Home-Based ABA Services: Maintaining High Standards and Best Practices in Function-Based Treatment

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Conducting Functional Analyses in Home-Based Settings: Preliminary Data on Resources Needed

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Introduction

- Functional analysis (FA) is a powerful tool to assess challenging behavior
  - Systematic manipulation of antecedent and consequent variables
  - Experimentally determine function
  - Lead to effective, function-based treatments
- Meta-analysis Data
  - 94% differentiated outcomes (Beavers, Iwata, & Lerman, 2013)

(Hagopian, Rooker, Jessel, & DeLeon, 2013; Hanley, Iwata, & McCord, 2003; Iwata, Dorsey, Slifer, Bauman, & Richman, 1982/1994; Vollmer & Northup, 1996)

Introduction

- FAs have been modified from standard FA

  - Modifications increase efficiency in conducting FAs

  - When initial FAs are undifferentiated, modifications may result in differentiated outcomes

(Beavers, Iwata, & Lerman, 2013; Hagopian, Rooker, Jessel, & DeLeon, 2013; Hanley, Iwata, & McCord, 2003; Hanley, 2012, Iwata & Dozier, 2008)

Design Modifications	Description	References
Brief FA	Definition is inconsistent in the literature Same number of conditions as standard FA but fewer sessions per condition (Hanley, Iwata, & McCord, 2003)	(Cihak, Alberto, & Frederick, 2007; Gardner, Spencer Boelter, Dubard, & Jannett, 2012; Lydon, Healy, O'Reilly, & Lang, 2012; Northup et al., 1991; Tincani, Castrogiavanni, & Axelrod, 1999; Wallace & Iwata, 1999)
Modified Standard FA	Duration of analysis is reduced - Shortened sessions (5-10 min) - Reduced number of sessions - Fewer conditions	Only for the purposes of this presentation
Trial-Based FA	The discriminative stimulus (SD) or establishing operation (EO) is presented one trial at a time. Measures percentage of trials with challenging behavior	(Bloom, Lambert, Dayton, & Samaha, 2013)
Precursor FA	The target behavior itself is not assessed. Precursor behaviors (behaviors that reliably precede the target behavior) are assessed.	(Fritz, Iwata, Hammond, & Bloom, 2013; Herscovitch, Roscoe, Libby, Bourret, & Ahearn, 2009; Najdowski, Wallace, Ellsworth, & MacAleese, 2008, Smith & Churchill, 2002)

Design Modifications	Description	References
Synthesized FA	Alternates between test and control conditions More than one function is targeted in the test condition	(Hanley, Jin, Vanselow, & Hanratty 2014)
Single-Function FA	Alternates between one test and one control conditions Only one function is targeted in the test condition	(Iwata & Dozier, 2008)
Latency FA	Latency to the first instance of the target behavior is measured Session is terminated following the first response	(Thomason-Sassi, Iwata, Neidert, & Roscoe, 2011)

Introduction

- Modifications:
  - Are supported in the literature
  - Maintain high experimental standards
  - Increase ease of conducting FAs in homes
- Few published studies on FAs in home-based settings

  (Hanley, Iwata, & McCord, 2003)

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Purpose

- ▶ Describe how our agency effectively modified FAs for home-based settings

- ▶ Describe the resources we utilized to conduct FAs in home-based settings

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Method

- BCBAs from ABACS submitted lists of FAs they had conducted
  - FAs were conducted as part of agency's standard service model
    - During assessment process or part of on-going treatment
  - Across all full-time BCBAs

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Method

- Criteria for inclusion:
  - FA information readily available:
    - Operational definitions
    - Clear description of FA methodology
    - Raw data

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Method

- Of all FAs conducted, 25 met the inclusion criteria
- Conducted between June 2013 and April 2015
- For each FA, we collected the following data:
  - Behavior assessed
  - FA type
  - FA results (Roane, Fisher, Kelley, Meyers, & Bouxsein, 2013)
  - Procedural Integrity (PI)
  - Interobserver Agreement (IOA)
  - Resources for conducting FA

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Results – Functional Analyses

- Behaviors analyzed:
  - Tantrum (7)
  - Noncompliance (4)
  - Self-Injurious Behavior (SIB) (4)
  - Aggression (3)
  - Food Refusal (2)
  - Stereotypy (1)
  - Loud Vocals / Screaming (1)
  - Precursors to challenging behavior (1)
  - Pica (1)
  - Ripping (1)

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Results – Functional Analyses

▶ The 25 FAs will be presented in table format

▶ Tables organized by FA measurement method utilized

  ▶ Table 1: Rate

  ▶ Table 2: Frequency

  ▶ Table 3: Percentage of Intervals

  ▶ Table 4: Latency

▶ FAs further organized by FA type

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Results – Functional Analyses

Sample Table

Functional Analyses Organized by Measurement Method

			Functional Analysis Information						
			Conditions Tested						
Case	FA Type	Behavior	Social Pos (Attn.)	Social Pos (Tang.)	Social Neg (Escape)	Auto. (Alone)	Control	Other	Function

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Results – Functional Analyses

Table 1

Mean Rate (per Min) of Problem Behavior for Each Functional Analysis Condition and Interpretation of the Function.

| | | | Functional Analysis Information | | | | | | |
| | | | Conditions Tested | | | | | | |
Case	FA Type	Behavior	Social Pos (Attn.)	Social Pos (Tang.)	Social Neg (Escape)	Auto. (Alone)	Control	Other	Function
1	Standard (M)	AGG	0.5	10.67	6.33	-	0	-	Multiple
2	Standard (M)	AGG/ED	3.00	-	3.67	1.67	0.67	-	Multiple
3	Standard (M)	SIB	0.00	2.93	1.00	0.00	0	4.20	Escape
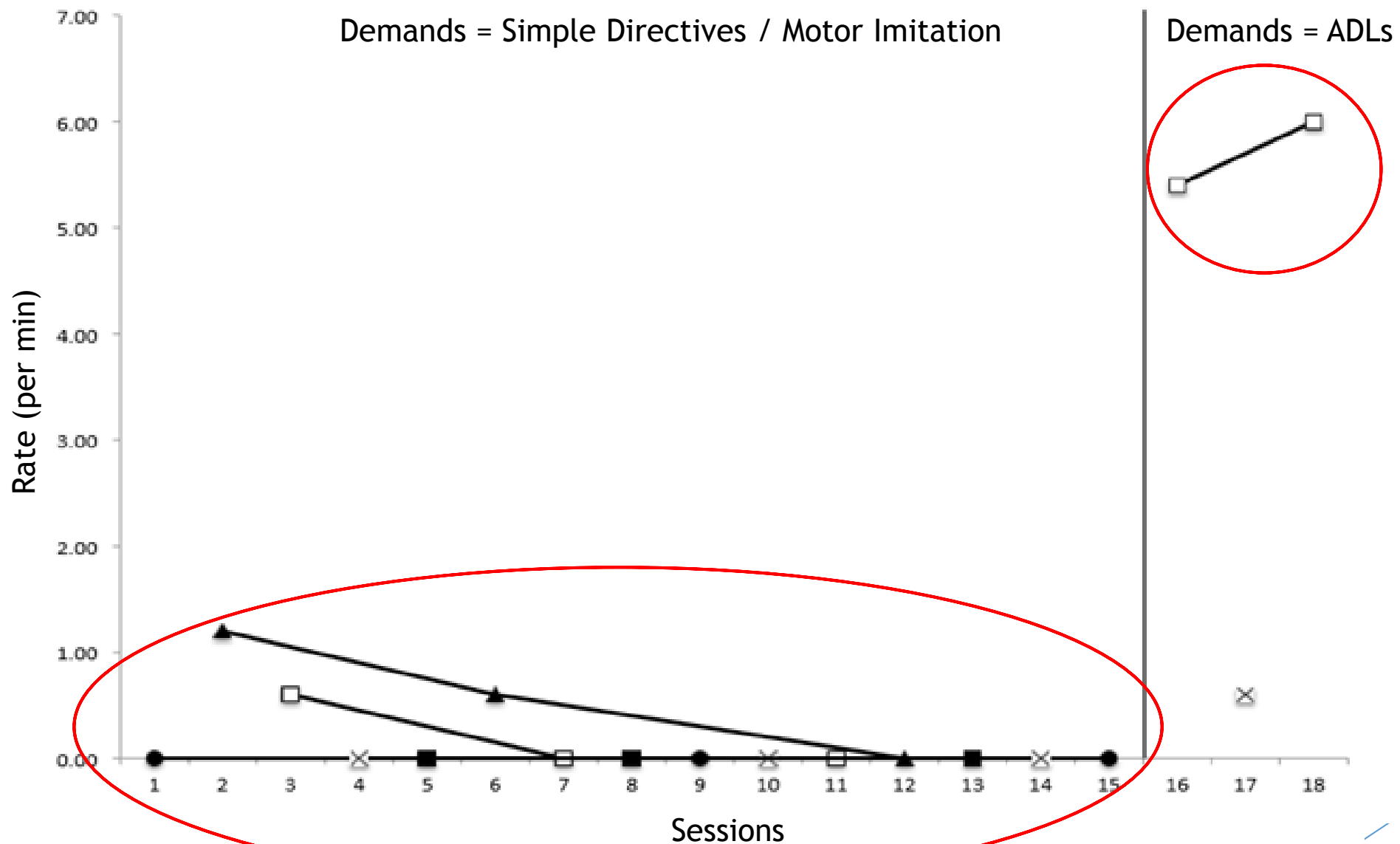
Figure 1. Case 3, a functional analysis of self-injury

Results – Functional Analyses

Table 2

Mean Frequency (per Session) of Problem Behavior for Each Functional Analysis Condition and Interpretation of the Function.

			Functional Analysis Information						
			Conditions Tested						
Case	FA Type	Behavior	Social Pos (Attn.)	Social Pos (Tang.)	Social Neg (Escape)	Auto. (Alone)	Control	Other	Function
4	Standard (M)	SIB	1.33	1.33	0.33	4.67	0.67	-	Undifferentiated
5	Standard (M)	SIB	2.00	2.67	0.00	7.67	4.00	-	Undifferentiated
6	Standard (M)	Tantrum	3.00	9.67	10.33	-	0.00	-	Multiple
7	Standard (M)	Pica	7.33	7.67	-	7.33	5.33	5.00	Automatic

Results – Functional Analyses

Table 2

Mean Frequency (per Session) of Problem Behavior for Each Functional Analysis Condition and Interpretation of the Function.

			Functional Analysis Information						
			Conditions Tested						
Case	FA Type	Behavior	Social Pos (Attn.)	Social Pos (Tang.)	Social Neg (Escape)	Auto. (Alone)	Control	Other	Function
4	Standard (M)	SIB	1.33	1.33	0.33	4.67	0.67	-	Undifferentiated
5	Standard (M)	SIB	2.00	2.67	0.00	7.67	4.00	-	Undifferentiated
6	Standard (M)	Tantrum	3.00	9.67	10.33	-	0.00	-	Multiple
7	Standard (M)	Pica	7.33	7.67	-	7.33	5.33	5.00	Automatic
8	Brief	Ripping	1.00	4.00	3.00	0.00	0.00	-	Multiple

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Results – Functional Analyses

Table 2

Mean Frequency (Per Session) of Problem Behavior for Each Functional Analysis Condition and Interpretation of the Function.

| | | | Functional Analysis Information | | | | | | |
| | | | Conditions Tested | | | | | | |
Case	FA Type	Behavior	Social Pos (Attn.)	Social Pos (Tang.)	Social Neg (Escape)	Auto. (Alone)	Control	Other	Function
4	Standard (M)	SIB	1.33	1.33	0.33	4.67	0.67	-	Undifferentiated
5	Standard (M)	SIB	2.00	2.67	0.00	7.67	4.00	-	Undifferentiated
6	Standard (M)	Tantrum	3.00	9.67	10.33	-	0.00	-	Multiple
7	Standard (M)	Pica	7.33	7.67	-	7.33	5.33	5.00	Automatic
8	Brief	Ripping	1.00	4.00	3.00	0.00	0.00	-	Multiple
9	Single-Function	Tantrum	-	-	8.25	-	0.00	-	Escape
10	Single-Function	Tantrum	-	11.33	-	-	0.00	-	Tangible
11	Single-Function	AGG	-	9.00	-	-	0.00	-	Tangible
12	Single-Function	NC	-	-	8.67	-	0.00	-	Escape
13	Single-Function	NC	-	-	0.00	-	0.00	-	Undifferentiated
14	Single-Function	NC	-	-	6.00	-	0.00	-	Escape
15	Single-Function	NC	-	-	3.00	-	0.00	-	Escape
16	Single-Function	SIB	68.00	-	-	-	62.50	-	Undifferentiated

Results – Functional Analyses

Table 3

Mean Percentage of Intervals In Which Problem Behavior Occurred for Each Functional Analysis Condition and Interpretation of the Function.

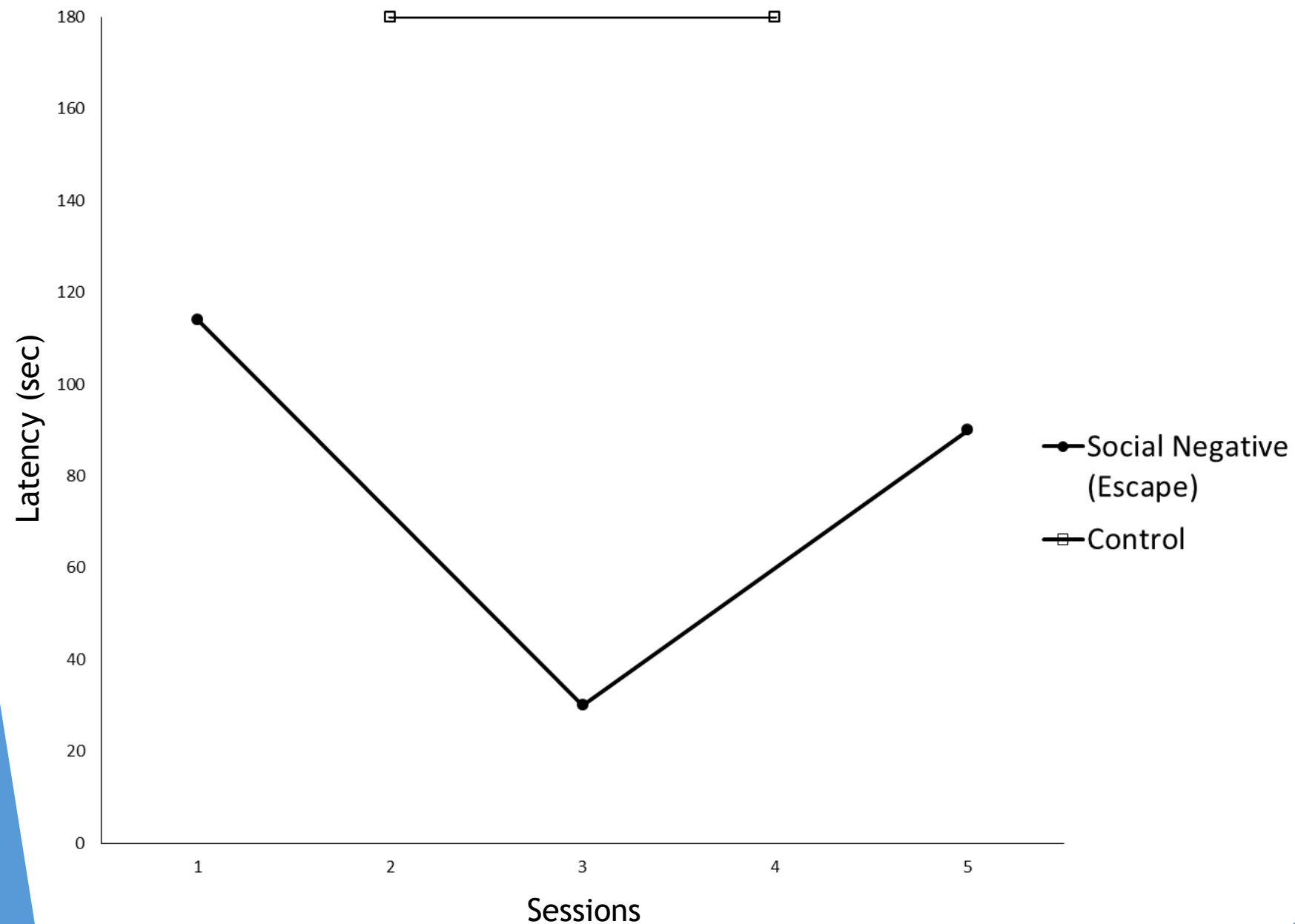| | | | Functional Analysis Information | | | | | | |
| | | | Conditions Tested | | | | | | |
Case	FA Type	Behavior	Social Pos (Attn.)	Social Pos (Tang)	Social Neg (Escape)	Auto. (Alone)	Control	Other	Function
17	Brief	Stereotypy	30%	-	0%	100%	83%	-	Multiple (Primarily Automatic)

Results – Functional Analyses

Table 4

Mean Latency (sec) to Engage in the First Instance of Challenging Behavior For Each Functional Analysis Condition and Interpretation of the Function

| | | | Functional Analysis Information | | | | | | |
| | | | Conditions Tested | | | | | | |
Case	FA Type	Behavior	Social Pos (Attn.)	Social Pos (Tang)	Social Neg (Escape)	Auto. (Alone)	Control	Other	Function
18	Brief	Tantrum	300.0	17.0	190.0	-	7.5	24.0	Undifferentiated

Results – Functional Analyses

Table 4

Mean Latency (sec) to Engage in the First Instance of Challenging Behavior For Each Functional Analysis Condition and Interpretation of the Function

| | | | Functional Analysis Information | | | | | | |
| | | | Conditions Tested | | | | | | |
Case	FA Type	Behavior	Social Pos (Attn.)	Social Pos (Tang)	Social Neg (Escape)	Auto. (Alone)	Control	Other	Function
18	Brief	Tantrum	300.0	17.0	190.0	-	7.5	24.0	Undifferentiated
19	Trial-Based	Food Refusal	-	-	5.33	-	120.0	-	Escape
20	Trial-Based	Food Refusal	-	1.74	-	-	120.0	-	Tangible

Results – Functional Analyses

Table 4

Mean Latency (sec) to Engage in the First Instance of Challenging Behavior For Each Functional Analysis Condition and Interpretation of the Function

			Functional Analysis Information						
			Conditions Tested						
Case	FA Type	Behavior	Social Pos (Attn.)	Social Pos (Tang)	Social Neg (Escape)	Auto. (Alone)	Control	Other	Function
18	Brief	Tantrum	300.0	17.0	190.0	-	7.5	24.0	Undifferentiated
19	Trial-Based	Food Refusal	-	-	5.33	-	120.0	-	Escape
20	Trial-Based	Food Refusal	-	1.74	-	-	120.0	-	Tangible
21	Precursor	AGG	-	-	-	-	180.0	2.0	Tangible

Results – Functional Analyses

Table 4

Mean Latency (sec) to Engage in the First Instance of Challenging Behavior For Each Functional Analysis Condition and Interpretation of the Function

| | | | Functional Analysis Information | | | | | | |
| | | | Conditions Tested | | | | | | |
Case	FA Type	Behavior	Social Pos (Attn.)	Social Pos (Tang)	Social Neg (Escape)	Auto. (Alone)	Control	Other	Function
18	Brief	Tantrum	300.00	17.00	190.00	-	7.50	24.00	Undifferentiated
19	Trial-Based	Food Refusal	-	-	5.33	-	120.00	-	Escape
20	Trial-Based	Food Refusal	-	1.74	-	-	120.00	-	Tangible
21	Precursor	AGG	-	-	-	-	180.00	2.00	Tangible
22	Single-Function	Tantrum	-	-	95.30	-	180.00	-	Escape
23	Single-Function	AGG	-	-	40.30	-	300.00	-	Escape
24	Single-Function	AGG	-	72.30	-	-	186.00	-	Tangible
25	Single-Function	Screaming	-	109.00	-	-	180.00	-	Tangible

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Figure 4. Case 22, a functional analysis of tantrums

Results – Functional Analyses

Table 5

Functional Analysis Design Information

Design Element	Average	Range
Conditions per FA	3.1	2-5
Number of Sessions per FA	8.1	4-18
Session Length per FA	5.1 min	2 - 10 min

Results – Functional Analyses

- PI data were collected for 16/25 (64%) FAs
  - PI collected for at least 25% of sessions per FA

- IOA data were collected for 16/25 (64%) FAs
  - IOA collected for at least 33% of sessions per FA

Results – Functional Analyses

Table 6

Procedural Integrity (PI) and Interobserver Agreement (IOA)

Data	Average (%)	Range (%)
PI	97.35	93.50 - 100.0
IOA	93.07	76.33 - 100.0

Results – Functional Analyses

- 20/25 (80%) of FAs conducted were differentiated
  - Lower than published data

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Results - Resources

Table 7

Resources Needed Per Functional Analyses

Case	Number of Staff Needed	Credentials of Staff	Resources					Cost
			In-FA Time	In-Consult Time	Time to Collect PI	Time to Collect IOA	
1	1	Masters	55	120	-	-	$250
2	2	Ph.D.	88	420	24	284	$2100
3	2	Masters	90	270	-	-	$1125
4	2	Masters	150	180	39	162	$750
5	2	Caregiver	150	180	22	62	$750
6	1	Masters	60	120	-	-	$250
7	1	Masters	75	90	25	95	$375
8	1	Masters	50	180	-	-	$375
9	1	Caregiver	30	150	22	90	$312
10	1	Masters	30	120	-	-	$250
11	1	Masters	50	120	-	-	$250
12	1	Caregiver	15	120	8	47	$250

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Results - Resources

Table 7

Resources Needed Per Functional Analyses

Case	Number of Staff Needed	Credentials of Staff	In-FA Time	In-Consult Time	Time to Collect PI	Time to Collect IOA	Cost
				Resources			
1	1	Masters	55	120	-	-	$250
2	2	Ph.D.	88	420	24	284	$2100
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4	2	Masters	150	180	39	162	$750
5	2	Caregiver	150	180	22	62	$750
6	1	Masters	60	120	-	-	$250
7	1	Masters	75	90	25	95	$375
8	1	Masters	50	180	-	-	$375
9	1	Caregiver	30	150	22	90	$312
10	1	Masters	30	120	-	-	$250
11	1	Masters	50	120	-	-	$250
12	1	Caregiver	15	120	8	47	$250

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Results - Resources

Table 8

Resources Needed Per Functional Analyses

Case	Number of Staff Needed	Credentials of Staff	Resources					Cost
			In-FA Time	In-Consult Time	Time to Collect PI	Time to Collect IOA	
13	1	Masters	15	120	3	24	$250
14	1	Masters	15	180	8	30	$375
15	1	Masters	15	180	3	12	$375
16	1	Masters	20	120	11	40	$250
17	1	Masters	20	180	-	-	$375
18	2	Masters	9.26	120	-	-	$500
19	1	Masters	12.5	120	38	-	$250
20	1	Masters	12.1	-	-	-	-
21	1	Masters	6.1	60	5	18	$125
22	1	Masters	9.9	180	3	27	$375
23	1	Masters	10.68	120	-	-	$250
24	1	Masters	9.81	-	-	-	-
25	1	Masters	11.8	120	12	39	$250

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Results - Resources

Table 8

Resources Needed Per Functional Analyses

			Resources				
Case	Number of Staff Needed	Credentials of Staff	In-FA Time	In-Consult Time	Time to Collect PI	Time to Collect IOA	Cost
13	1	Masters	15	120	3	24	$250
14	1	Masters	15	180	8	30	$375
15	1	Masters	15	180	3	12	$375
16	1	Masters	20	120	11	40	$250
17	1	Masters	20	180	-	-	$375
18	2	Masters	9.26	120	-	-	$500
19	1	Masters	12.5	120	38	-	$250
20	1	Masters	12.1	-	-	-	-
21	1	Masters	6.1	60	5	18	$125
22	1	Masters	9.9	180	3	27	$375
23	1	Masters	10.68	120	-	-	$250
24	1	Masters	9.81	-	-	-	-
25	1	Masters	11.8	120	12	39	$250

Results - Resources

Table 9

Resources Needed to Conduct Functional Analyses

Resource	Average	Range
Number of Staff	1.2	1-2
Time to Conduct FA	40 min	6 - 150 min
Consult Length	155 min	60 - 420 min
Cost	$452.72	$125 - $2100

Discussion

- FAs can be modified for implementation in home-based settings
  - 80% of FAs had differentiated results
  - 97.35% Procedural integrity
  - 93.07% Interobserver agreement

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Discussion

- FAs can be cost-effective for clients
  - Only 1-2 trained staff needed to conduct FA
  - 40 minutes on average to conduct FA
  - Average cost was $452.72

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Discussion

- Limitations
  - Small sample size
  - Staff training data were not presented or analyzed
  - Treatment data were not presented or analyzed

Discussion

- Future Research

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Discussion

- Future Research
  - Statistical analysis of FAs and resources needed to conduct them

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Discussion

- Future Research
  - Statistical analysis of FAs and resources needed to conduct them
  - Analysis of staff training needed for conducting FAs
    - Time Needed
    - Cost

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Discussion

- Future Research
  - Statistical analysis of FAs and resources needed to conduct them
  - Analysis of staff training needed for conducting FAs
    - Time Needed
    - Cost
  - Treatment data
    - The extent to which FAs lead to the implementation of effective, function-based treatments

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Using Functional Communication Training and Reinforcer Delay Fading to Treat Multiply-Maintained Aggressive Behavior

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Functional Communication Training

- A communication response results in access to reinforcer (Carr & Durand, 1985)
    - Extinction (e.g., Fisher et al., 1993, Hagopian et al., 1998, Wacker et al., 1990)
- Functional communication training (FCT) is effective in reducing rates of severe problem behavior (e.g., Carr & Durand, 1985; Fisher et al., 1993; Hagopian, Fisher, Sullivan, Acquisto, & LeBlanc, 1998)
- FCT is the most published function-based treatment for problem behavior (Tiger, Hanley, & Bruzek, 2008)

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Limitations of FCT

▶ FCT has its limitations (Fisher et al., 2000; Fisher et al., 1993; Tiger et al., 2008)

▶ The individual is given immediate access on a continuous schedule (Carr and Durand, 1985; Tiger et al., 2008)

▶ Parents/Caregivers/Teachers (Tiger et al., 2008)

  ▶ The reinforcer may not be immediately available

  ▶ Caregiver may be unavailable to facilitate delivery of the reinforcer

  ▶ The reinforcer may only be intermittently available

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Limitations of FCT

▶ Rates of responding are often higher than peers (Fisher et al., 2000; LeBlanc, Hagopian, Marhefka, & Wilke, 2001)

▶ Escape-maintained behavior (Reichle, Johnson, Monn, & Harris, 2010)

- ▶ Requesting breaks at a high rate

- ▶ Few learning opportunities

- ▶ Limited tolerance to delays or denial

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Schedule Thinning following FCT

▶ Schedule thinning is needed (Hagopian, Boelter, & Jarmolowicz, 2011)

1. **Delay schedules**

    (e.g. Braithwaite & Richdale, 2000; Fisher et al., 2000; Hanley, Iwata, & Thompson 2001)

2. Chain schedules or demand fading

    (e.g., Falcomata, Meuthing, Gainey, Hoffman, & Fragale, 2013; Fisher et al., 1993; Hagopian et al., 1998; Lalli et al., 1995)

3. Multiple schedules

    (e.g., Fisher et al., 1998; Hagopian et al., 2004; Hanley et al., 2001)

4. Response restriction

    (e.g., Hagopian et al., 2004; Roane, Fisher, Sgro, Falcomata, & Pabico, 2004)

▶ Only 29% of functional communication studies used schedule thinning following FCT (Hagopian et al., 2011)

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Reinforcement Delay Fading

▶ Reinforcement delay fading

| Demands are presented | → | "Break please" | 0 s → | "Sure, you can have a break" |

| Demands are presented | → | "Break please" | 2 s → | "Sure, you can have a break" |

| Demands are presented | → | "Break please" | 4 s → | "Sure, you can have a break" |

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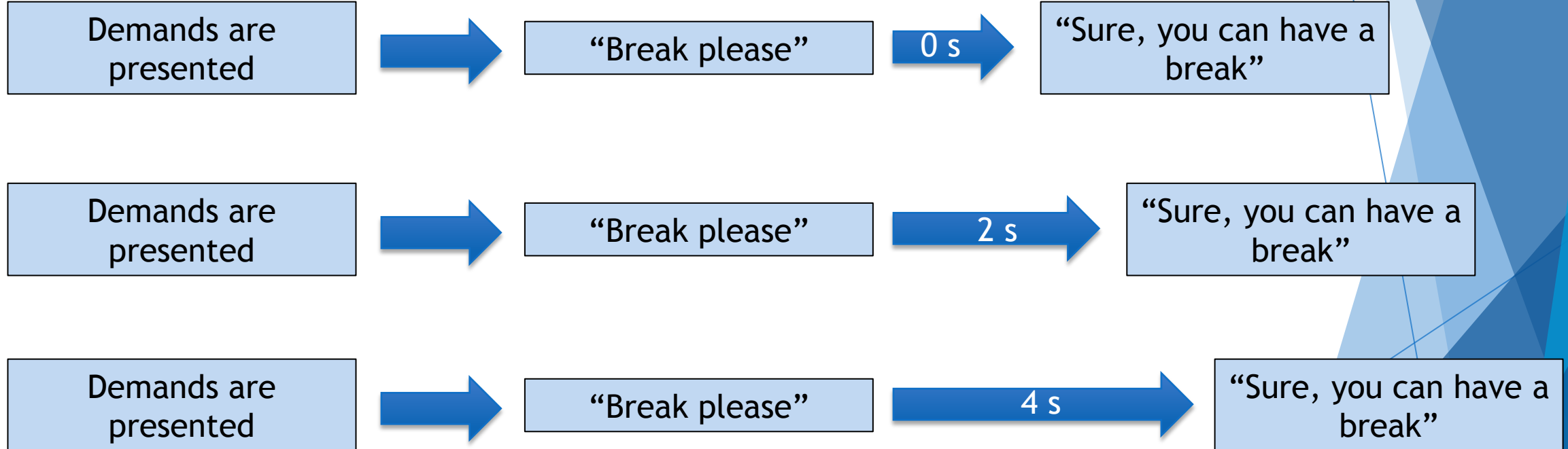
Delay Schedules

- Reinforcement delay fading generally fails to increase delays greater than 30 s (Kelley, Lerman, Fisher, Roane, & Zangrillo, 2011)

- Signals may facilitate longer delay periods (Kelley et al., 2011)

  - For 2 of 3 participants:

    - Signal aided maintenance of responding during greater delays as compared to unsignaled delays

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Reinforcement Delay

- Largely used to treat problem behavior maintained by social positive contingencies (i.e., attention, tangible) (e.g., Braithwaite & Richdale, 2000; Fisher et al., 2000; Hagopian et al., 2001; Hagopian et al., 1998)

- Braithwaite and Richdale (2000)

  - Escape maintained SIB and aggression

  - Multiply controlled – escape and tangible

    - Treatment was separate for each function

    - Did not specify whether demands were maintained during the delay period

      - EO may not have been in place during the delay

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Purpose

▶ Use FCT and signaled reinforcement delay fading to decrease rates of aggression maintained by access to escape from demands and preferred items

▶ Establish high rates of communication and high, increasing rates of task completion as delay increased

▶ During ongoing home-based service delivery

Participant

- 3-year-old boy with autism spectrum disorder

- Full day preschool

- 10 hours/week of home-based ABA

- 2 hours/week of clinic-based 1:1 therapy and social skills

- Participant behaviors:

  - PECS (Bondy & Frost, 1994) & some vocal communication (3-5 words)

  - Aggressive behaviors

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Setting

- Home
  - Living room
    - Included sofa, TV, small table and chairs, low and moderately preferred toys
    - Family members were often present and passing through the room
- Outpatient Clinic (Generalization)
  - Workspace was an 8'x8' cubicle with one open side facing a larger room with peers
  - 2-3 peers present during session

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Materials

- Materials
  - iPad®
  - PECS book
  - Vivitar® DVR508 digital camcorder
  - Instant Data® and Instant IOA®

Dependent Variables

▶ 1. Aggressive behaviors

▶ 2. Task completion

▶ 3. Vocal communication responses

▶ 4. Nonvocal communication responses] Total FCRs

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Dependent Variables

- Recorded total frequency

- Video recordings of sessions

- Rate of responding was calculated by dividing the total number of responses by the session length

  - During delay sessions, the session timer was paused during the reinforcement delay and excluded from the calculation of rate (Kelley et al., 2011)

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Experimental Design

- Functional Analysis (FA)
  - FA was conducted using multi-element design (Iwata, Dorsey, Slifer, Bauman & Richman, 1982/1994)
    - Attention (A)
    - Demand (B)
    - Tangible (C)
    - Control (D)
  - ABCDCADBDCB

Experimental Design

- Treatment
  - Multiple treatment with reversal (Barlow & Hayes, 1979)
  - Probes sessions of the terminal delay schedule
    - Baseline (E)
    - Extinction (F)
    - Functional communication training (G)
    - Reinforcement delay fading with extinction (H)
  - EFGEGH

Functional Analysis (FA) Procedures

▶ Session length 5 min with a 1-3 minute break between sessions

▶ Attention, demand, tangible and control

▶ Based on Iwata and colleagues (1982/1994)

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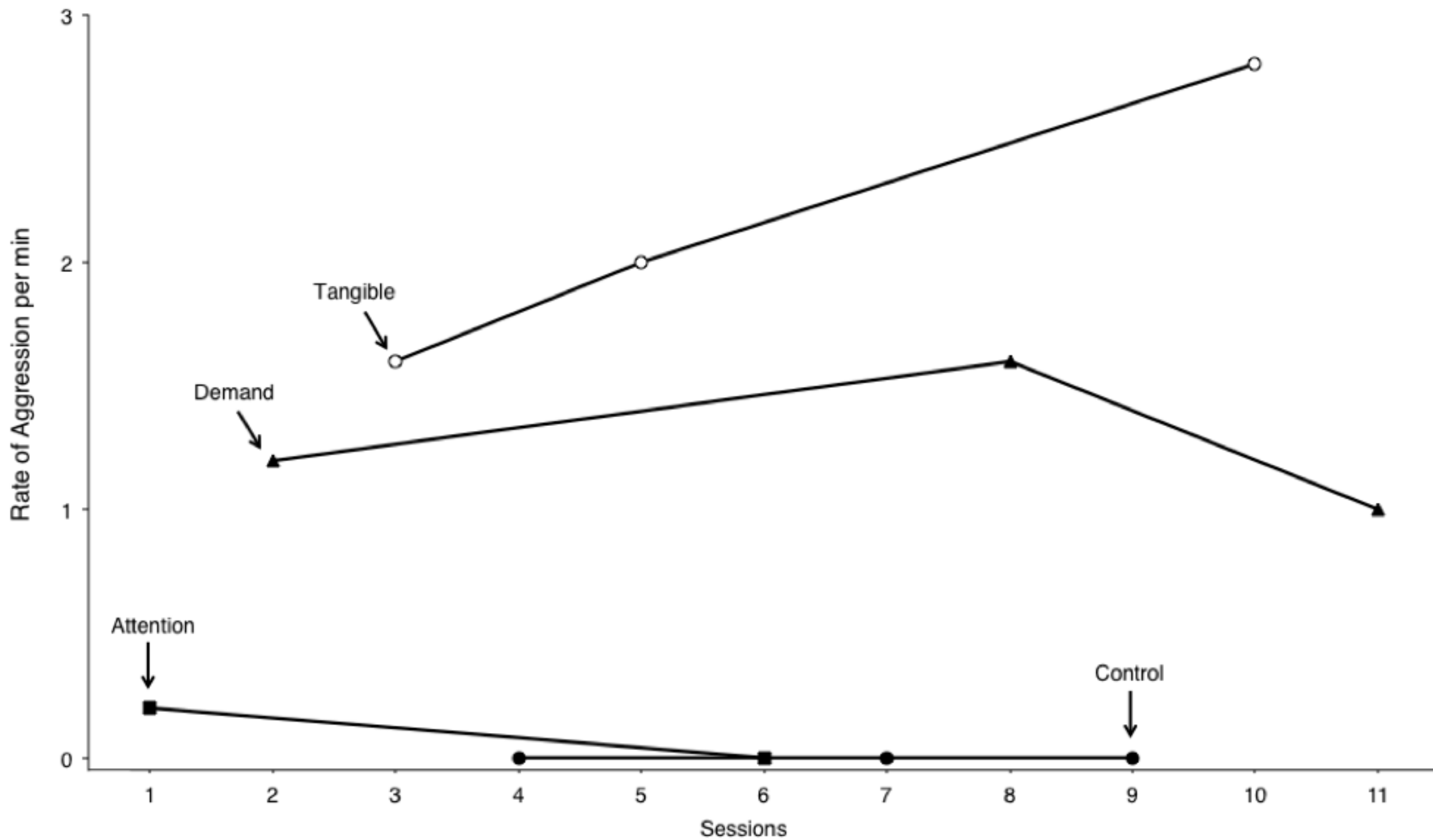
Procedures

- Treatment
  - All sessions were 5 minutes in length
  - Probe sessions 2 minutes in length
  - Across all phases, the antecedent conditions included the presentation of demands and access to the iPad® was withheld

Procedures

- Baseline
  - Functional reinforcers (escape and access to tangibles) were provided for aggression
  - No other programmed consequence was provided
- Extinction
  - Aggression and FCRs were ignored
  - Task completion resulted in neutral praise
- FCT
  - FCRs resulted in 15 s access to functional reinforcers (escape and access to tangibles)
  - Least-to-most prompting was provided for task completion, and praise for compliance

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Procedures (continued)

- Delay fading
  - Contingent on FCRs, the therapist stated "wait" and showed a visual wait sign for the duration of the delay
  - Demands were maintained during the delay and praise was provided for compliance
  - Delay length was increased by 30% following 2 consecutive sessions with high rates of FCR & low rates of aggression

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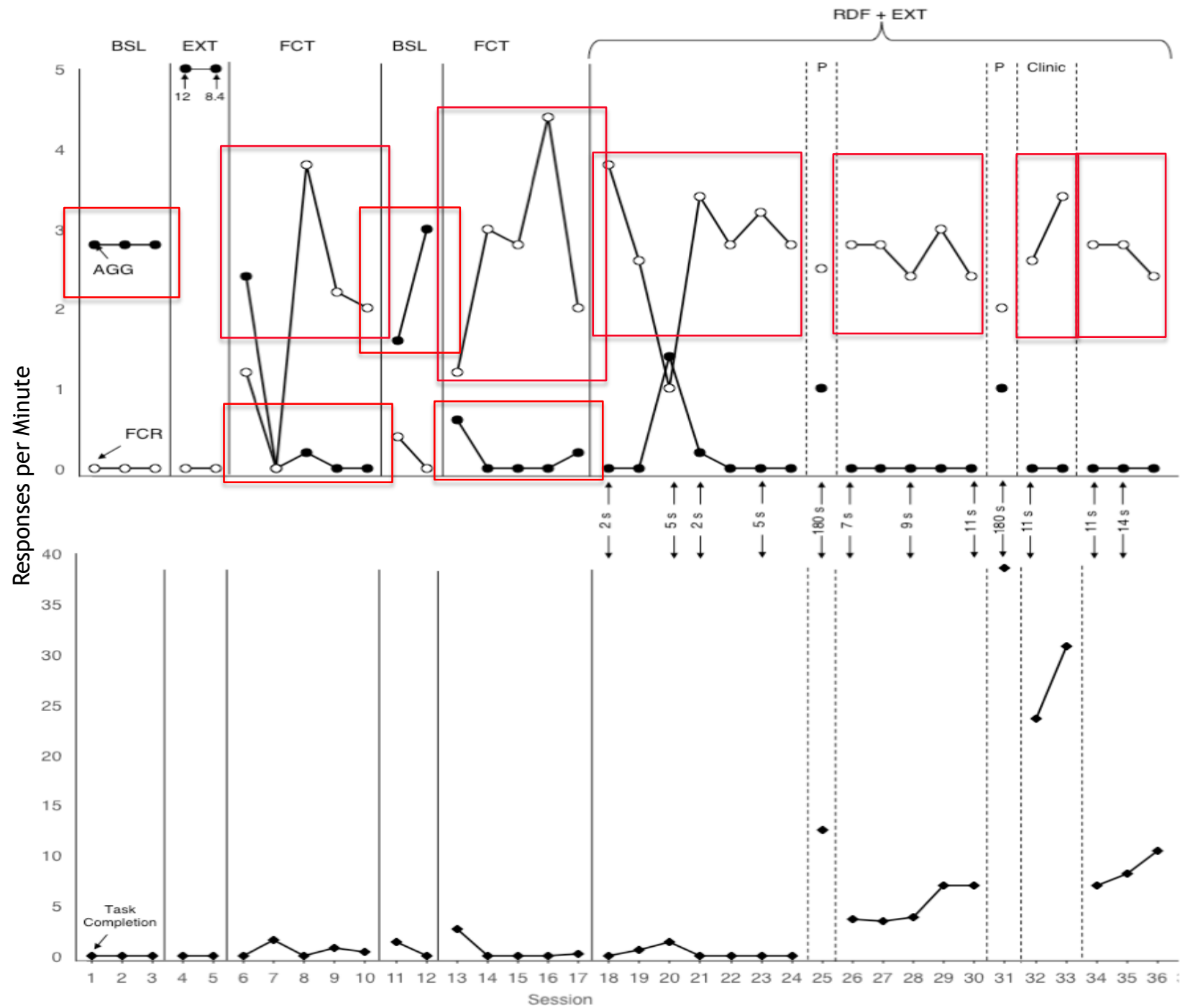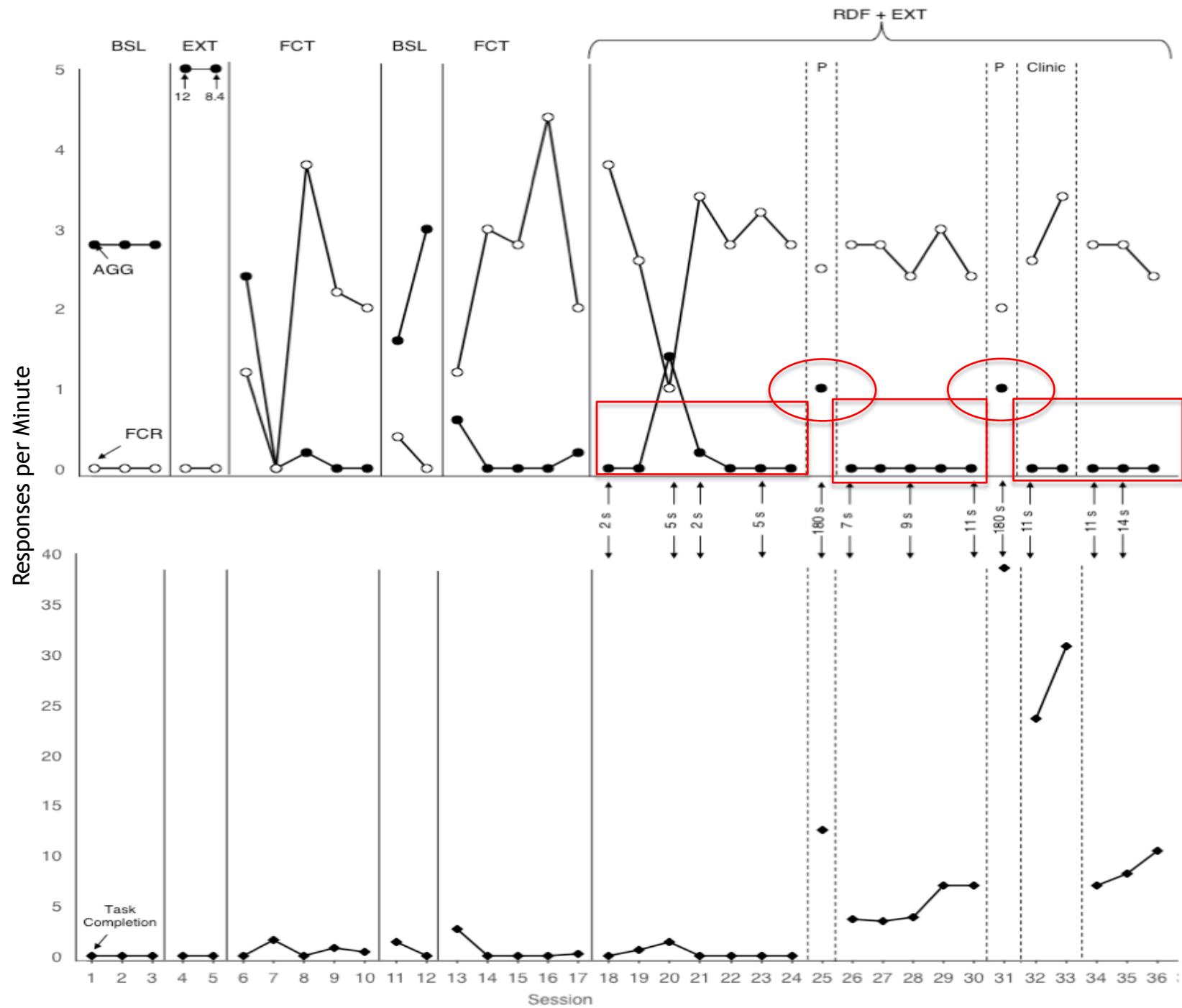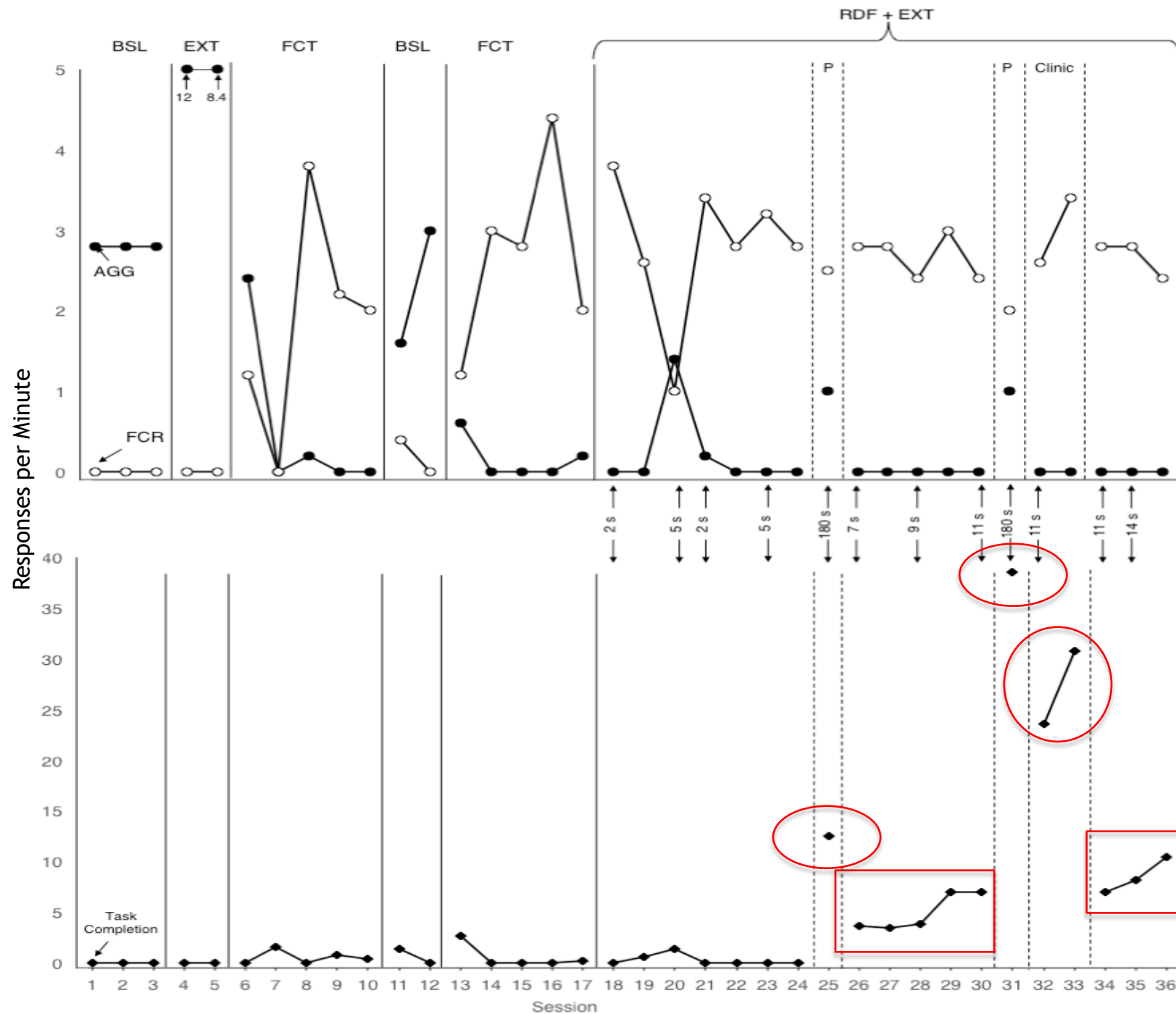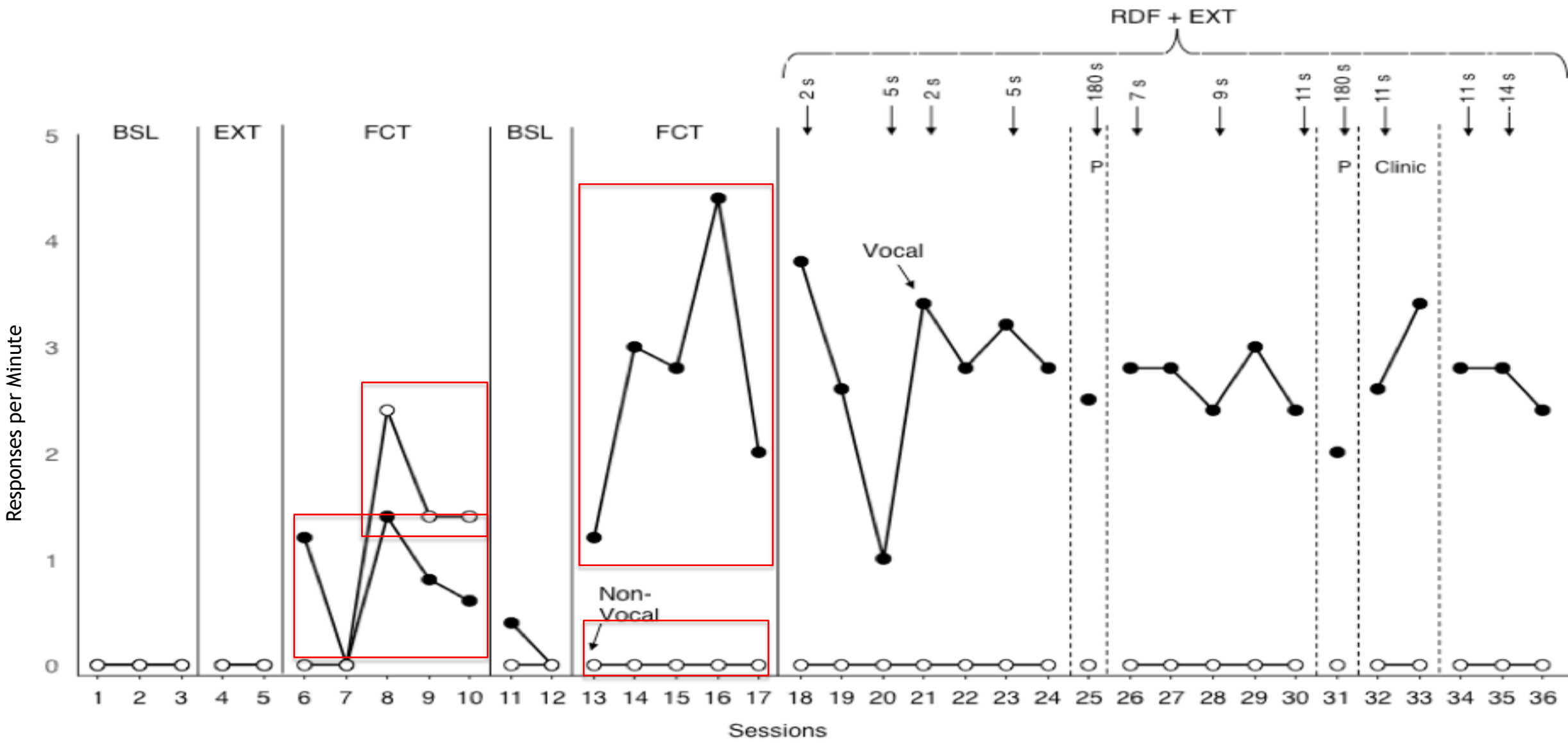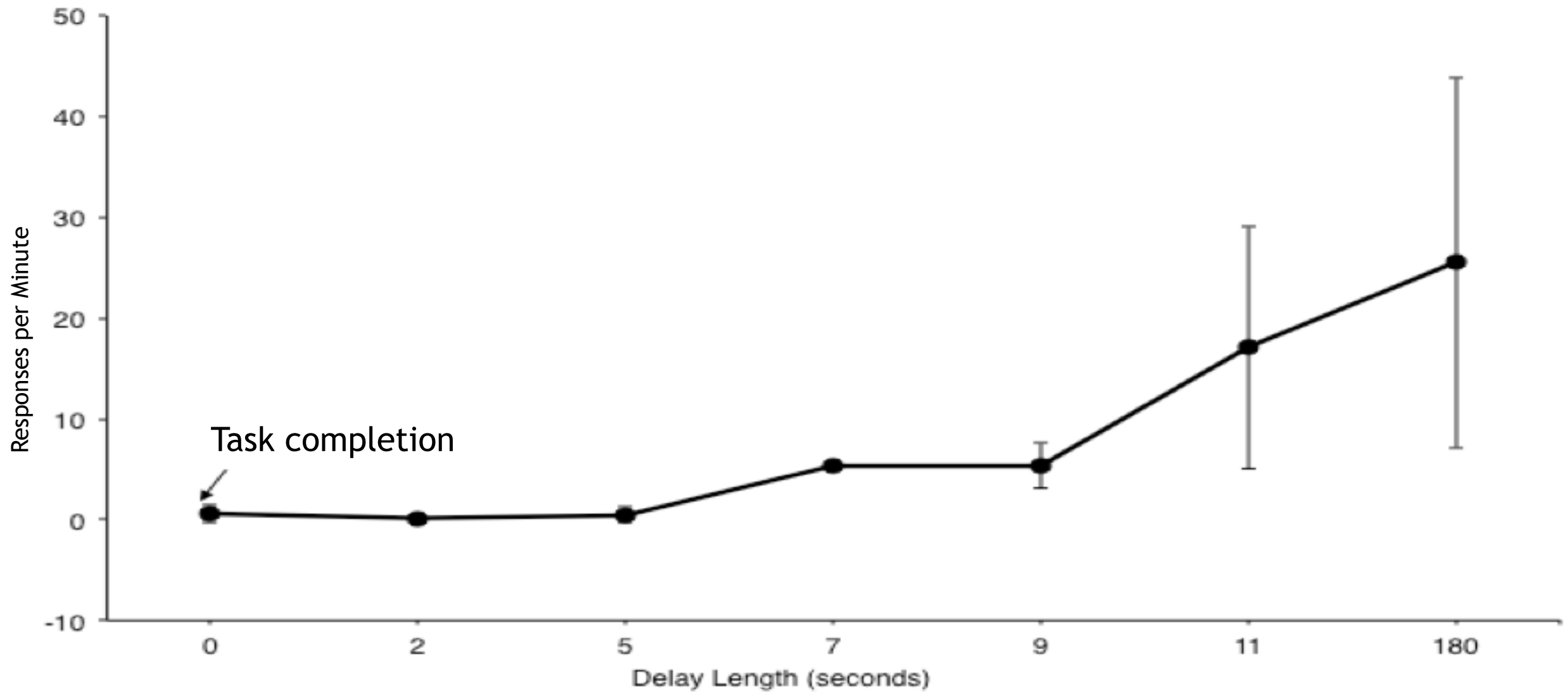
IOA & PI

- Interobserver Agreement
  - 70% of sessions
  - Average at least 95% across all dependent variables
- Procedural Integrity
  - Procedural integrity data were collected for 41% of sessions and averaged 91.5% (range: 85.7%-100%)

Discussion

- Treatment package was successful
  - Reduced rates of aggression
  - High rates of FCR
  - High rates of task completion
- Responding was maintained to a delay period of 14 s
- Probe sessions indicated reemergence of aggression
  - Not yet able to rapidly increase delay length

Discussion

- Generality of the treatment was assessed

- Support for previous research

  - Effectiveness of FCT in treating problem behavior (Carr & Durand, 1985)

  - Effectiveness of reinforcement delay fading (Tiger et al., 2008)

  - Need for schedule thinning following FCT

    - Escape-maintained behaviors

    - Increasing learning opportunities

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Limitations

- Probe design
  - Probe conducted after 5th session of reinforcement delay fading
  - Design could be strengthened by conducting probe following FCT
- Additional teaching opportunities during service delivery
  - Acquisition of FCR may have been aided by ongoing service delivery
- Only 1 participant

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Future Research

▶ Extend beyond 14 s delay length

▶ Address Kelley and colleagues (2011) concern that delays in applied research have not been demonstrated beyond 30 s

▶ Evaluate signaled versus unsignaled delays (Kelley et al., 2011)

▶ Combine other methods for schedule thinning, recommended by Tiger and colleagues (2008)

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Future Research

1. Delay schedules

   (e.g. Braithwaite & Richdale, 2000; Fisher et al., 2000; Hanley, Iwata, & Thompson 2001)

2. Chain schedules or demand fading

   (e.g., Falcomata, Meuthing, Gainey, Hoffman, & Fragale, 2013; Fisher et al., 1993; Hagopian et al., 1998; Lalli et al., 1995)

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Applications of Clinic-Based Research into Home Settings

Kimberly A. Diggs
Kevin J. Schlichenmeyer
Kara A. LaCroix
Krystie M. Fleck

tact

THE AUTISM COMMUNITY THERAPISTS

Introduction

- Pre-treatment approach to eliminating challenging behavior

Introduction

- Pre-treatment approach to eliminating challenging behavior

- Exponential growth within the past 30 years (Beavers, Iwata, & Lerman, 2013)

The Past 10 Years of Research

Setting	Number of Studies Published
Hospital (inpatient)	90
School	70
Clinic (outpatient)	34
Home	25
Institution	10
Vocational Program	9
Community	1

(Beavers, Iwata,& Lerman, 2013)

Why?

Why?

- Conversion from old lore to new lore (Hanley, 2012)

Why?

- Conversion from old lore to new lore (Hanley, 2012)

- This exists despite evidence in the contrary (Thompson et al., 2007)

Purpose of the Study

- Comprehensive treatment package for severe problem behavior in the Home setting (Hanley et al., 2014)

Comprehensive Treatment Package

Open Ended IA

Comprehensive Treatment Package

Open Ended IA → Functional Analysis

Comprehensive Treatment Package

Participants and Settings

Participant	Age	Diagnosis	Target Behavior	Setting
Adam	9	Autism Spectrum Disorder	Screams	Home

Participants and Settings

Participant	Age	Diagnosis	Target Behavior	Setting
Adam	9	Autism Spectrum Disorder	Screams	Home
Lola	6	PDD-NOS	Screams	Home

Participants and Settings

Participant	Age	Diagnosis	Target Behavior	Setting
Adam	9	Autism Spectrum Disorder	Screams	Home
Lola	6	PDD-NOS	Screams	Home
Joseph	20	Autism Spectrum Disorder	Vocal Protests & Aggression	Home

Participants and Settings

Participant	Age	Diagnosis	Target Behavior	Setting
Adam	9	Autism Spectrum Disorder	Screams	Home
Lola	6	PDD-NOS	Screams	Home
Joseph	20	Autism Spectrum Disorder	Vocal Protests & Aggression	Home

Adam: Functional Analysis

- Test
  - "iPad is all done, it is time to get to work!"
  - Preferred activity interruption and presentation of academic demands
  - Screams produced 30 s demand removal and iPad delivery

- Control
  - "You can have some iPad time!"
  - Continuous access to iPad time
  - No programmed consequences
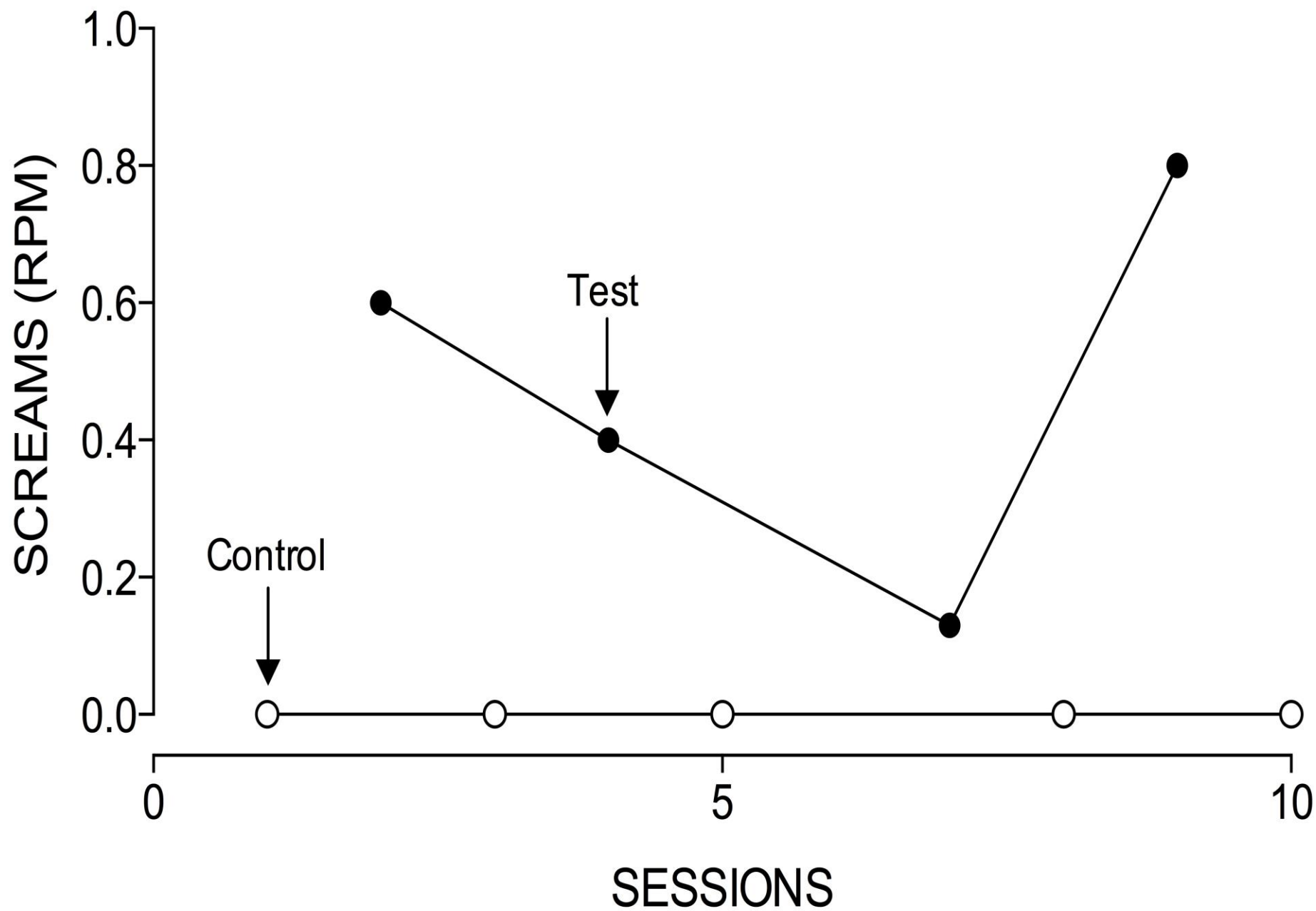
Lola: Functional Analysis

- Functional Analysis
  - Ignore, Attention, Toy Play, Demand and Tangible (Derby et al., 1992)
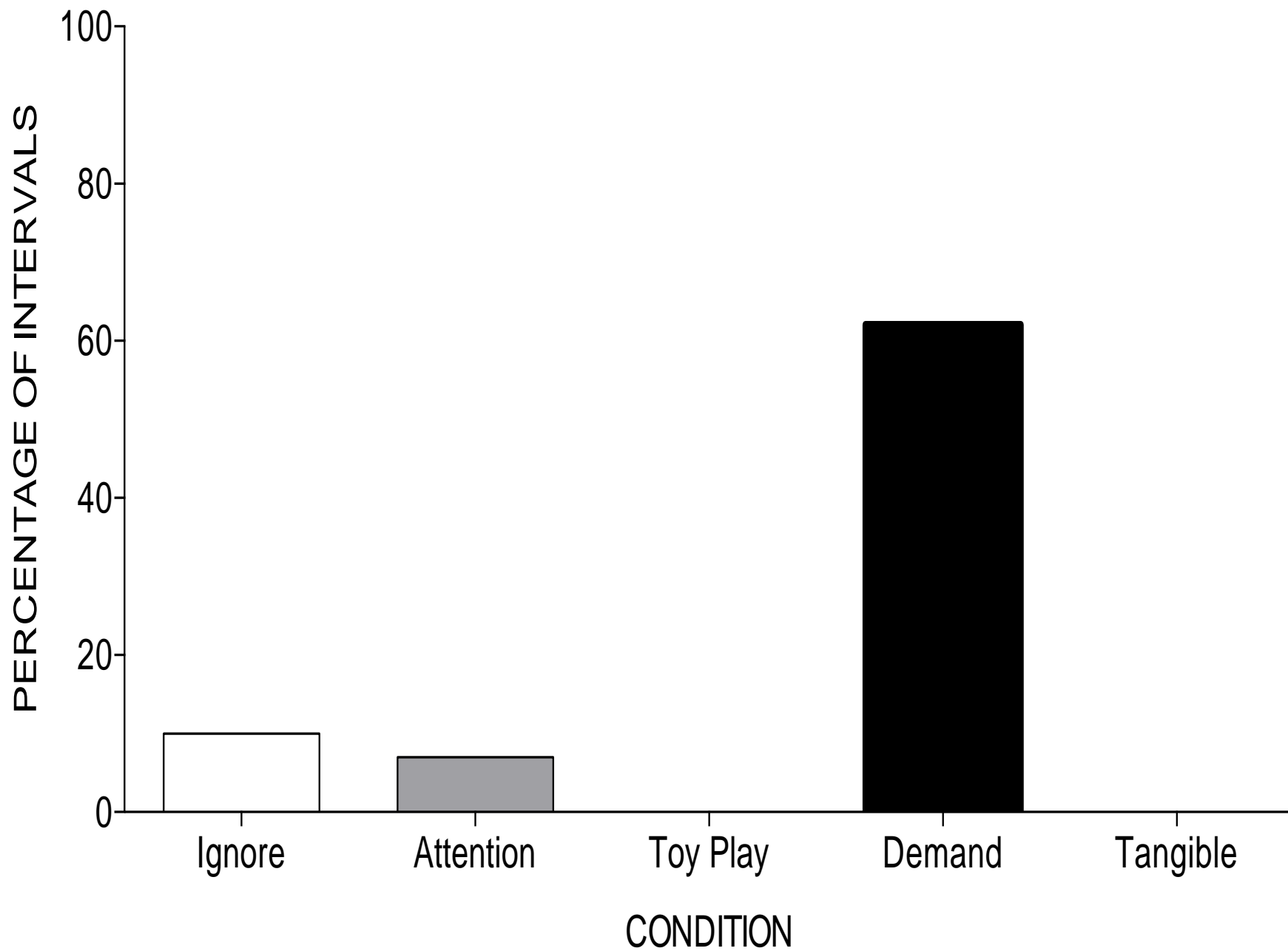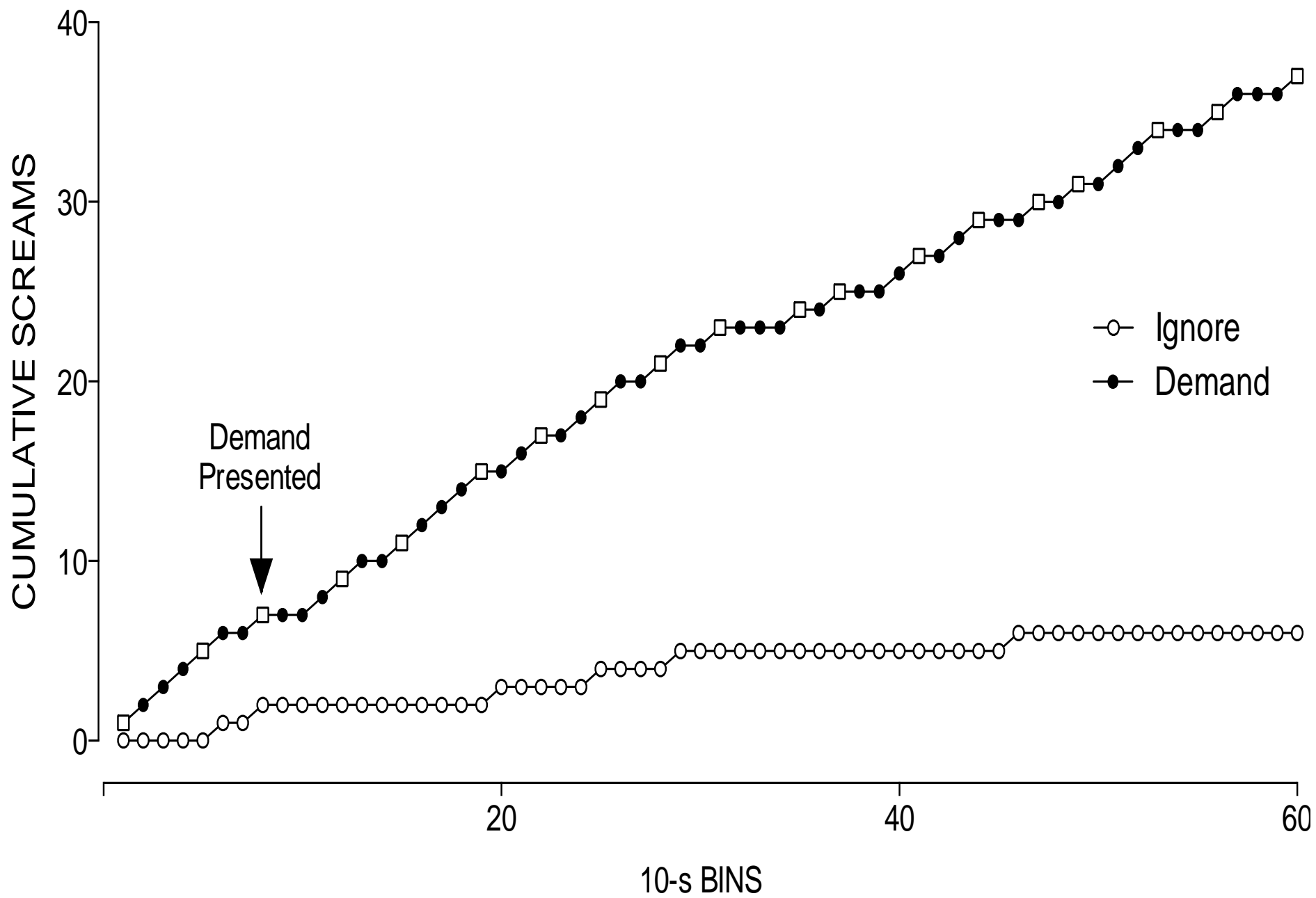
Joseph: Functional Analysis

- Test
  - "T.V. is all done, it is time to get to work!"
  - Preferred activity interruption and presentation of academic demands
  - Problem behavior produced 30 s demand removal and iPad delivery

- Control
  - "You can have some T.V. time!"
  - Continuous access to T.V. time
  - No programmed consequences
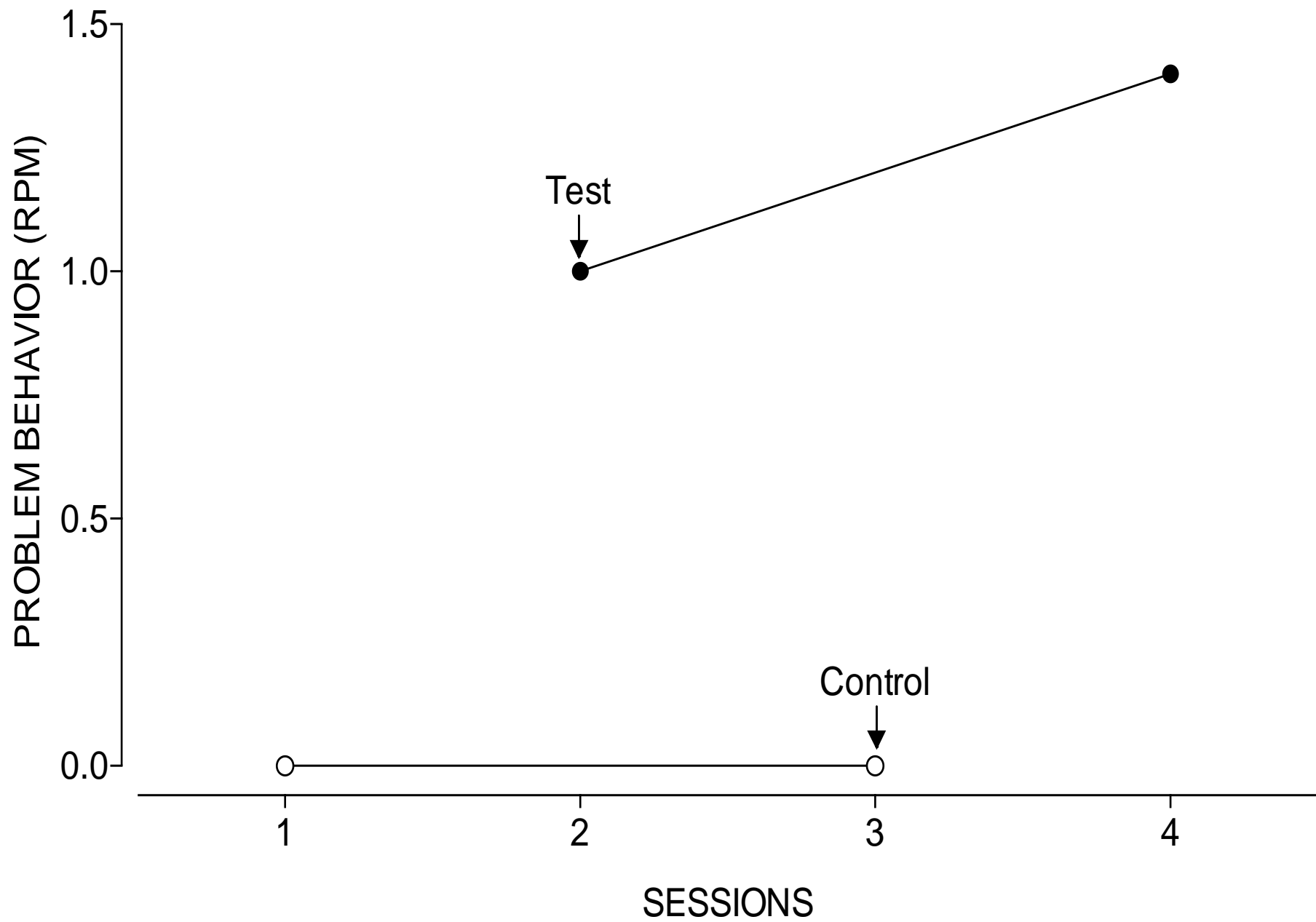
Methods

- Experimental Design:
  - 5 min sessions
  - FCR → Least-to-most verbal
  - Attention Gaining Response → Least-to-most physical
  - Treatment effects were determined via a changing criterion design.

Participant and Setting

Participant	Age	Diagnosis	Target Behavior	Setting
Adam	9	Autism Spectrum Disorder	Screams	Home

Baseline: FCR→ Extinction Screams → 30 s demand removal and iPad delivery

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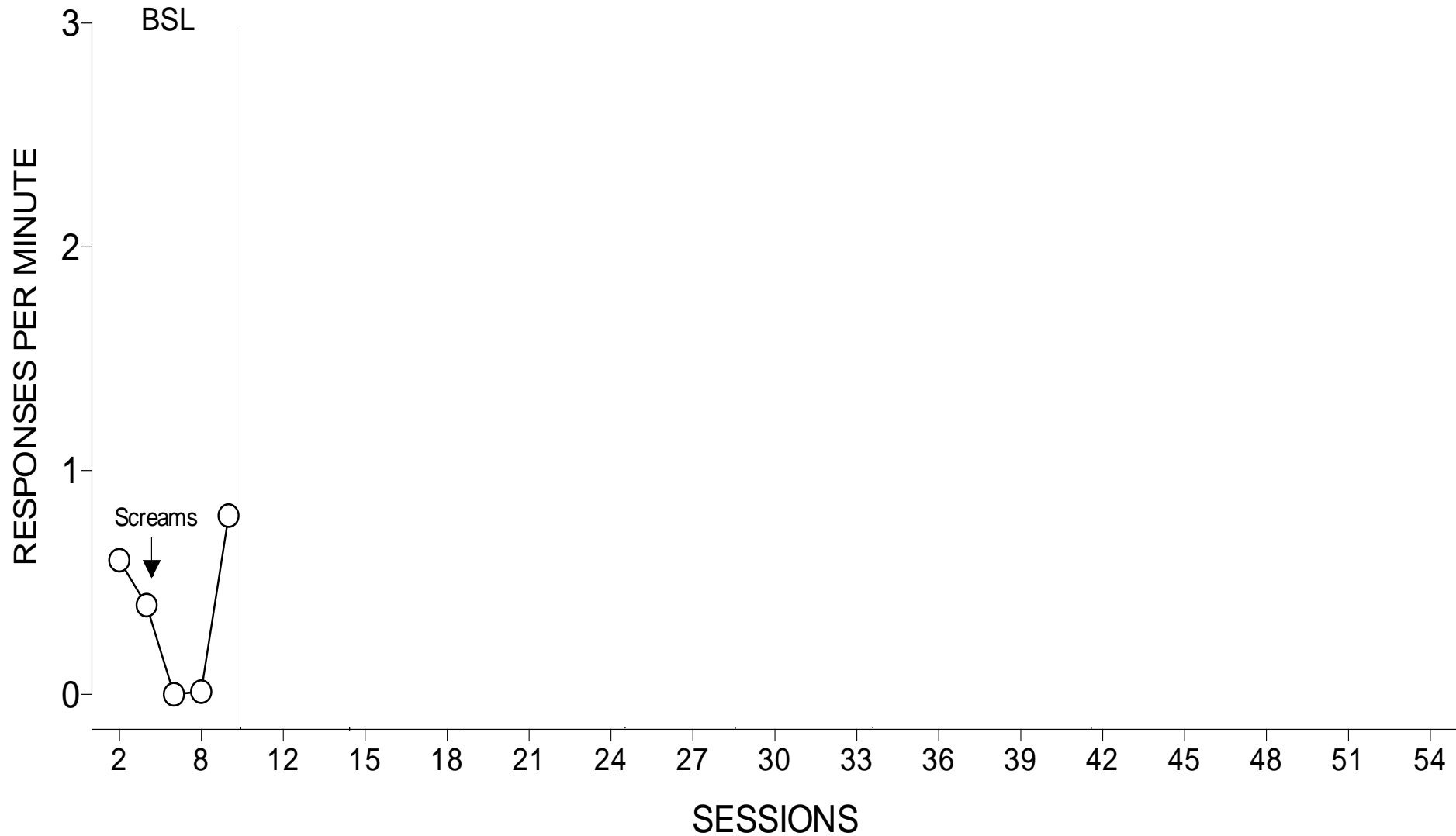
Simple FCR: "More, please!" → 30 s demand removal and iPad access; Screams → Extinction

Simple FCR: "More, please!" → 30 s demand removal and iPad access; Screams → Extinction
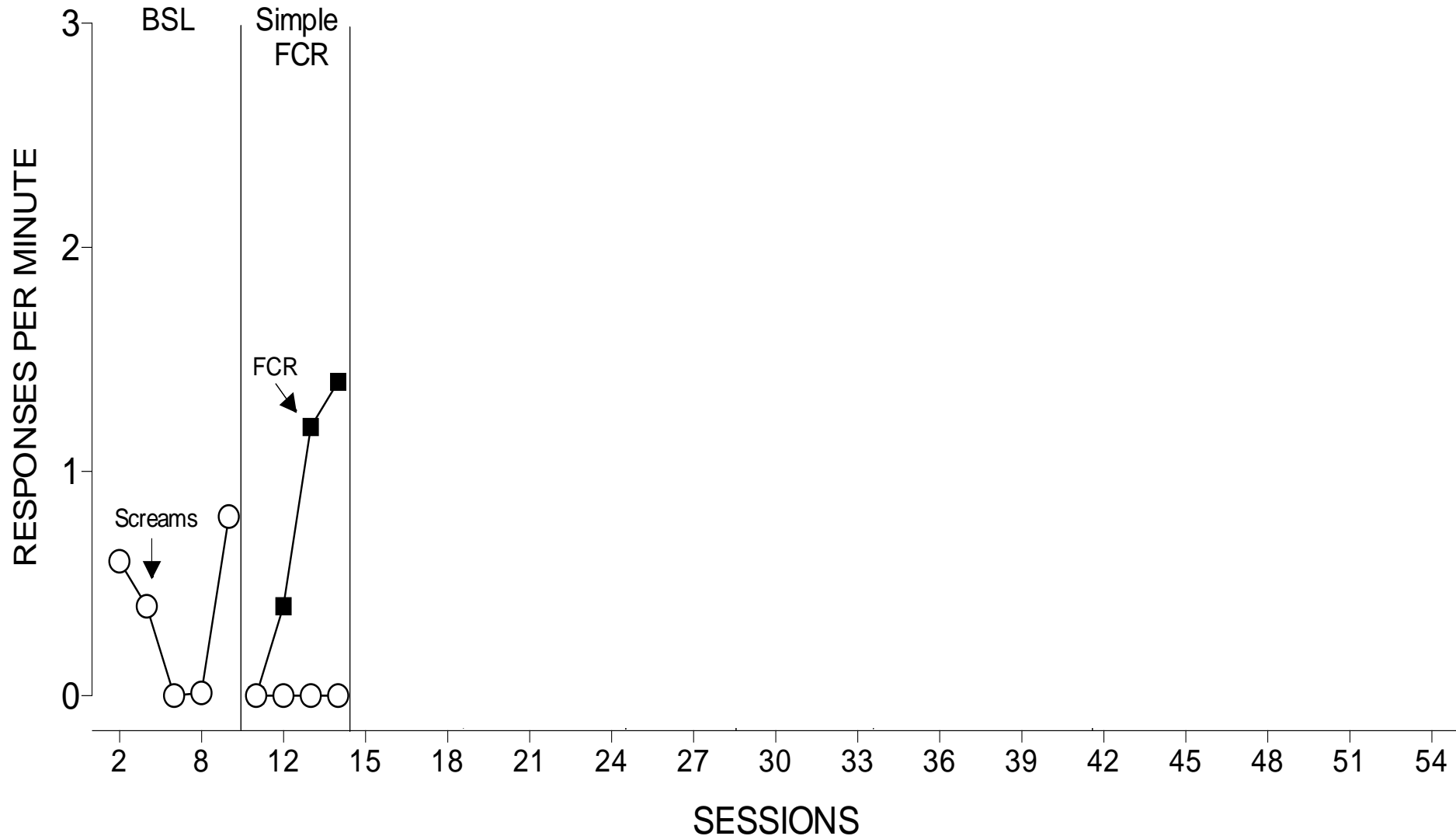
Complex FCR I: Orients toward therapist with eye contact →"I want more, please!" → 30 s demand removal and iPad delivery

Complex FCR I: Orients toward therapist with eye contact → "I want more, please!" → 30 s demand removal and iPad delivery

Complex FCR II: Orients toward therapist with eye contact → taps therapist → "I want more, please!" → 30 s demand removal and iPad delivery

Complex FCR II: Orients toward therapist with eye contact → taps therapist → "I want more, please!" → 30 s demand removal and iPad ~~delivery~~

Denial Baseline: Complex FCR III → "Not right now"; Screams → demand removal and 30 s iPad delivery

Denial Baseline: Complex FCR III → "Not right now"; Screams → demand removal and 30 s iPad delivery

Denial I: Complex FCR III→ "Not right now" → "Okay" → demand removal and 30 s iPad delivery

Denial I: Complex FCR III→ "Not right now" → "Okay" → demand removal and 30 s iPad delivery

Denial II: Complex FCR III → "Not right now" → "Okay" → takes a deep breath → demand removal and 30 s iPad delivery

Denial II: Complex FCR III → "Not right now" → "Okay" → takes a deep breath → demand removal and 30 s iPad delivery

Denial III: Complex FCR III → "Not right now" → "Okay" → takes a deep breath → completes task → demand removal and 30 s iPad delivery

Denial III: Complex FCR III → "Not right now" → "Okay" → takes a deep breath → completes task → demand removal and 30 s iPad delivery

Participant and Setting

Participant	Age	Diagnosis	Target Behavior	Setting
Lola	6	PDD-NOS	Screams	Home
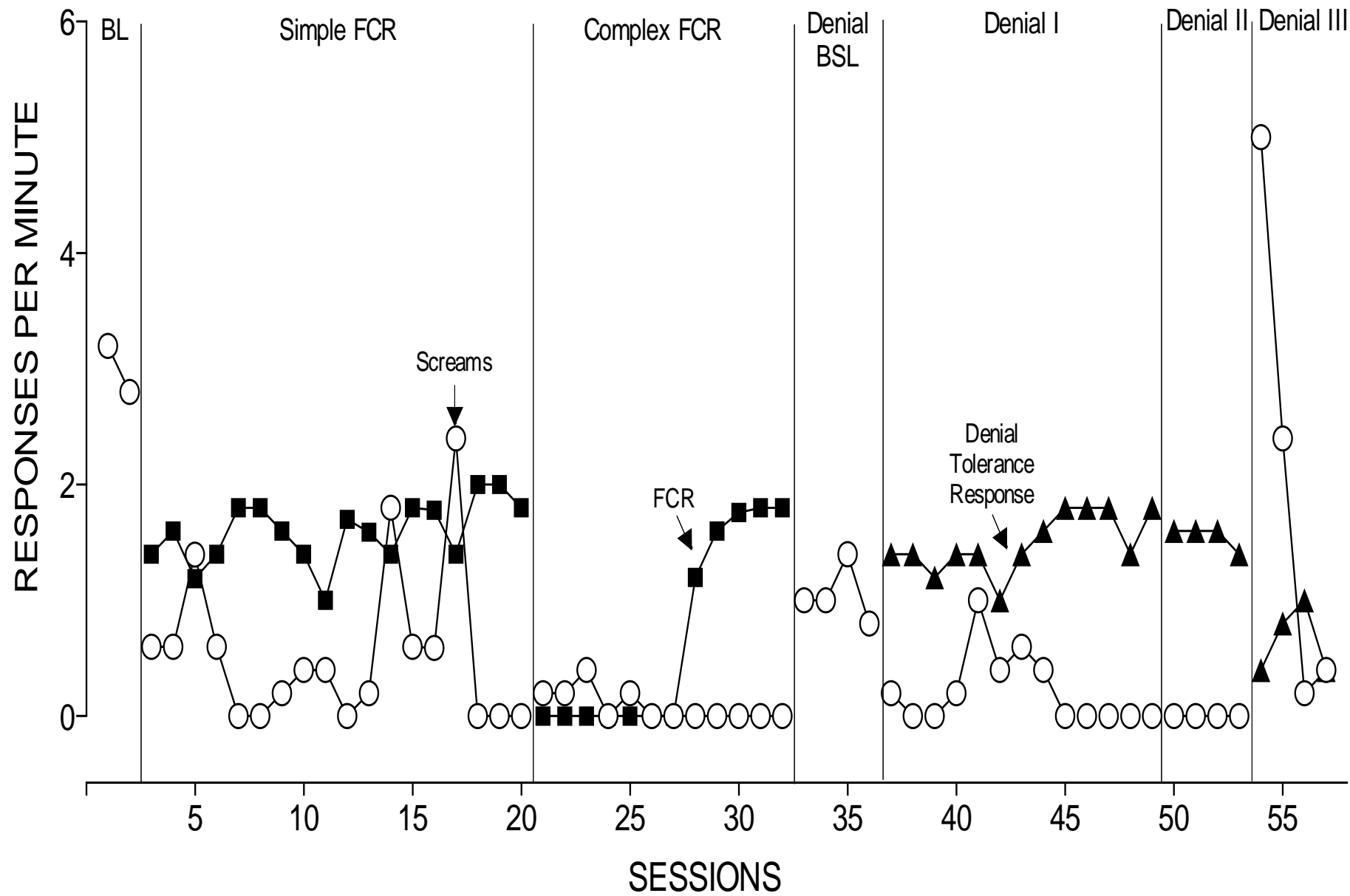
Participant and Setting

Participant	Age	Diagnosis	Target Behavior	Setting
Joseph	20	Autism Spectrum Disorder	Vocal Protests & Aggression	Home

Joseph: Treatment Analysis

- Denial Training without Extinction
  - Problem behavior produced 30 s demand removal and tangible delivery

Denial Tolerance Training

- Indiscriminable Contingencies

Denial Tolerance Training

- Indiscriminable Contingencies
  - Contingencies in which make it difficult for the learner to predict when reinforcement will be delivered
  - Randomly intersperse chains from the treatment analysis throughout the intervention
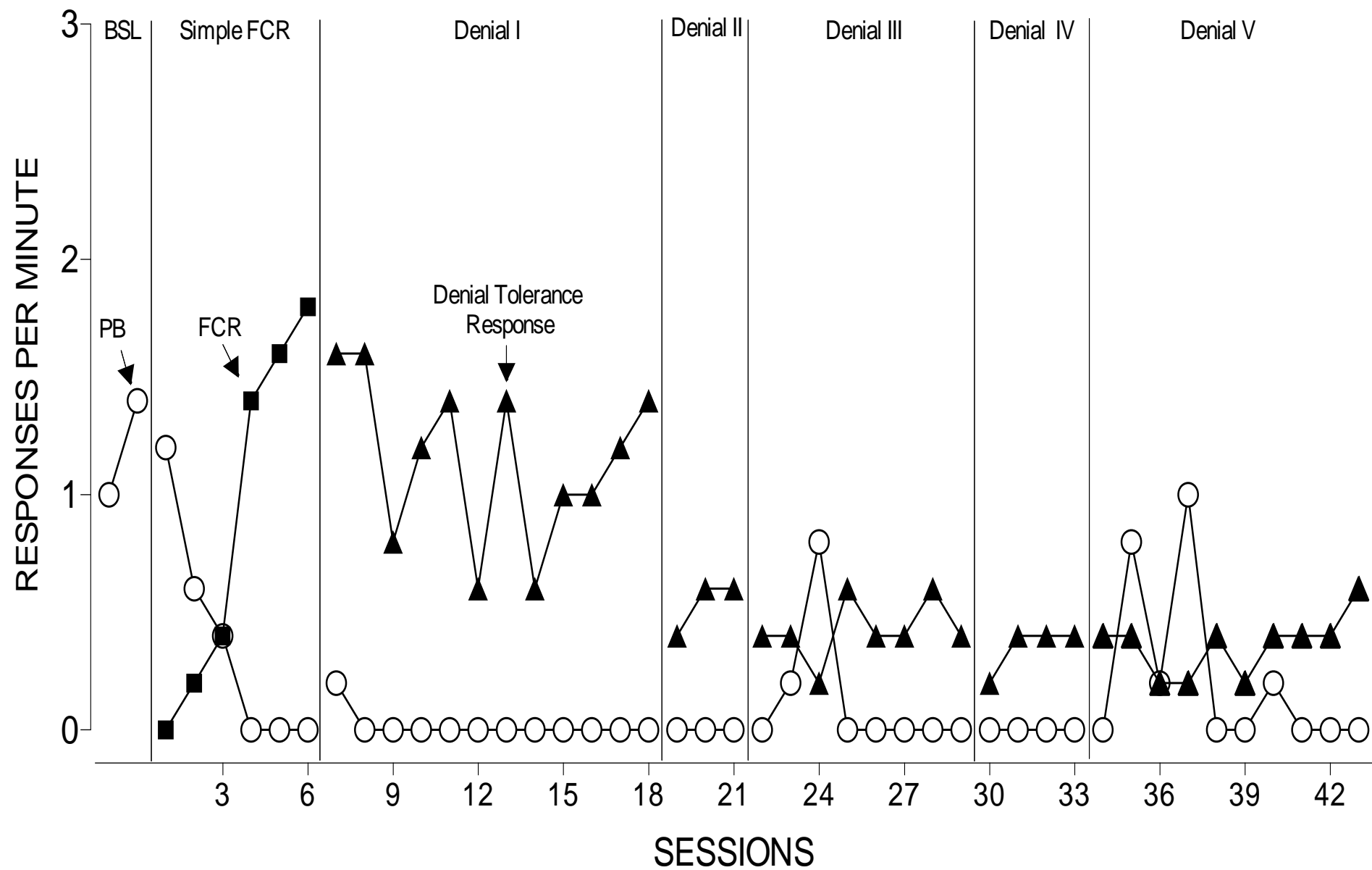
Results

Participant	Problem Behavior: Reduction from Baseline	Modification
Adam	41%	No substantial modification
Lola	86%	Isolated contingency in analysis
Joseph	91%	No extinction

Limitations

- Evidence of generalization to parents, novel settings and evocative events.

Limitations

- Evidence of generalization to parents, novel settings and evocative events.

- No systematic decision criteria for determining when to add complexity to mands/denial chain completion

Summary

- Conversion to the new lore allows for practitioners to employ systematic and behavior analytic interventions in the home setting (Hanley, 2012)
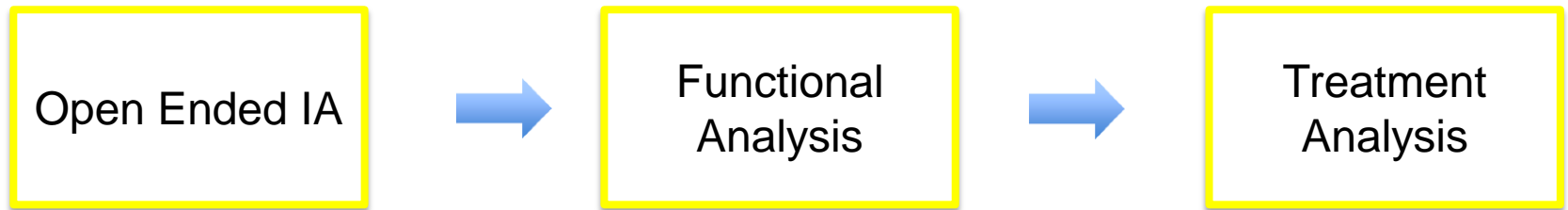
| Open Ended IA | → | Functional Analysis | → | Treatment Analysis |

Thank you!

Introduction

Setting	Number of Studies Published
Hospital (inpatient)	90
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Community	1

Previous Research

- Functional Behavior Assessment (Carr & Carlson, 1983)
  - Observation without manipulation

Previous Research

- Functional Behavior Assessment (Carr & Carlson, 1983)
  - Observation without manipulation

- Functional analysis (Tarbox et al., 2003)
  - Contingencies relevant to community settings?

Community-Based Functional Analysis

- **Conceptual Challenges**
  - Relevant antecedents and consequences events difficult to manipulate

Community-Based Functional Analysis

- **Conceptual Challenges**
  - Relevant antecedents and consequences events difficult to manipulate
  - Contingencies responsible for problem behavior may vary across settings (Lang et al., 2010, 2009, 2008)

Community-Based Functional Analysis

- **Conceptual Challenges**
  - Relevant antecedents and consequences events difficult to manipulate
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- **Logistical Challenges**
  - Repeated exposure to contingencies impractical

Community-Based Functional Analysis

- **Conceptual Challenges**
  - Relevant antecedents and consequences events difficult to manipulate
  - Contingencies responsible for problem behavior may vary across settings (Lang et al., 2010, 2009, 2008)

- **Logistical Challenges**
  - Repeated exposure to contingencies impractical
  - Risks of evoking challenging behavior in the community

Community-Based Functional Analysis

- **Conceptual Challenges**
  - Relevant antecedents and consequences events difficult to manipulate
  - Contingencies responsible for problem behavior may vary across settings (Lang et al., 2010, 2009, 2008)

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  - Repeated exposure to contingencies impractical
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- **Ethical Challenges**
  - Maintain client dignity (BACB, 2014)

Community-Based Functional Analysis

- **Conceptual Challenges**
  - Relevant antecedents and consequences events difficult to manipulate
  - Contingencies responsible for problem behavior may vary across settings (Lang et al., 2010, 2009, 2008)

- **Logistical Challenges**
  - Repeated exposure to contingencies impractical
  - Risks of evoking challenging behavior in the community

- **Ethical Challenges**
  - Maintain client dignity (BACB, 2014)
  - Precursor behavior

Recent Advances in Functional Analysis Methodology

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- **Bloom and Colleagues (2011)**
  - 2 Minute test and control conditions
  - Terminate trial upon first occurrence of problem behavior
  - No visual inspection of data in a linear fashion

Recent Advances in Functional Analysis Methodology

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  - 2 Minute test and control conditions
  - Terminate trial upon first occurrence of problem behavior
  - No visual inspection of data in a linear fashion

- **Thomason-Sassi and Colleagues (2011)**
  - Latency as a response measure
  - Terminate trial upon first occurrence of problem behavior
  - Visual Inspection of data

Purpose of Study

- Extend previous research through application of emerging functional analysis technology into community settings

- Develop comprehensive intervention in these settings

Participants

Participant	Age	Diagnosis	Target Behavior	Setting
Lilly	7	PDD-NOS	Screams	Sidewalk Downtown (Dunkin Donuts)

Participants

Participant	Age	Diagnosis	Target Behavior	Setting
Lilly	7	PDD-NOS	Screams	Sidewalk Downtown (Dunkin Donuts)
Dwight	14	Autism Spectrum Disorder	Whines	Staples, Home Depot, Grocery Store

Participants

Participant	Age	Diagnosis	Target Behavior	Setting
Lilly	7	PDD-NOS	Screams	Sidewalk Downtown (Dunkin Donuts)
Dwight	14	Autism Spectrum Disorder	Whines	Staples, Home Depot, Grocery Store
Aaron	9	PDD-NOS	Elopement	Target

Treatment Progression

Open Ended
Interview →

Treatment Progression
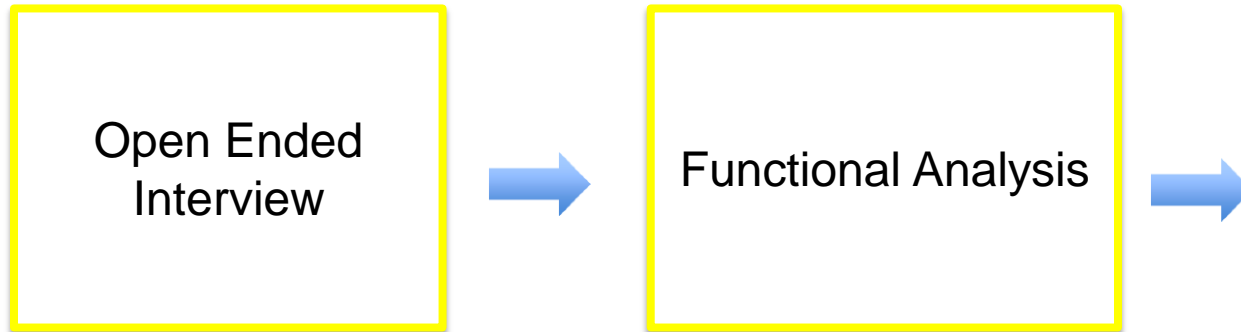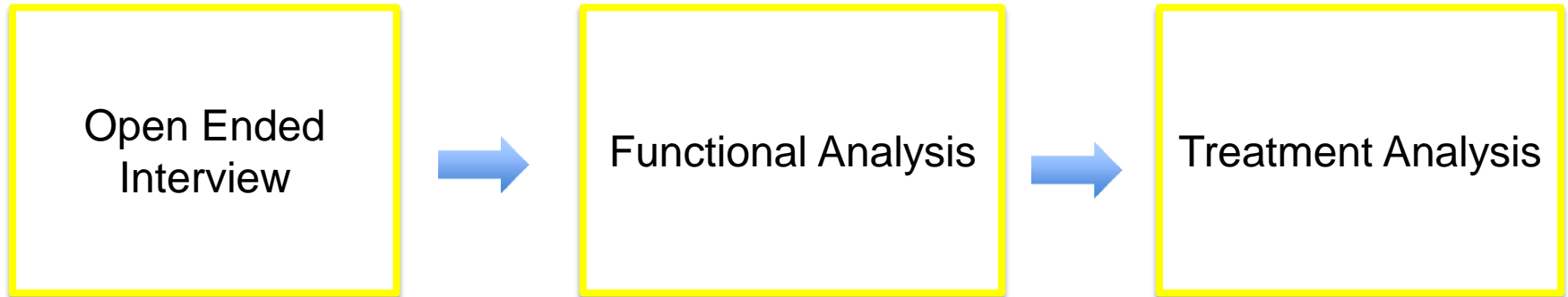
Open Ended Interview → Functional Analysis →

Treatment Progression

Open Ended Interview → Functional Analysis → Treatment Analysis

Lilly: Functional Analysis

- **Test**
  - "Walking to Dunkin Donuts is all done, let's go home"
  - Access to walking terminated
  - Screams terminated trial

Lilly: Functional Analysis

- **Test**
  - "Walking to Dunkin Donuts is all done, let's go home"
  - Access to walking terminated
  - Screams terminated trial
- **Control**
  - "Let's go to Dunkin Donuts"
  - Continuous access to walking
  - Screams terminated trial
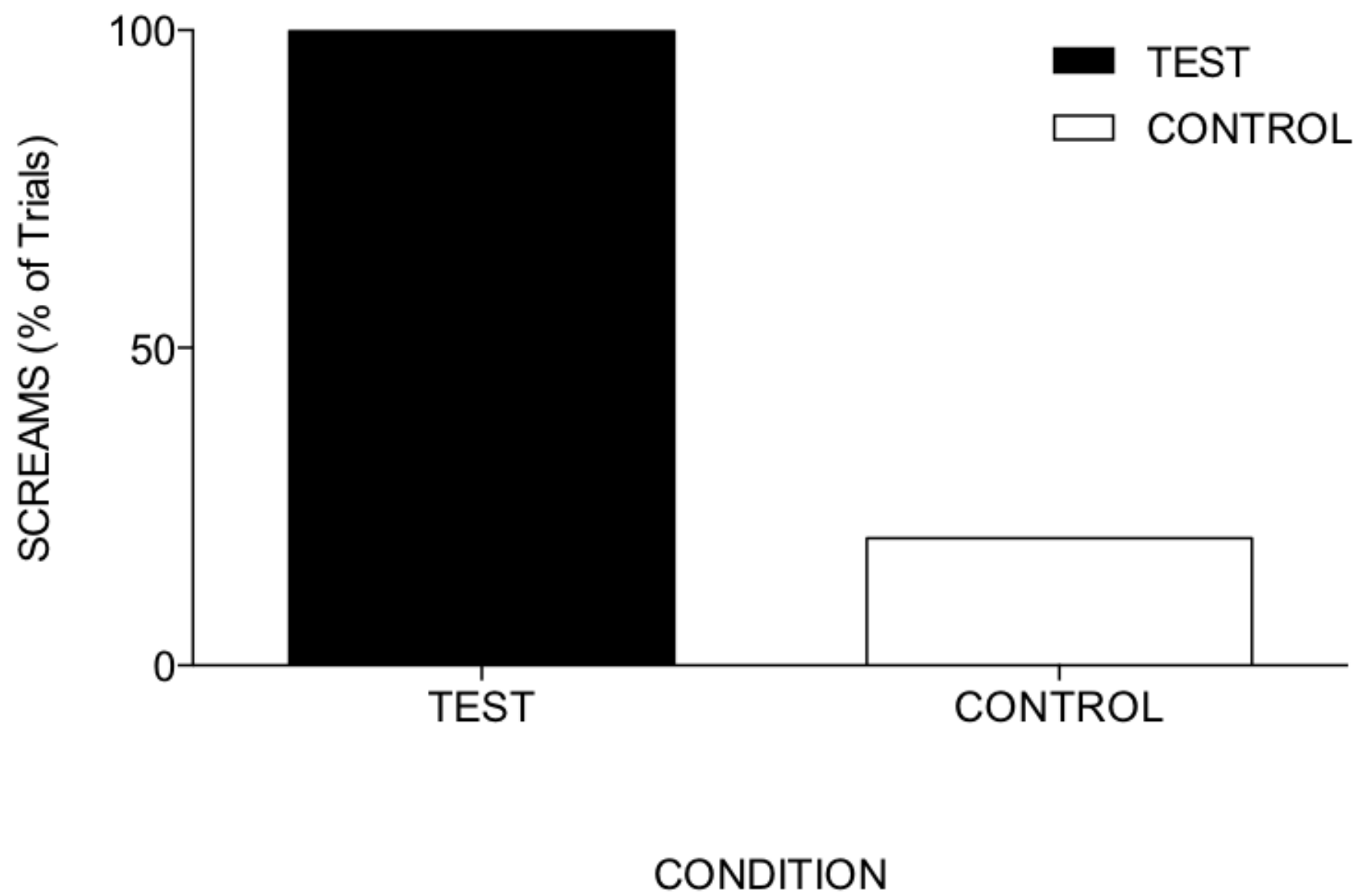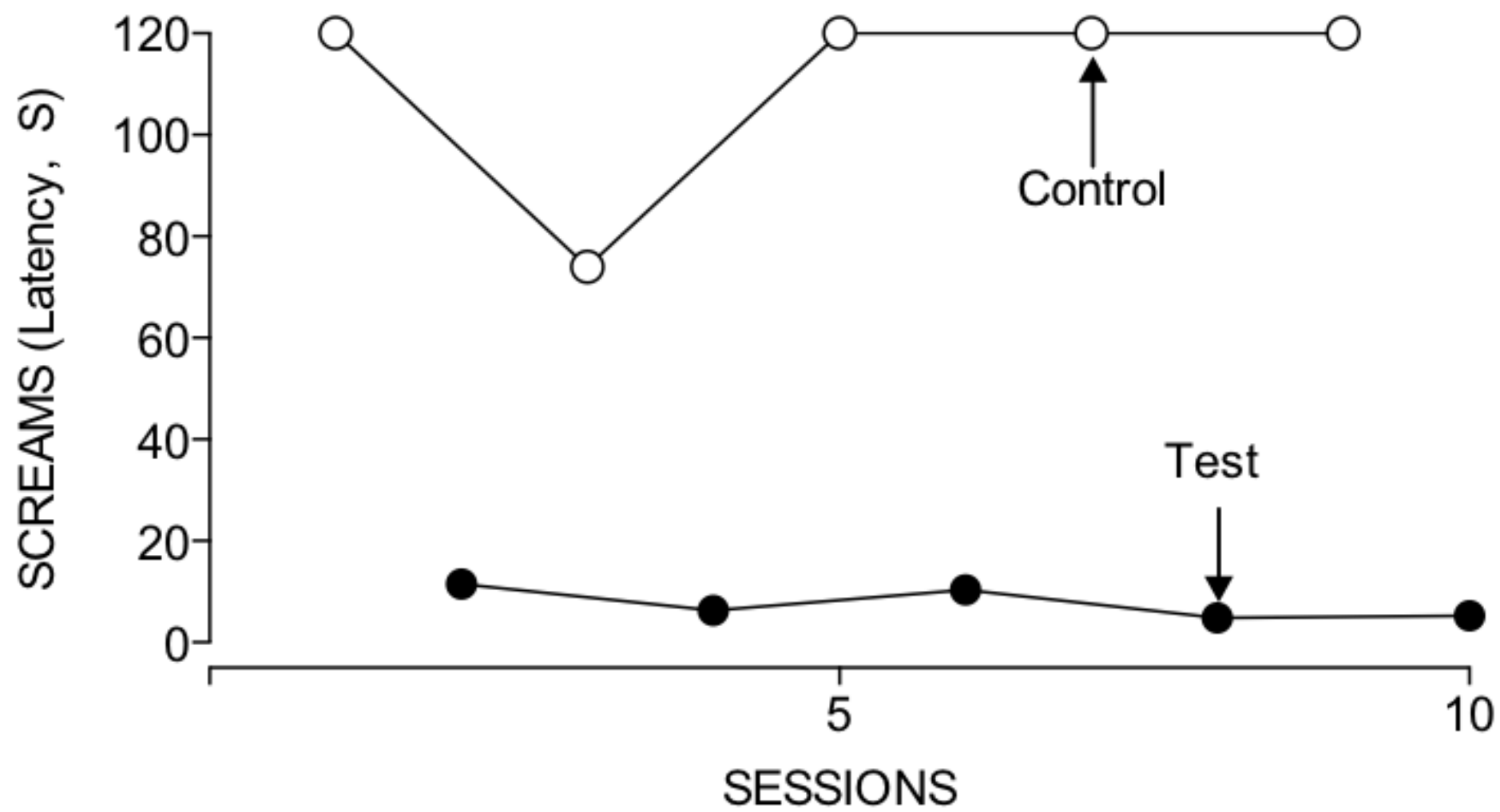
Dwight: Functional Analysis

- **Test**
  - "Let's go shopping at X location"
  - Enter store to begin shopping
  - Whines terminated trial

Dwight: Functional Analysis

- **Test**
  - "Let's go shopping at X location"
  - Enter store to begin shopping
  - Whines terminated trial

- **Control**
  - "X location is all done, let's go to the car."
  - Continuous access to car and heading home
  - Whines terminated trial
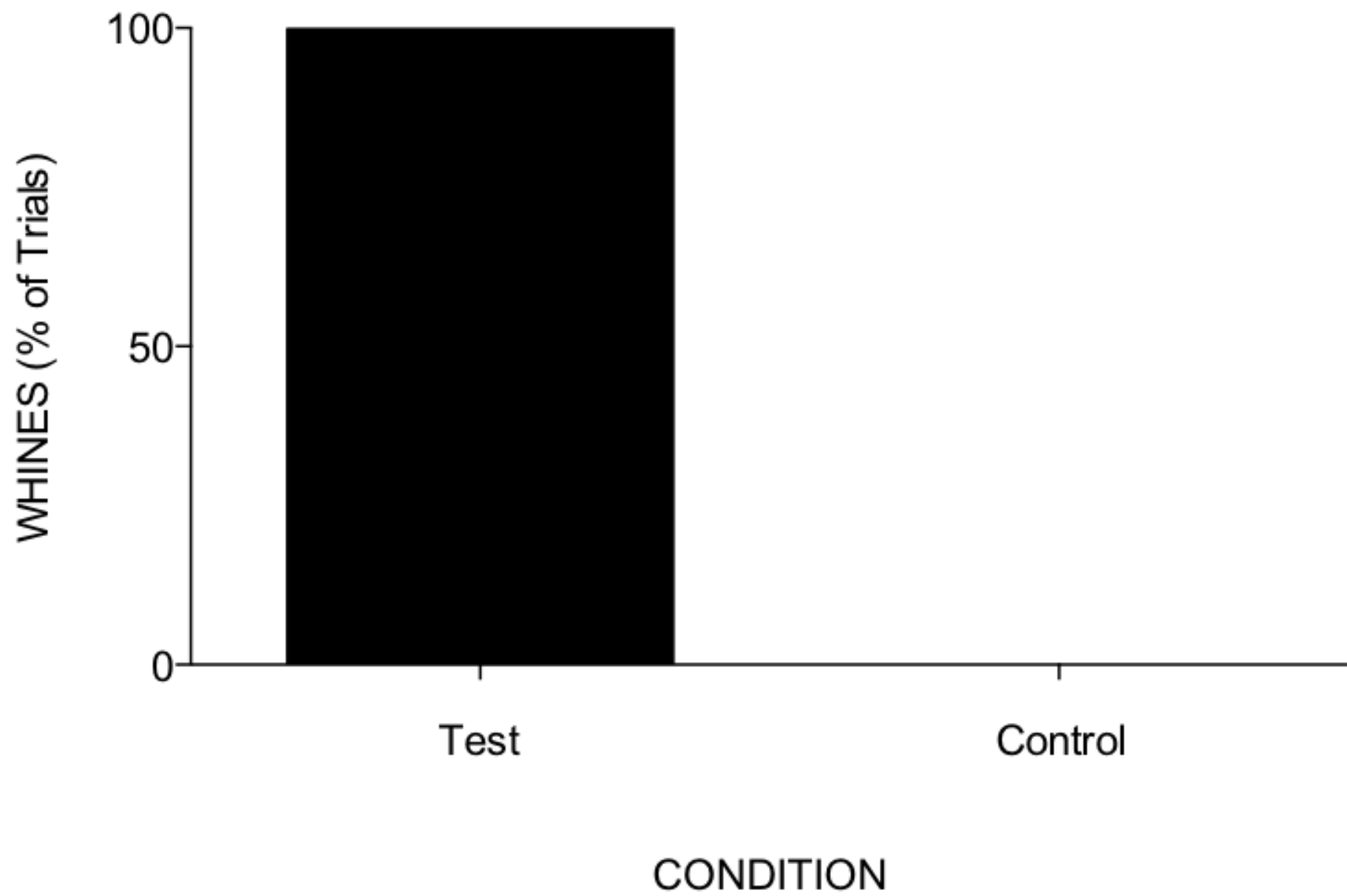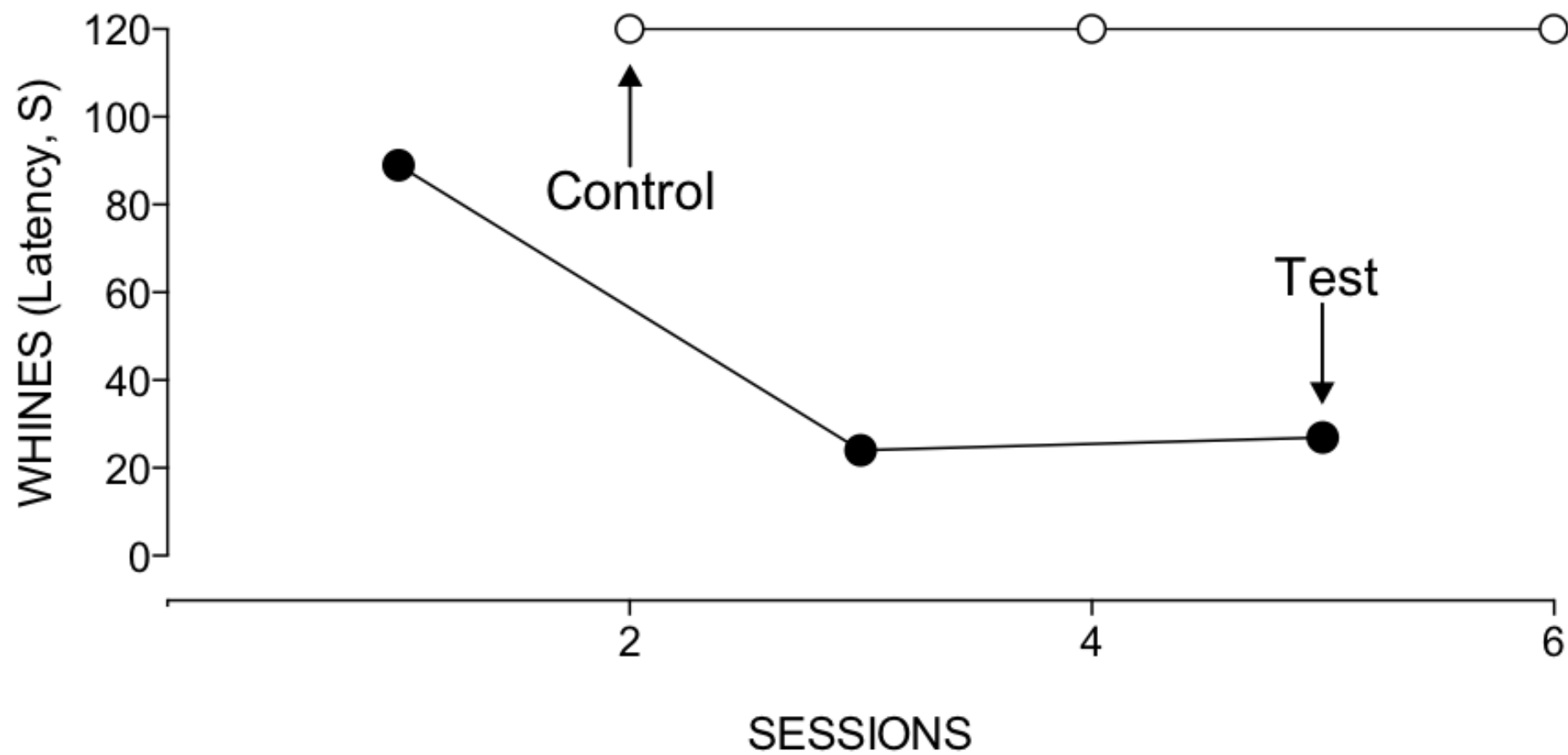
Aaron: Functional Analysis

- **Test**
  - "Walk this way"
  - Electronics terminated, demand to walk presented
  - Elopement terminated trial

Aaron: Functional Analysis

- **Test**
  - "Walk this way"
  - Electronics terminated, demand to walk presented
  - Elopement terminated trial
- **Control**
  - "You can go where ever you'd like."
  - Continuous access to electronics
  - Elopement terminated trial
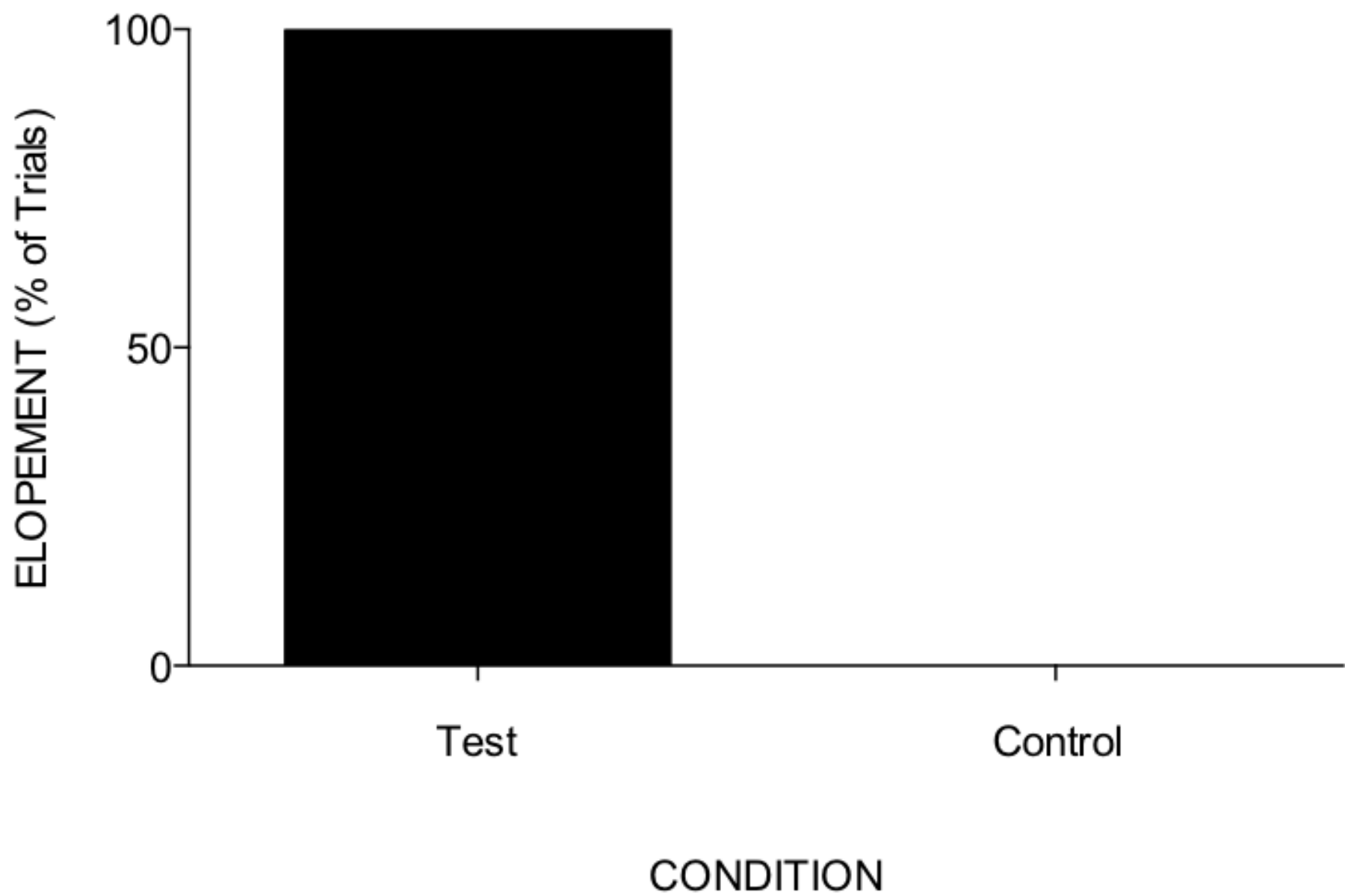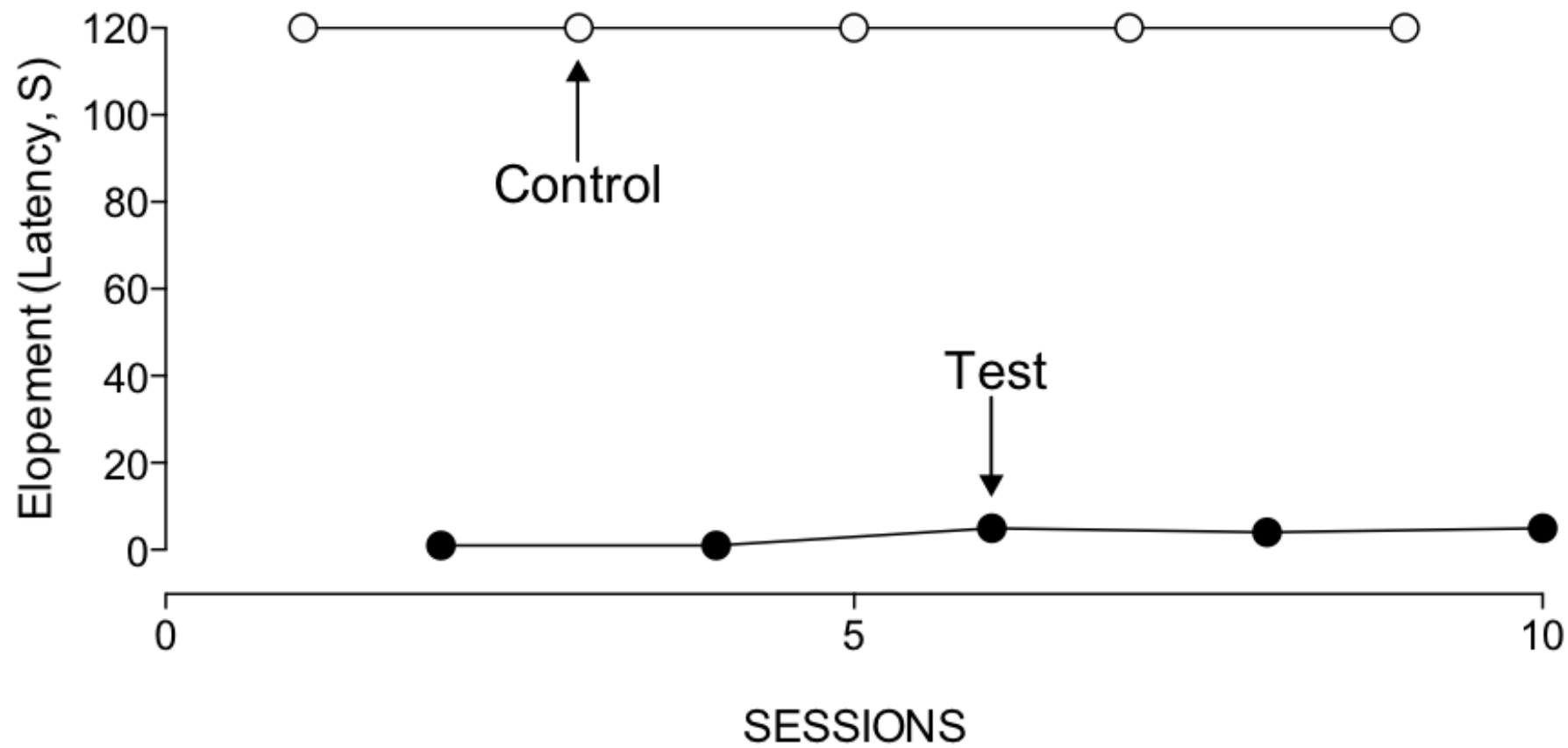
Treatment

- Differential Reinforcement of Alternative Behavior (DRA)

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- Denial Tolerance

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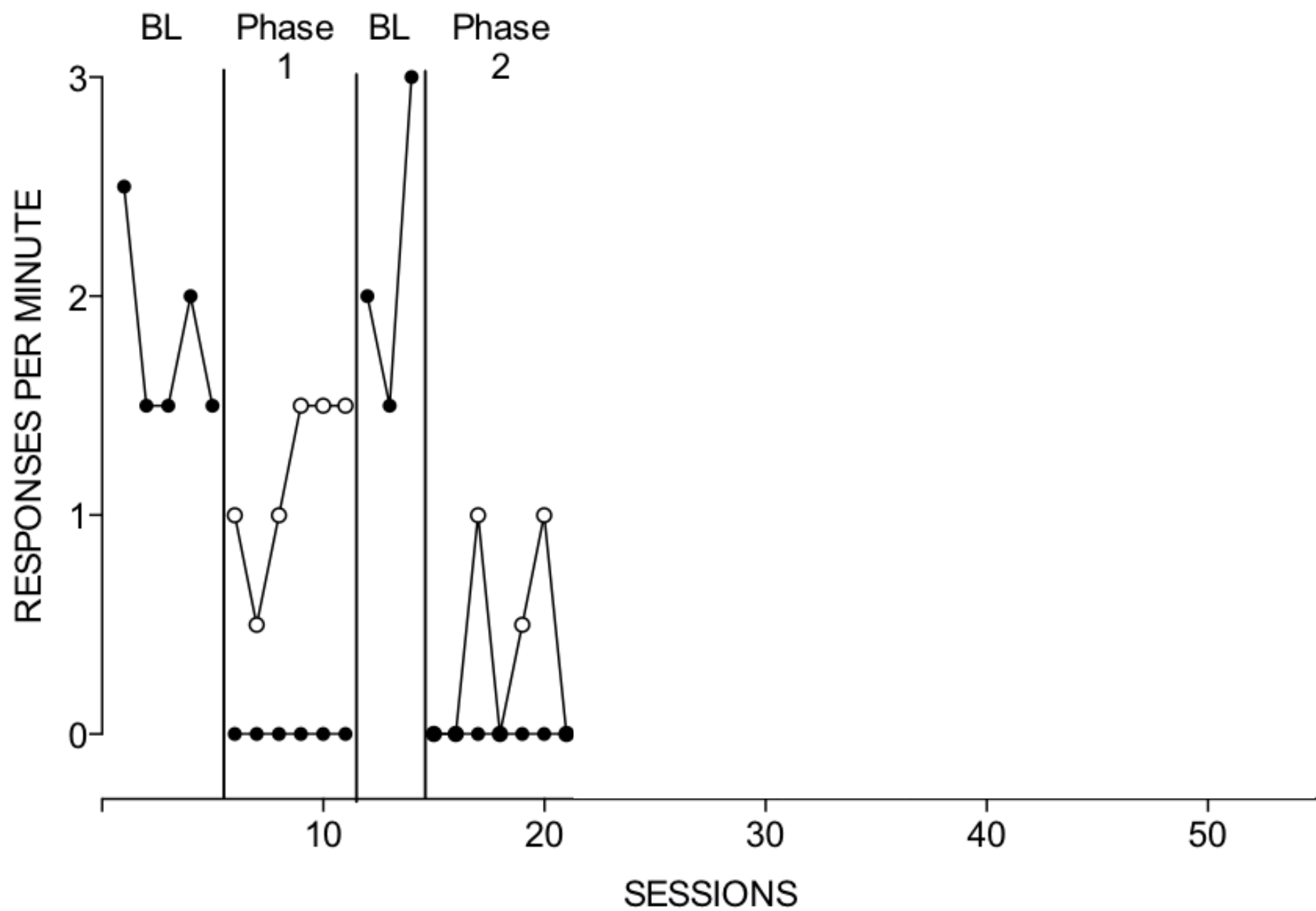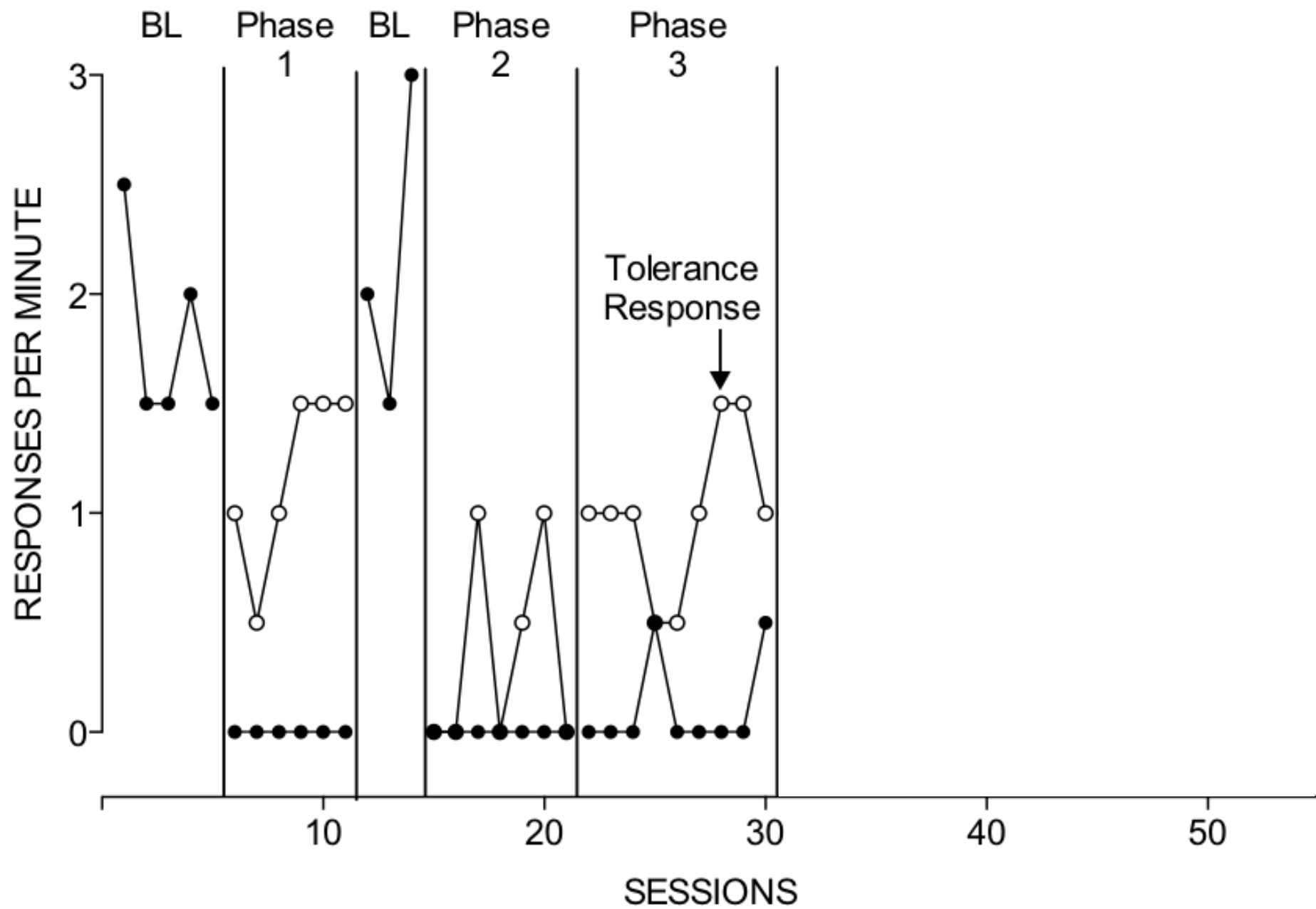- Experimental Design
  - Reversal
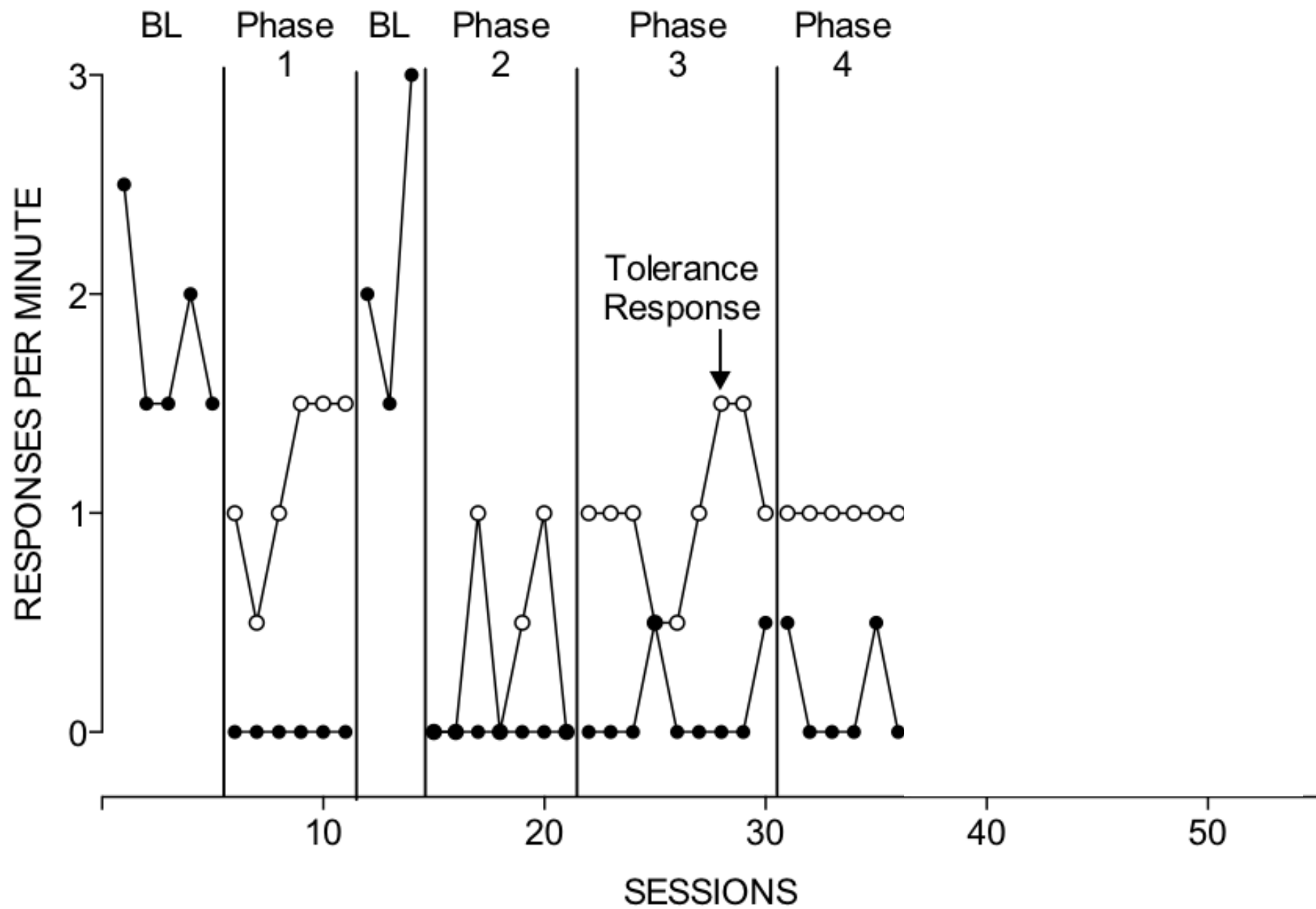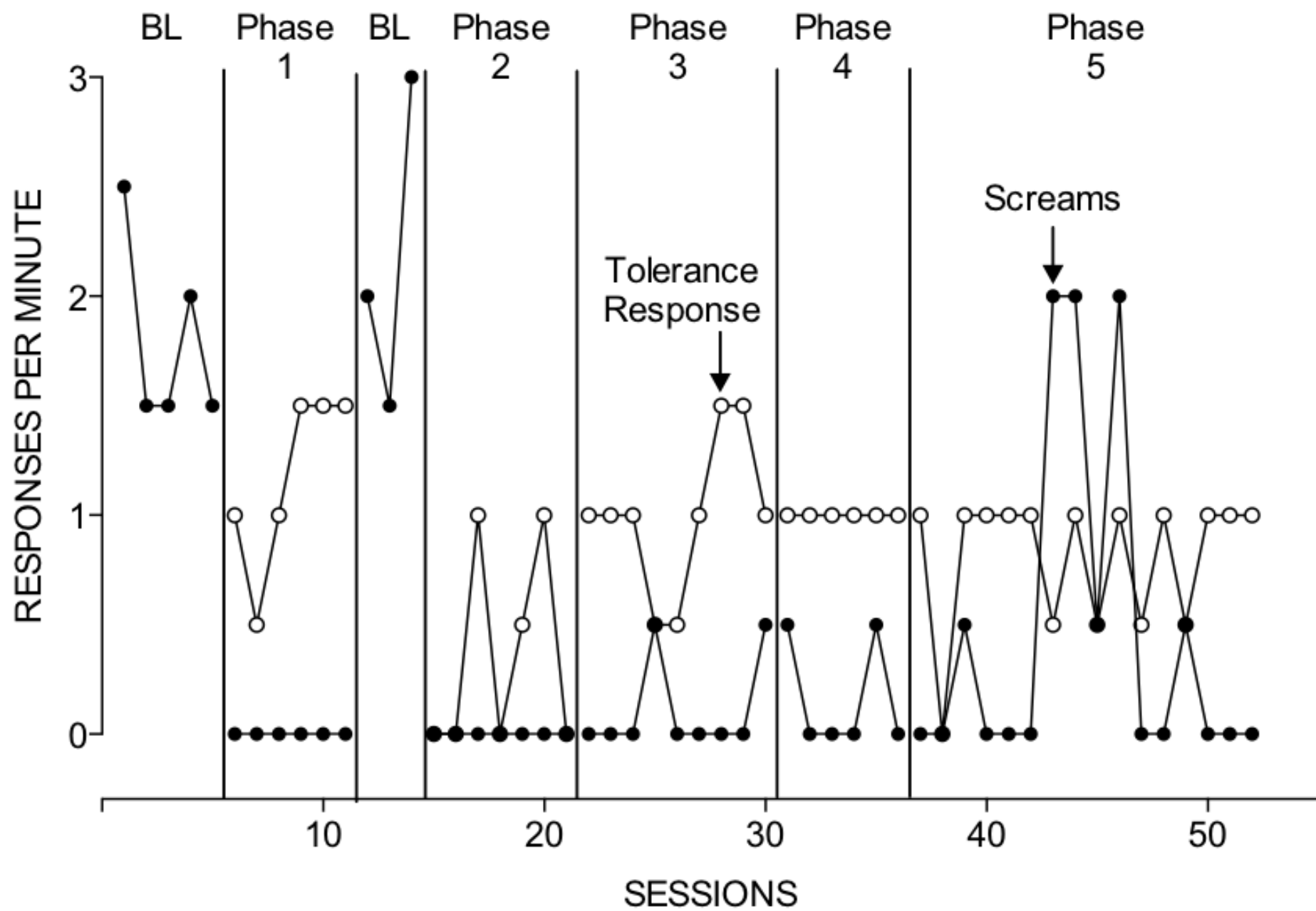 - Changing Criterion
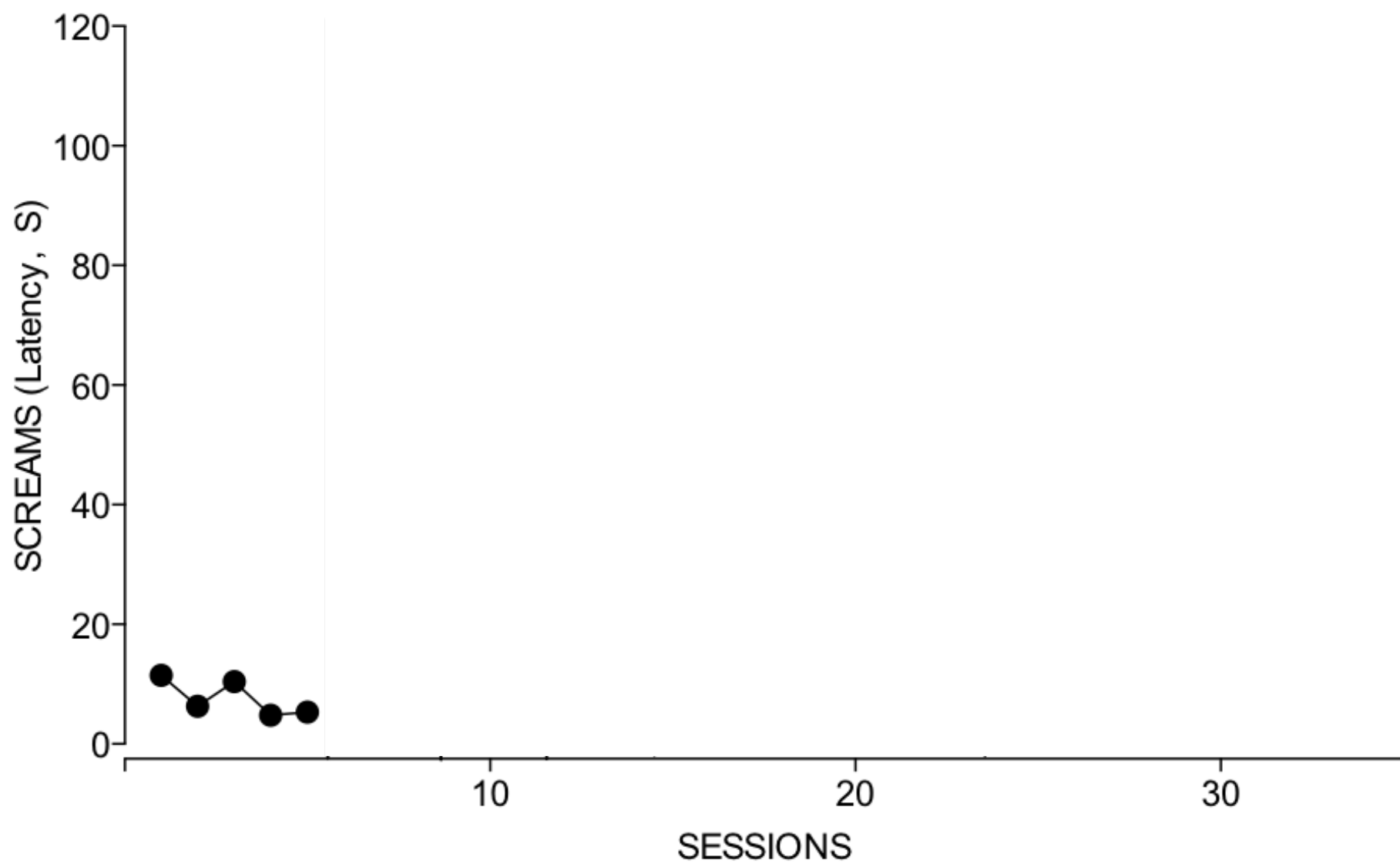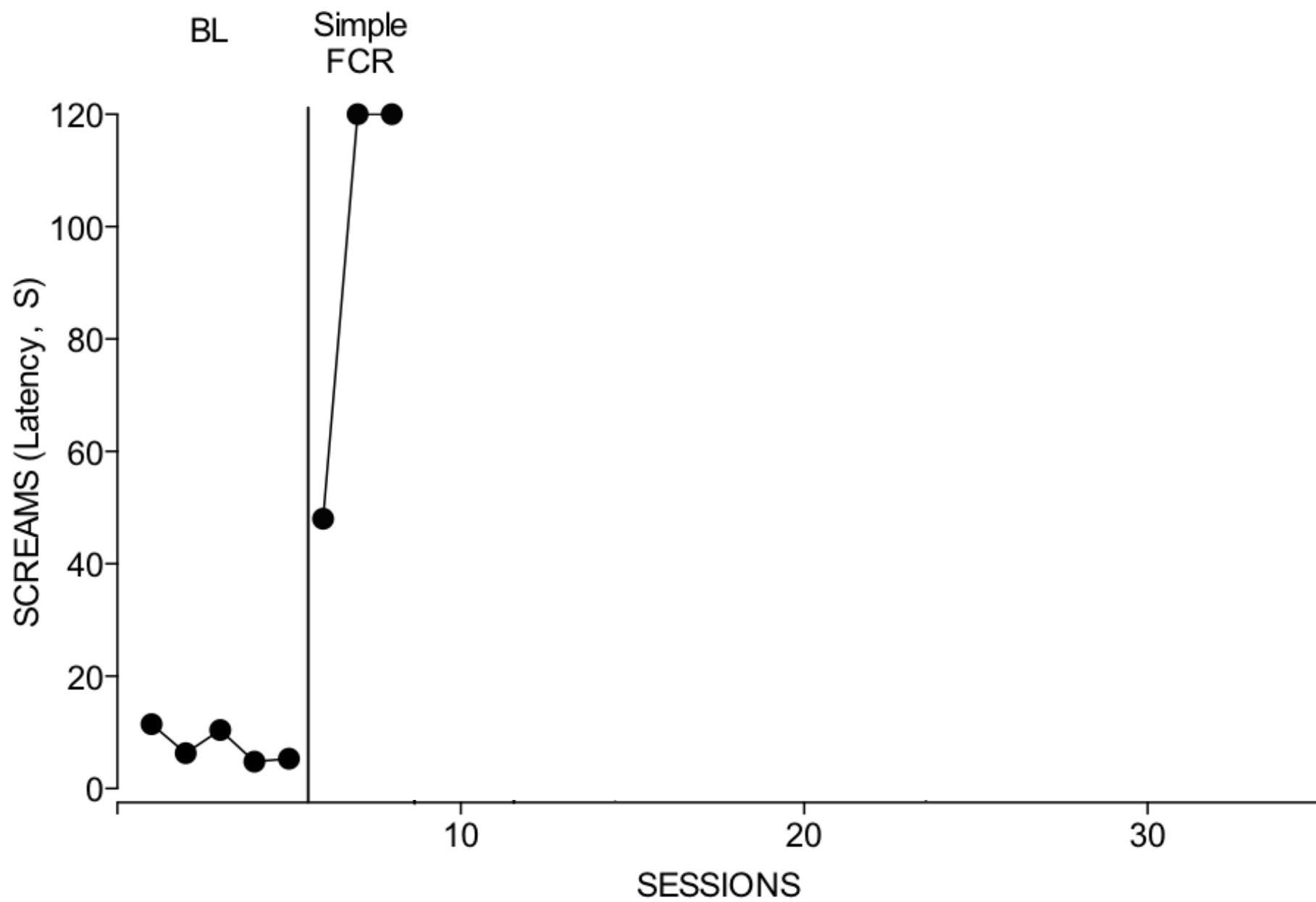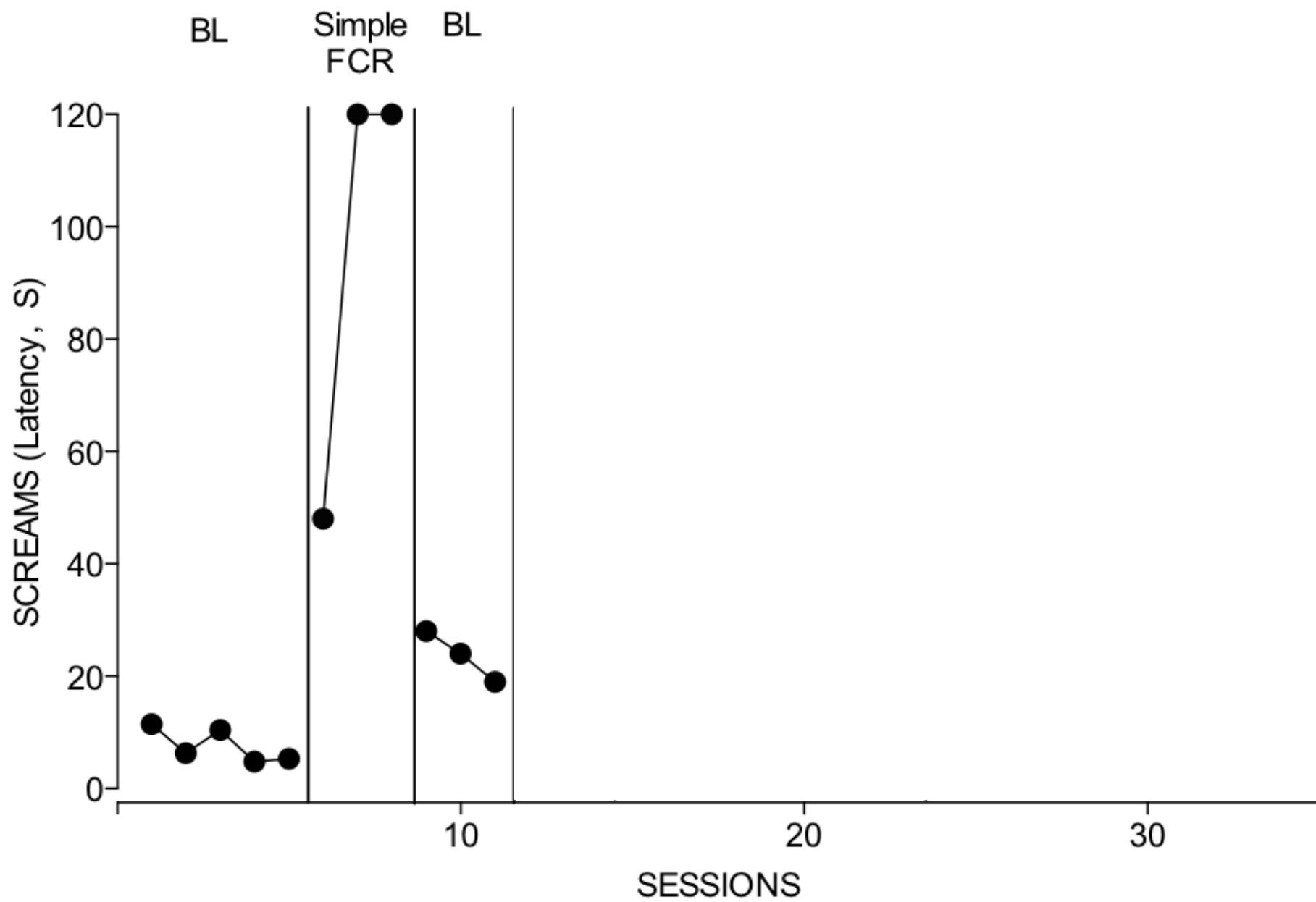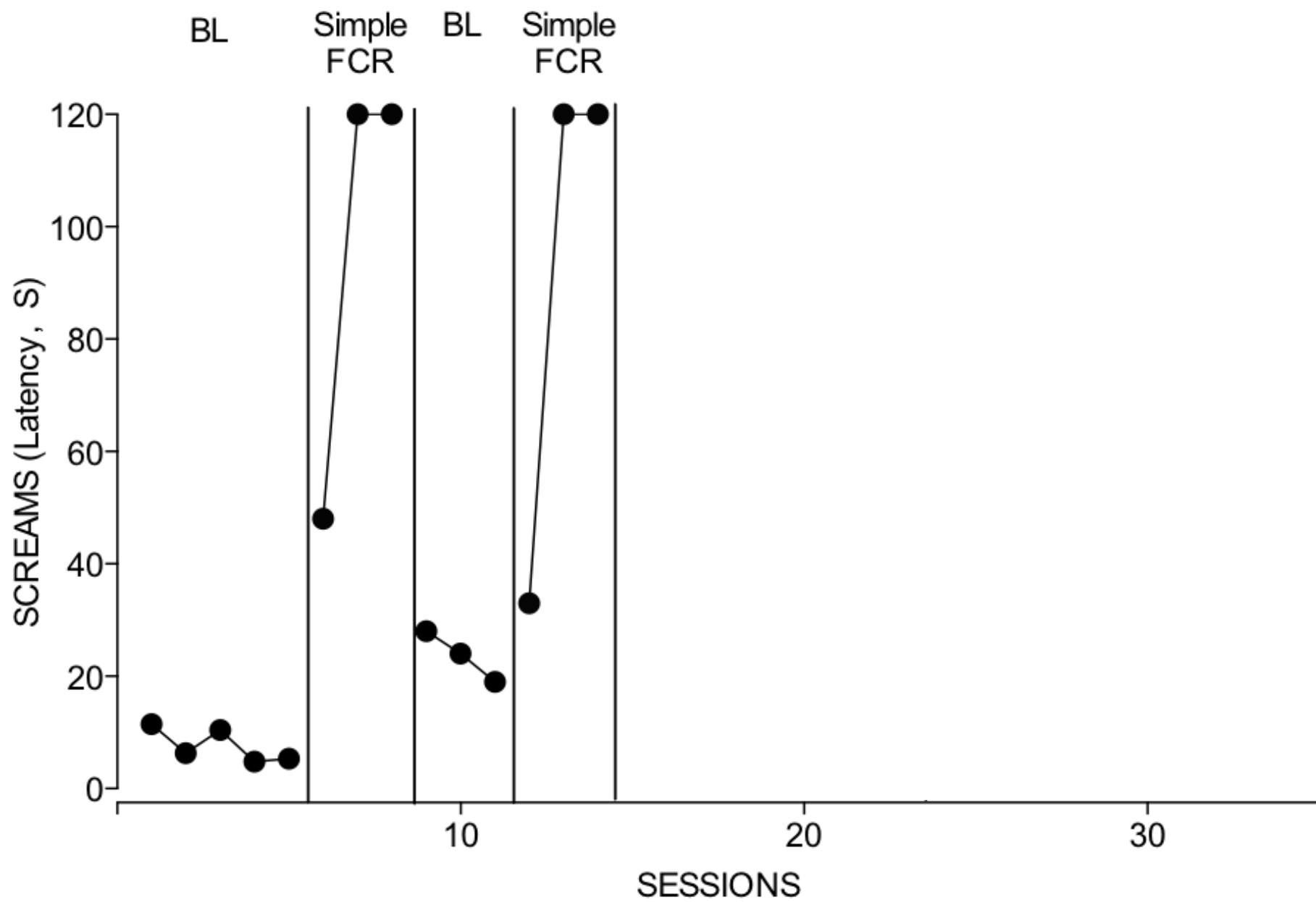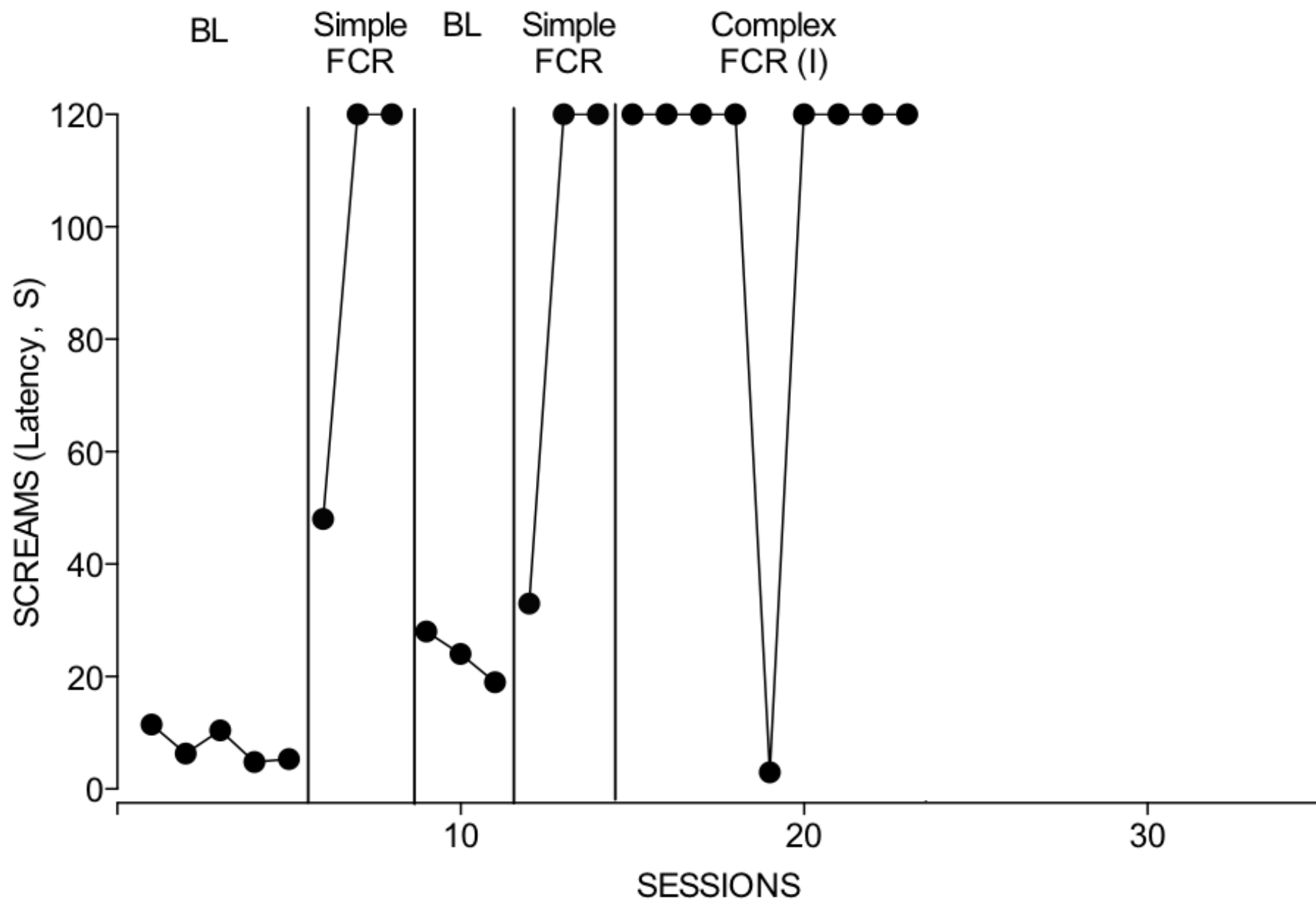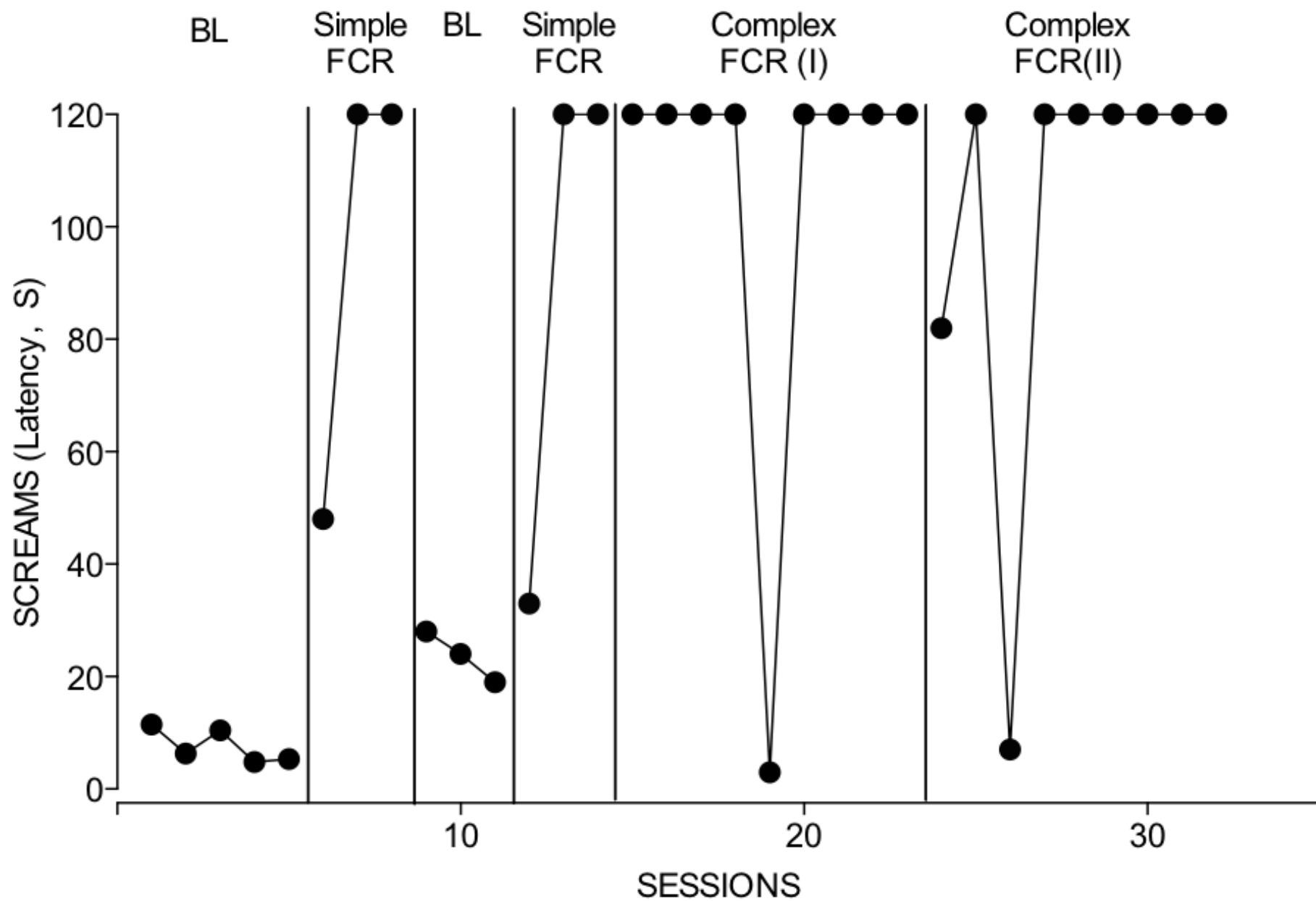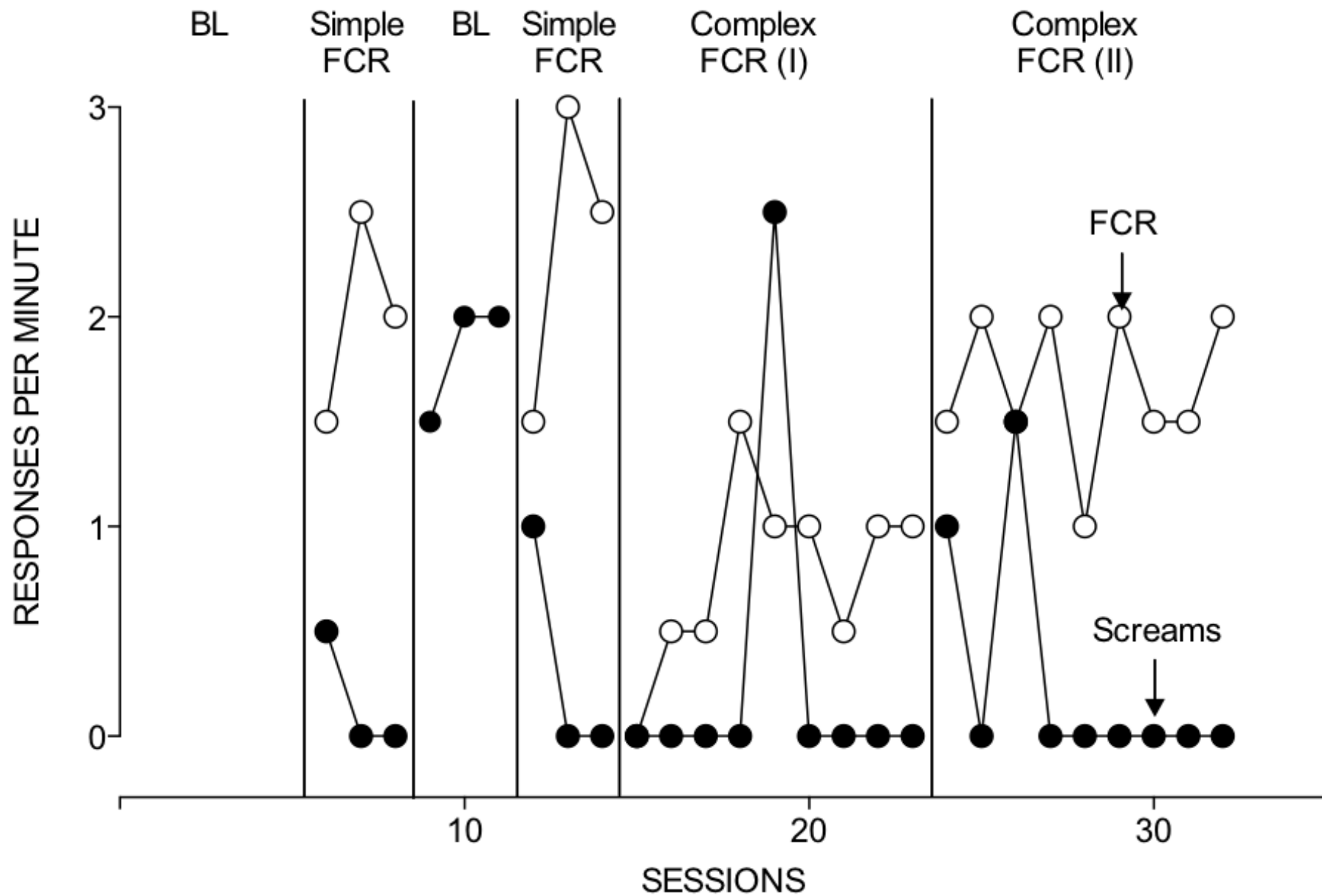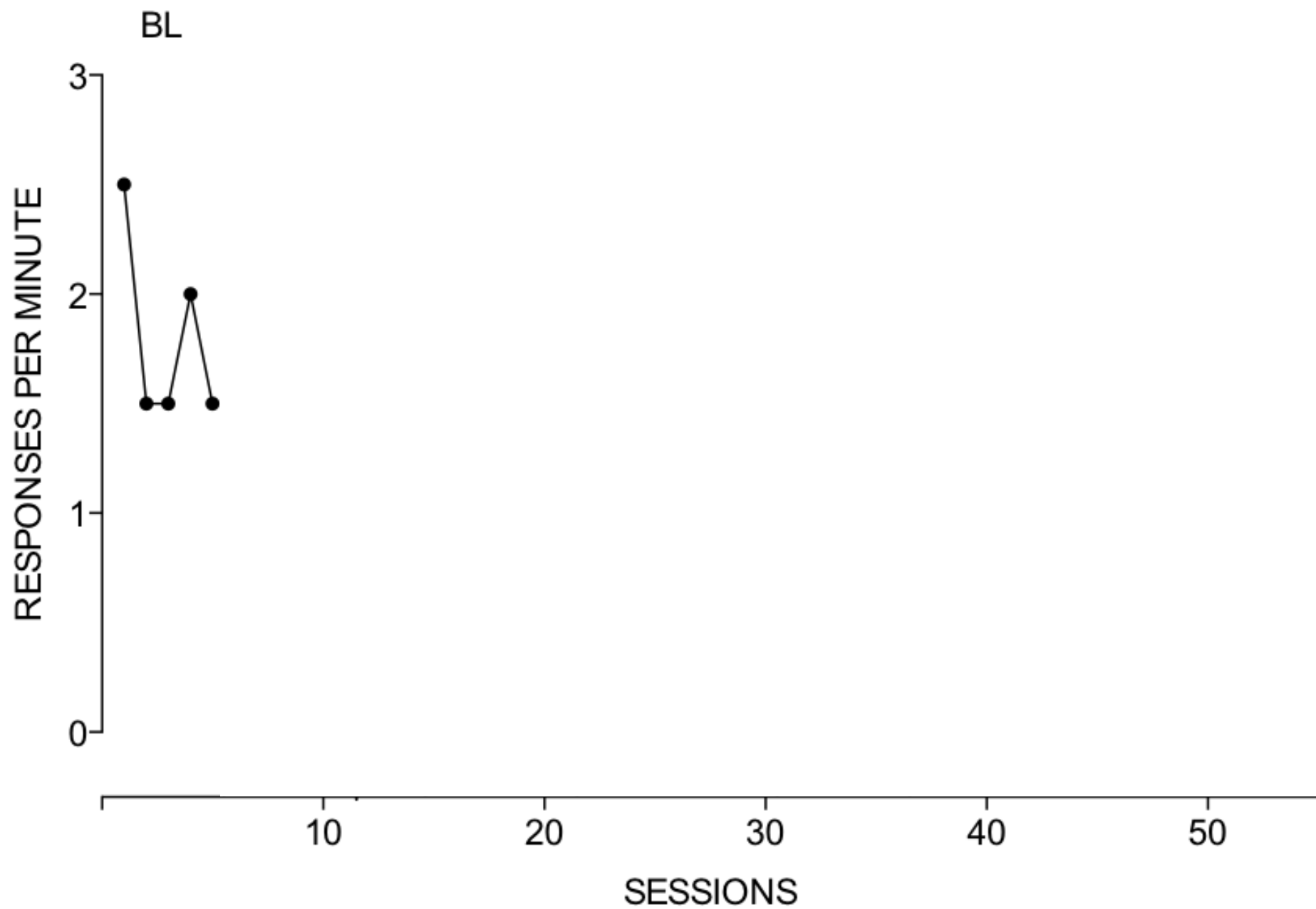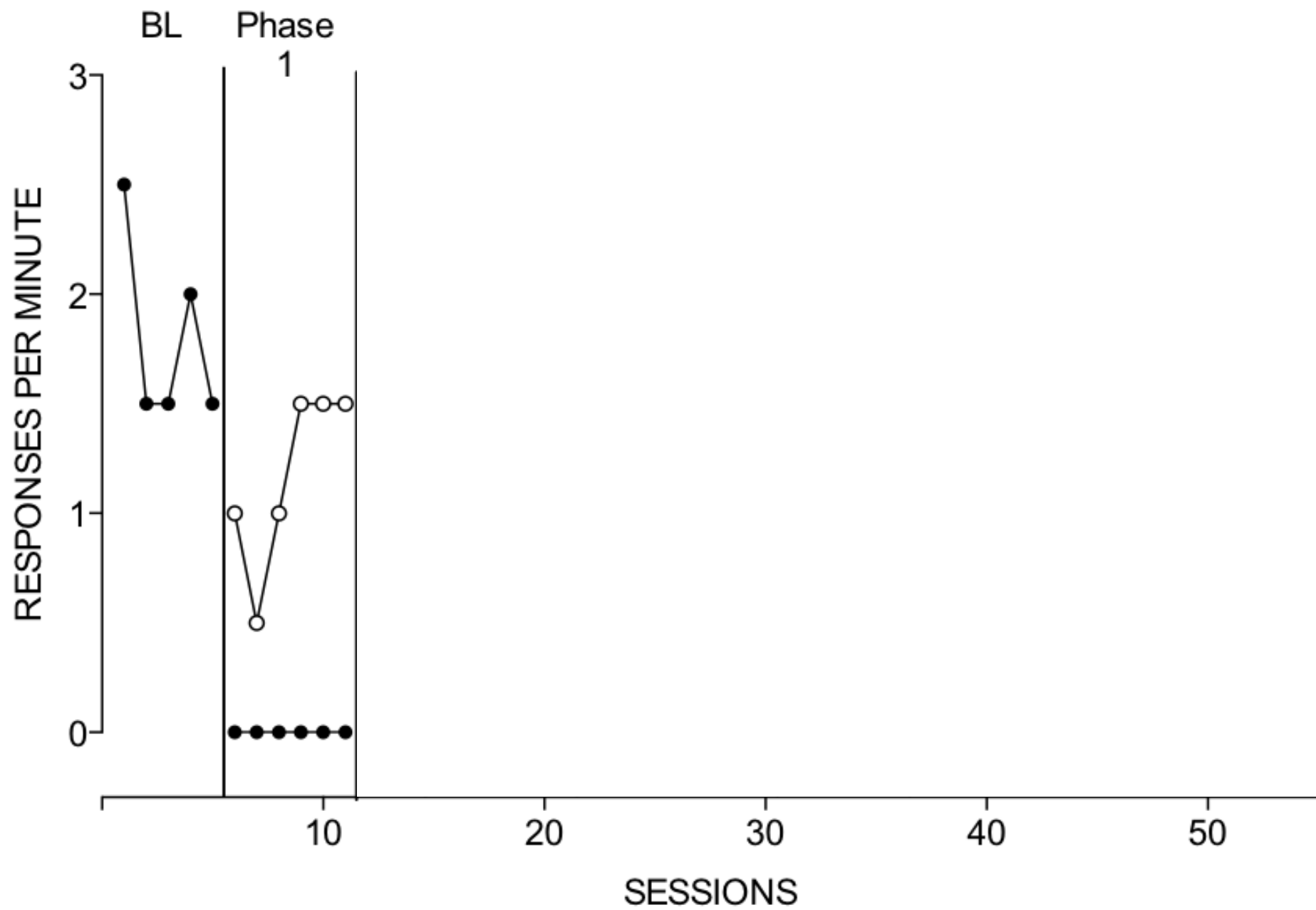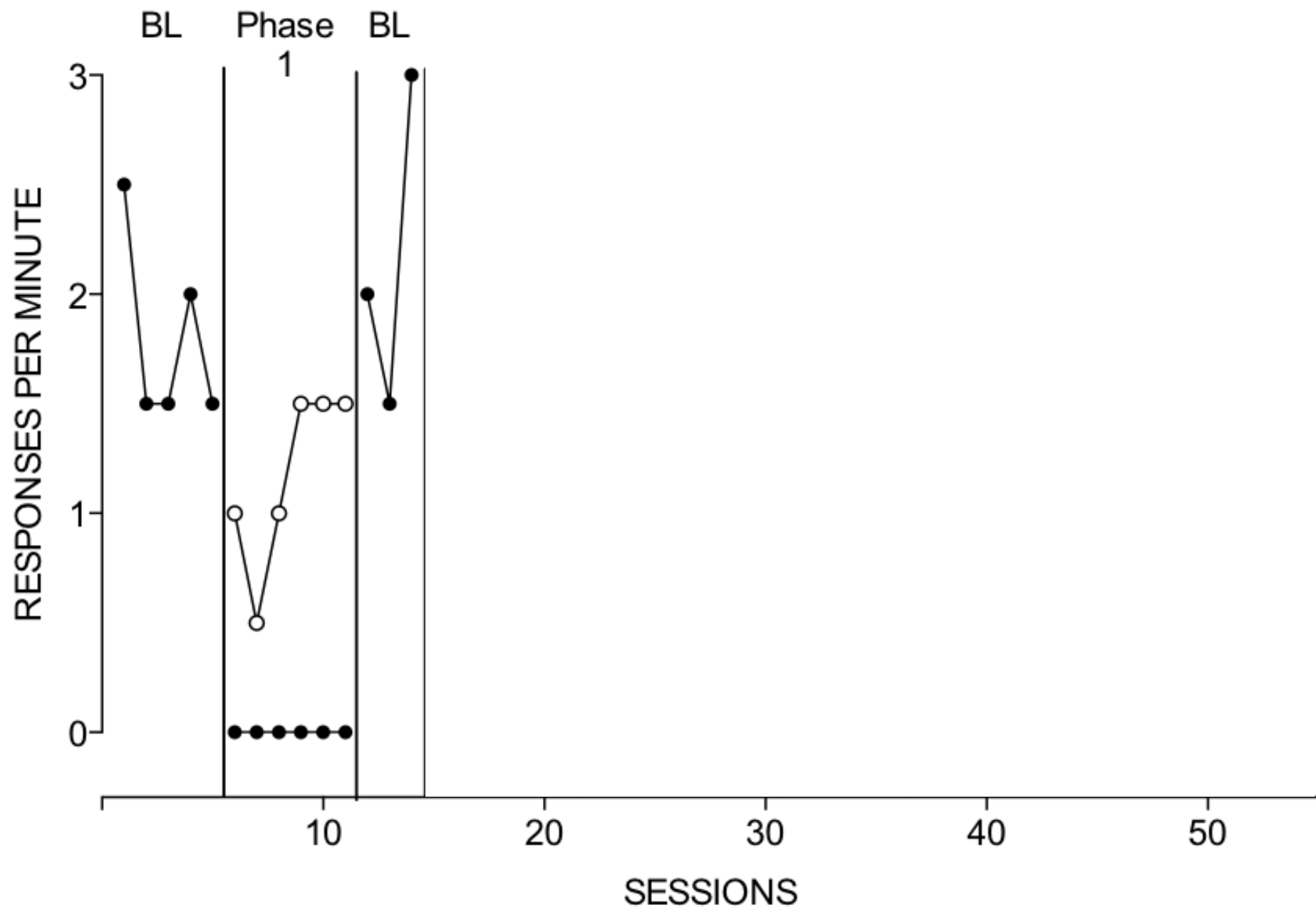
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Discussion

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  - Paucity of analysis demonstrations

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- **Future Research**
  - Evaluate the correspondence of FA results across settings