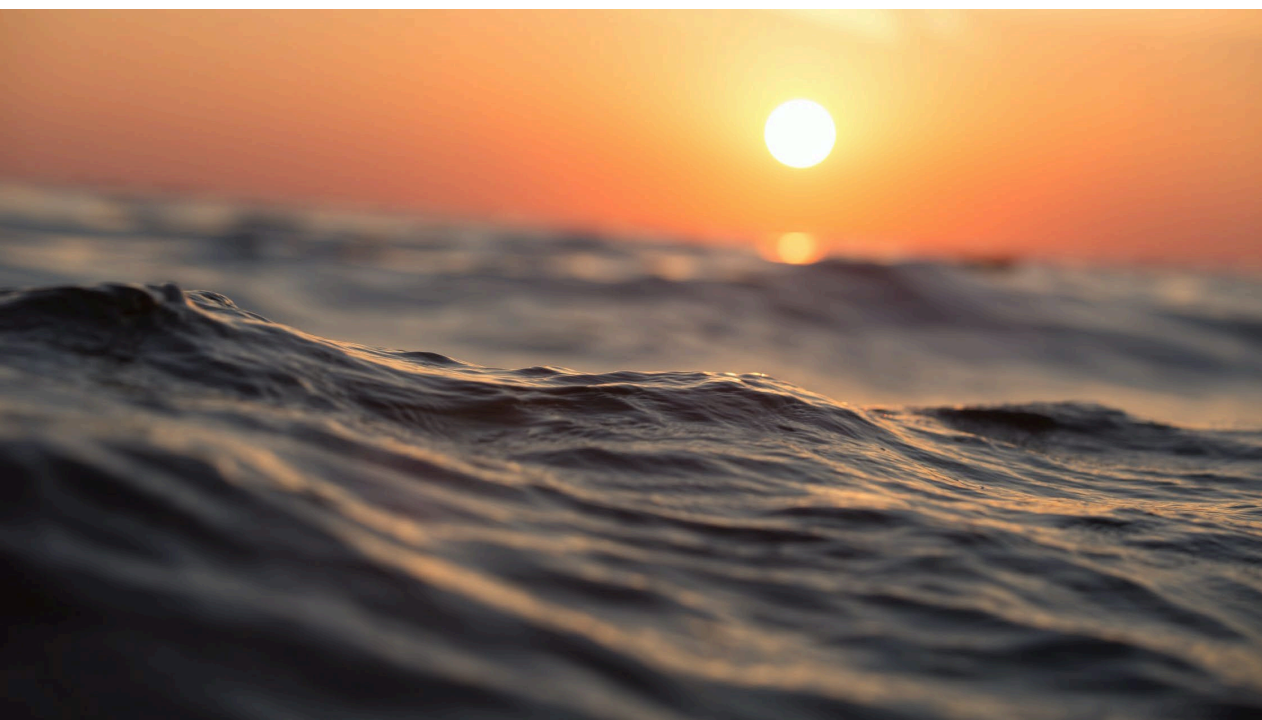


# AATD

- **Ledford, J. R., \*Chazin, K. T., \*Harbin, E. R., & \*Ward, S. R. (2017).** Massed trials versus trials embedded into game play: Child outcomes and preference. *Topics in Early Childhood Special Education, 37*, 107-120.



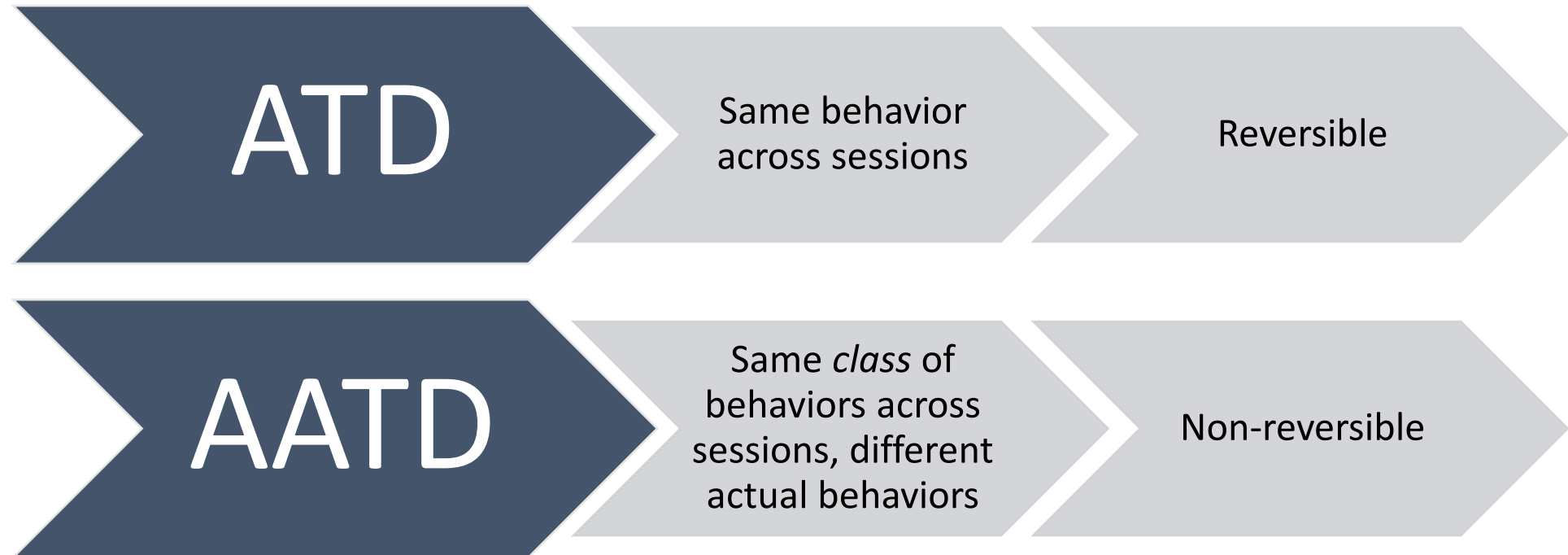
**Figure 2.** Acquisition data for participants for whom massed instruction was most efficient (Greta, Helga, Isa, Jace, Kate), and for Lea, for whom neither type was effective.  
Note. BL = Baseline.



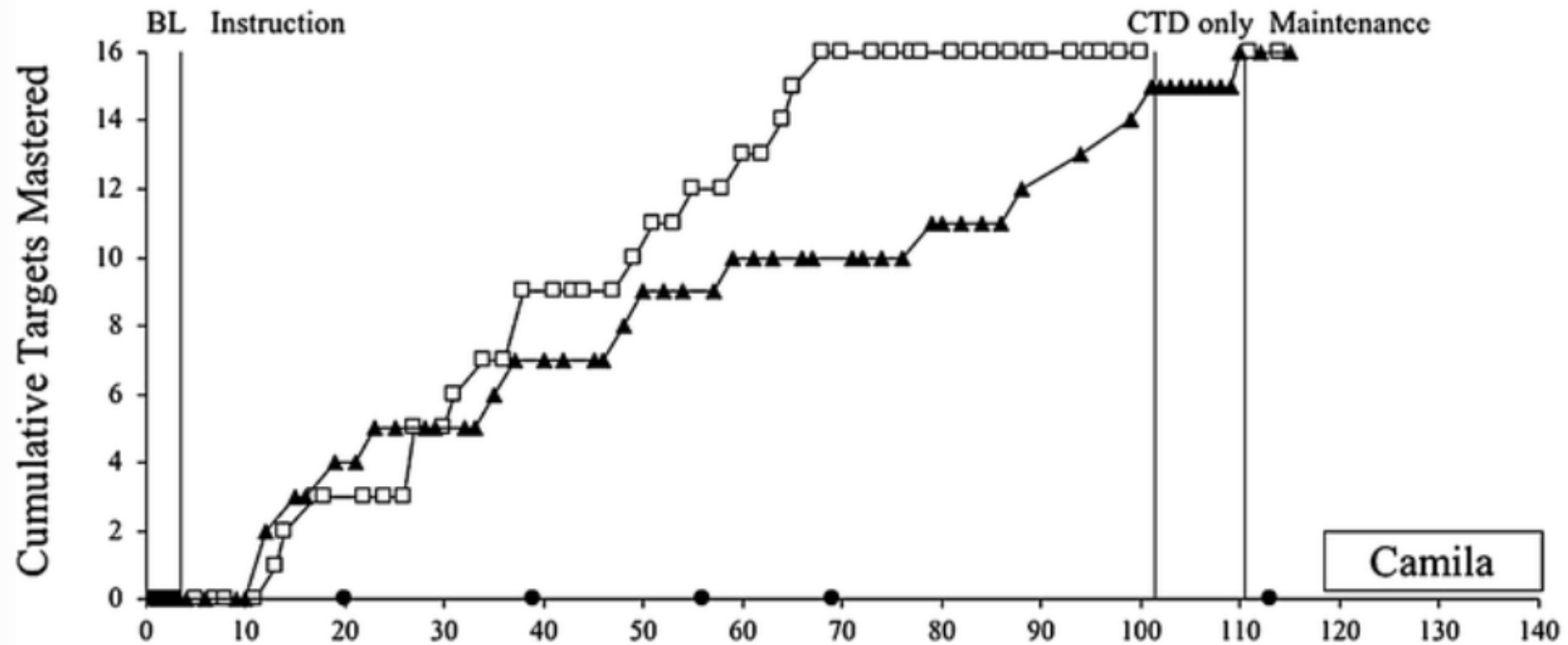
## Critical Issues for RIA Designs

- Differences between ATD and AATD
- When the design impacts your research question.
- Experimental analysis of preference

# Differences between ATD and AATD



When the design impacts your research question.



# Experimental analysis of preference

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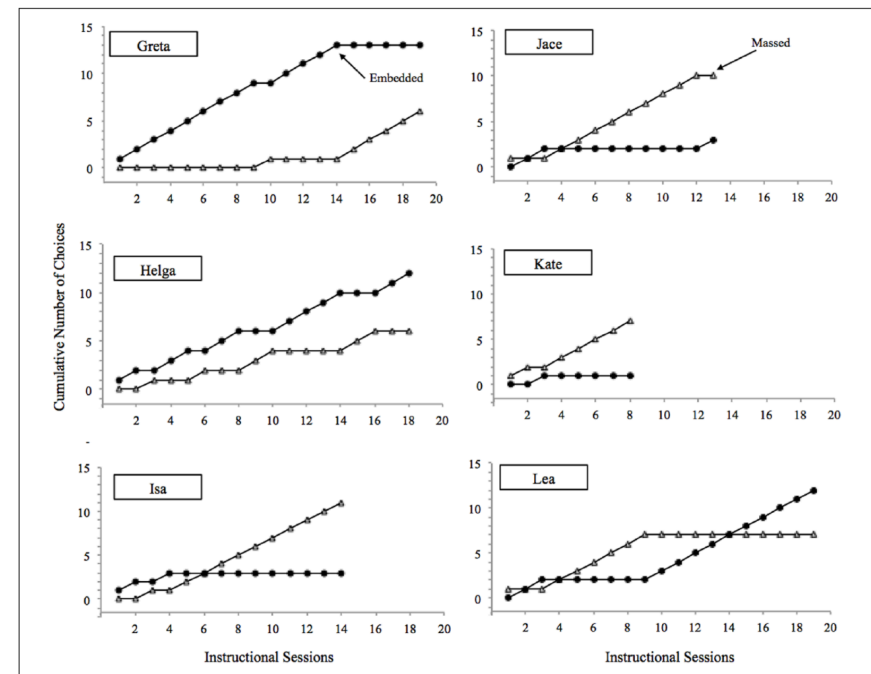


Figure 4. Preference data for participants for whom acquisition data suggested massed instruction was most efficient (and for Lea, for whom neither type was effective).

# Activity

In a group of 2-3, identify IV and DV and select an appropriate design for the scenarios





# Single Case Design Standards

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# Related References

- Horner et al., 2005
- WWC, 2020
- CEC, 2014
- EBIP website
- Ledford et al., 2022

# Components of Standards

Internal Validity

External Validity

Reporting

# History of Standards

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Exceptional Children

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*Vol. 71, No. 2, pp. 165-179.*  
*©2005 Council for Exceptional Children.*

## *The Use of Single-Subject Research to Identify Evidence-Based Practice in Special Education*

# Horner Standards (DR-SCD)

## BENEFITS

- Acknowledgement
- Rigor
- Evaluation

## DRAWBACKS

- IV, EV, Reporting Standards all together
- Inflexible

# History of Standards

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## **Council for Exceptional Children Standards for Evidence-Based Practices in Special Education**

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# CEC Standards (CEC-EBP)

## BENEFITS

- Improved evidence rules
- Took out some extraneous standards

## DRAWBACKS

- Unwieldy
- Doesn't specify clear rules

WWC  
(2010....2020)

Pilot→Not

3/5/20→300 participants

Visual analysis→Not

Purpose

Criticism

## Benefits of Standards

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Standardization for  
Developing Studies

---

Clear Evaluation of  
Published Studies

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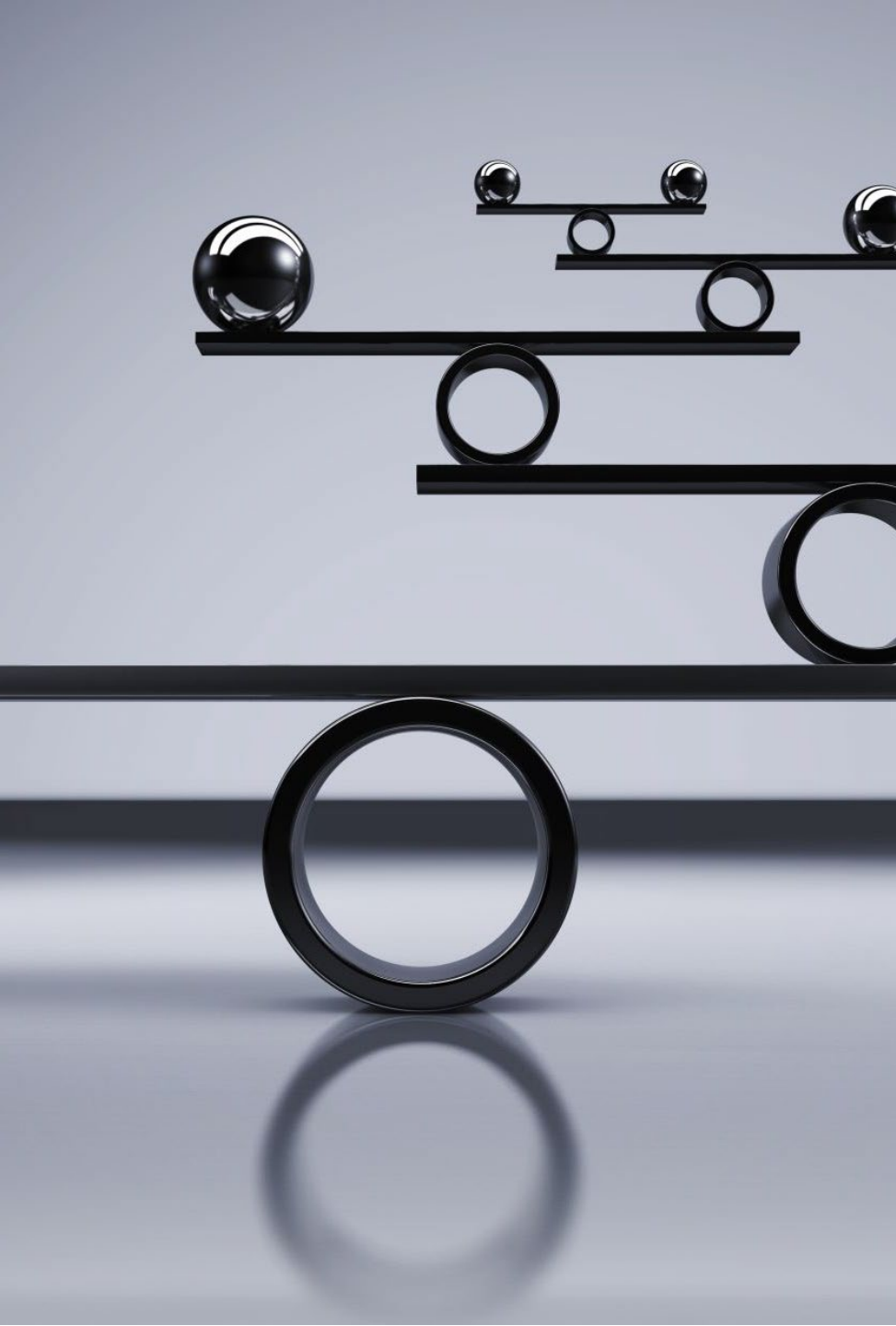
Inclusion Criteria for  
Reviews



# Generally Agreed Upon

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- Interobserver agreement
  - Defined differently
- Procedural fidelity
  - Mostly
- Sufficient data
  - Defined differently
- Sufficient demonstrations
  - Defined differently



# Disagreement/Not always included

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- Analysis
- Social validity
- Ethics



# Breakout Rooms

- Read assigned section. What do you agree/disagree with? What questions do you have?
- 1: IV 1<sup>st</sup> page
- 2: IV 2<sup>nd</sup> page
- 3: EV/SV (page and a half)
- 4: Reporting 1<sup>st</sup> page
- 5: Reporting 2<sup>nd</sup> page



Measurement &  
Related  
Complexities

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# Related References

- Ledford et al., 2014?
- Yoder et al., 2018
- Pyr...
- Pustejovsky...
- Chow (CB)

# General Framework

- General measurement in SCD
- Bias/drift detection
- Generalized/context bound behaviors
- Estimation



# Breakout Rooms

- QUESTIONS

# Exit Activity

ACTIVITY

