Evaluating the Function of Problem Behaviors using Direct Behavior Ratings

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Implementation of Tier 2 Interventions

- Behavior multi-tiered systems of support
  - Tier 2 → prevention of further symptom development
- **Standard protocol** (Yong and Cheney, 2013)
  - Single intervention implemented in standard fashion
- **Flexible protocol** (Hawken, Adolphson, MacLeod, and Schumann, 2009)
  - Problem-solving model

Standard Protocol

- Single Tier 2 intervention
- Implemented in a common way for **all** students assigned to Tier 2
- **Decisions**:
  - Highly responsive → return to Tier 1
  - Somewhat responsive → stay at Tier 2
  - Unresponsive → go to Tier 3
- **Ex. Check In/Check Out (CICO)**
  - Morning check in with coordinator
  - Ongoing performance feedback from teacher throughout the day
  - Afternoon check out with coordinator

(Yong and Cheney, 2013)

Flexible Protocol

- Problem solving approach
  - Menu of intervention strategies; modifiable interventions
  - Use data to inform selection/modification
- Intervention procedures depend upon function of behavior
- Identify the **function** of behavior through brief FBA instruments
  - **Function** = purpose the behavior serves
  - **Assumption** = intervention will be more effective if it matches a student's function

(Hawken, Adolphson, MacLeod, and Schumann, 2009)

Standard vs. Flexible

- Ex. **Check In/ Check Out (CICO)**
- McIntosh, Campbell, Carter, & Dickey, 2009
  - Behavior maintained by Adult Attention
  - Behavior maintained by Escape/Avoidance 
- Modifications have proven effective (Campbell & Anderson, 2008; Kilgus, Fallon, & Feinberg, 2015; Turtura, Anderson, & Boyd, 2014)

Take Home Message

- Limitations associated with standard protocol approach
  - SP intervention is unlikely to be effective for a subgroup of students
- SP protocol implications
  - Student who could respond to Tier 2 interventions might be moved on to Tier 3
- Need for flexibility in intervention selection/ modification
  - Need to collect **functional behavior assessment** (FBA) data

Functional Behavioral Assessment Tools

- What is required of a FBA tool at Tier 2?
  - Efficiency
  - Accurate portrayal of the function of behavior
  - Direct
  - Easy integration into other forms

Functional Behavioral Assessment Tools

- Functional Assessment Checklist for Teachers and Staff (FACTS) (March et al., 2000)
  - Rating Scale + Semi-Structured Interview
  - Indirect methodology
  - Limited evidence (McIntosh et al., 2008; Zaja, Moore, van Ingen, & Rojahn, 2011)

Functional Behavioral Assessment Tools

- Functional Analysis Screening Tool (FAST) (Iwata & DeLeon, 1995)
  - Rating scale
  - Iwata, DeLeon & Roscoe (2013)
    - Miscalculated function 1/3 cases
    - Indirect methodology

Systematic Direct Observations

- Example: ABC recording, time sampling procedures, scatterplot
- Good → highly direct, low inference
  - Collected at time and place in which behavior is exhibited
- Bad → takes a large amount of time and effort
  - Limited applicability at Tier 2 due to inefficiency

Direct Behavior Ratings

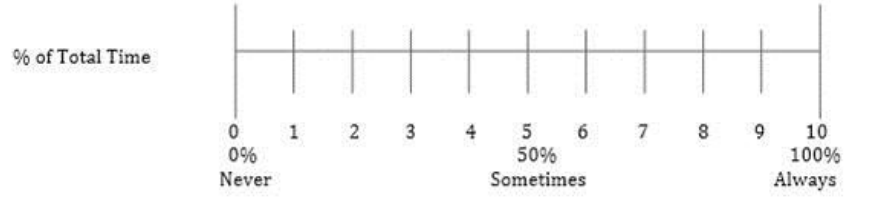
- Direct method for monitoring social behavior
  - SDO + Behavior Rating Scale
  - Direct → short latency, low inference
  - Brief teacher ratings
  - Progress monitoring
  - Corresponds to operationally defined behaviors
  - Minimum training
  - DBR-SIS* and DBR-MIS

(Chafouleas, Riley-Tillman, and McDougal 2002, Chafouleas, Riley-Tillman, & Christ, 2009)

Direct Behavior Ratings

DBR-SIS

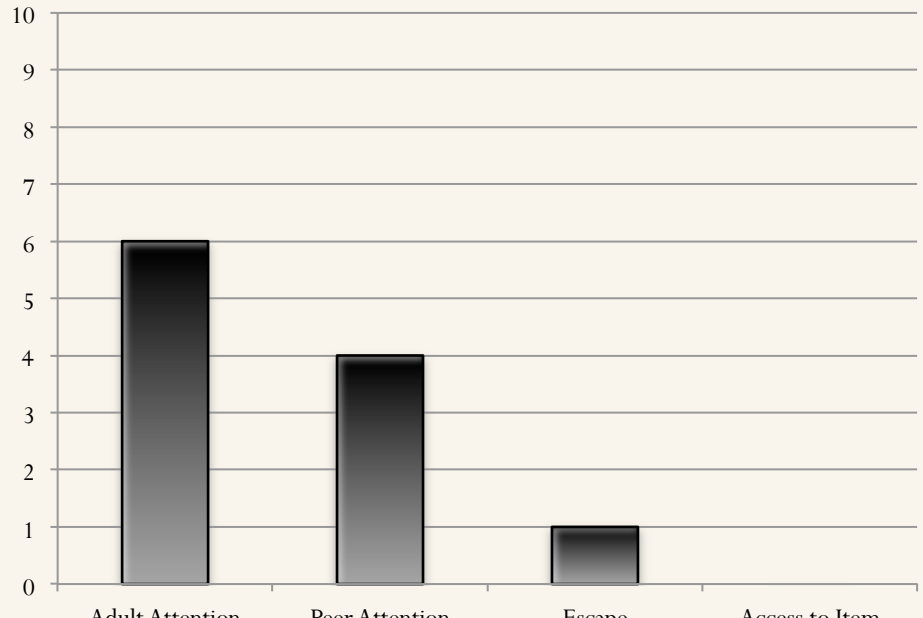
- Psychometric defensibility in assessing social behavior
  - Sensitivity to change, validity, and reliability
- Could potentially collect data regarding consequences at the same time as behaviors
  - **Use in FBA?**



(Chafouleas, Riley-Tillman, and McDougal 2002, Chafouleas, Riley-Tillman, & Christ, 2009)

DBR-SIS in FBA: Interpretation & Use

- **Interpretation** → akin to *conditional probabilities*
  - The percentage of problem behavior instances followed by each consequence
- **Use** → collect at same time as baseline progress monitoring (e.g., re: disruptive behavior) to inform subsequent intervention decisions



Purpose

DBR-SIS utility in FBA?

- Can the DBR-SIS generate accurate ratings of behavioral consequences?
- What level of training is needed for accurate DBR-SIS ratings?
- Can users collect both ratings of behavior and consequences and still remain accurate?

Experiment 1: Method

- Participants
  - 178 undergraduates
- Randomly assigned
  - Training with feedback
  - Training no feedback
  - Pretest-Posttest only
  - Posttest only

Experiment 1: Method

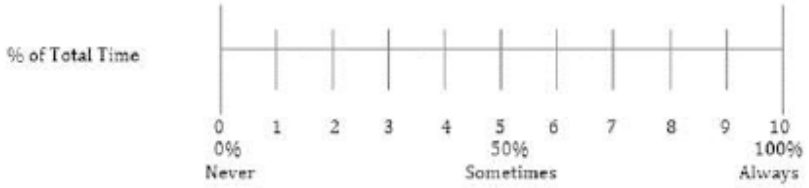
- Materials
  - Book Chapter
  - Video Clips
  - DBR-SIS

Experiment 1: Method

Directions: Place a mark along the line that best reflects the percentage of total time the student exhibited disruptive behavior.

Disruptive behavior is a student action that interrupts regular school or classroom activity. For example, out of seat, fidgeting, playing with objects, acting aggressively, talking/yelling about things that are unrelated to classroom instruction.

Disruptive Behavior:



Directions: Place a mark along the line that best reflects the percentage of disruptive behaviors that were followed by each consequence.

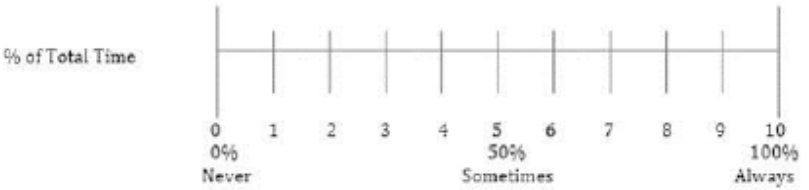
Adult Attention: Positive, negative, or neutral adult reaction that can be either verbal or nonverbal. Examples: reprimand, redirection to work, praise, discussion, high-fives, or shushing.

Peer Attention: Positive, negative, or neutral peer reaction that can be either verbal or nonverbal. Examples: talking, laughing, arguing, high-fives, hitting, kicking, or yelling.

Escape/Avoidance: Removal of task, activity, or performance expectations. Examples: removal of academic materials, allowance to delay task completion, permission to leave room, or elimination of task demands.

Access to Tangibles or Activities: Acquisition of items or activities. Examples: toys, food, prizes, games, preferred tasks, sleep, technology, or homework pass.

Adult Attention:



Experiment 1: Method

Experiment 1: Method

True score and inter-observer agreement for contrived videos in experiments 1 and 2

	True Score Rating					Study		IOA
	DB	AA	PA	EA	TA	1	2	Kappa *
Clip 1	7	5	2	1	0	Practice	----	.69
Clip 2	2	6	1	0	0	Pretest	Pretest	.92
Clip 3	1	0	7	0	0	Pretest	Posttest	1.00
Clip 4	5	6	4	1	0	Posttest	Posttest	.94
Clip 5	5	3	2	1	1	Practice	Practice	.74
Clip 6	1	7	3	0	0	Posttest	----	.87
Clip 7	4	2	5	3	0	----	Pretest	.93
Clip 8	2	6	2	2	0	----	Practice	1.00

Note: Disruptive Behavior (DB), Adult Attention (AA), Peer Attention (PA), Escape/Avoidance (EA), and Access to Tangibles/Activities (TA).

*Kappa scores reflect disruptive behavior agreement only.

Experiment 1: Method

- Procedure
  - 40-45 minute presentation including pretest, post test, and practice videos
  - Training with feedback
  - Training no feedback
  - Pretest-Posttest only
  - Posttest only

Experiment 1: Results

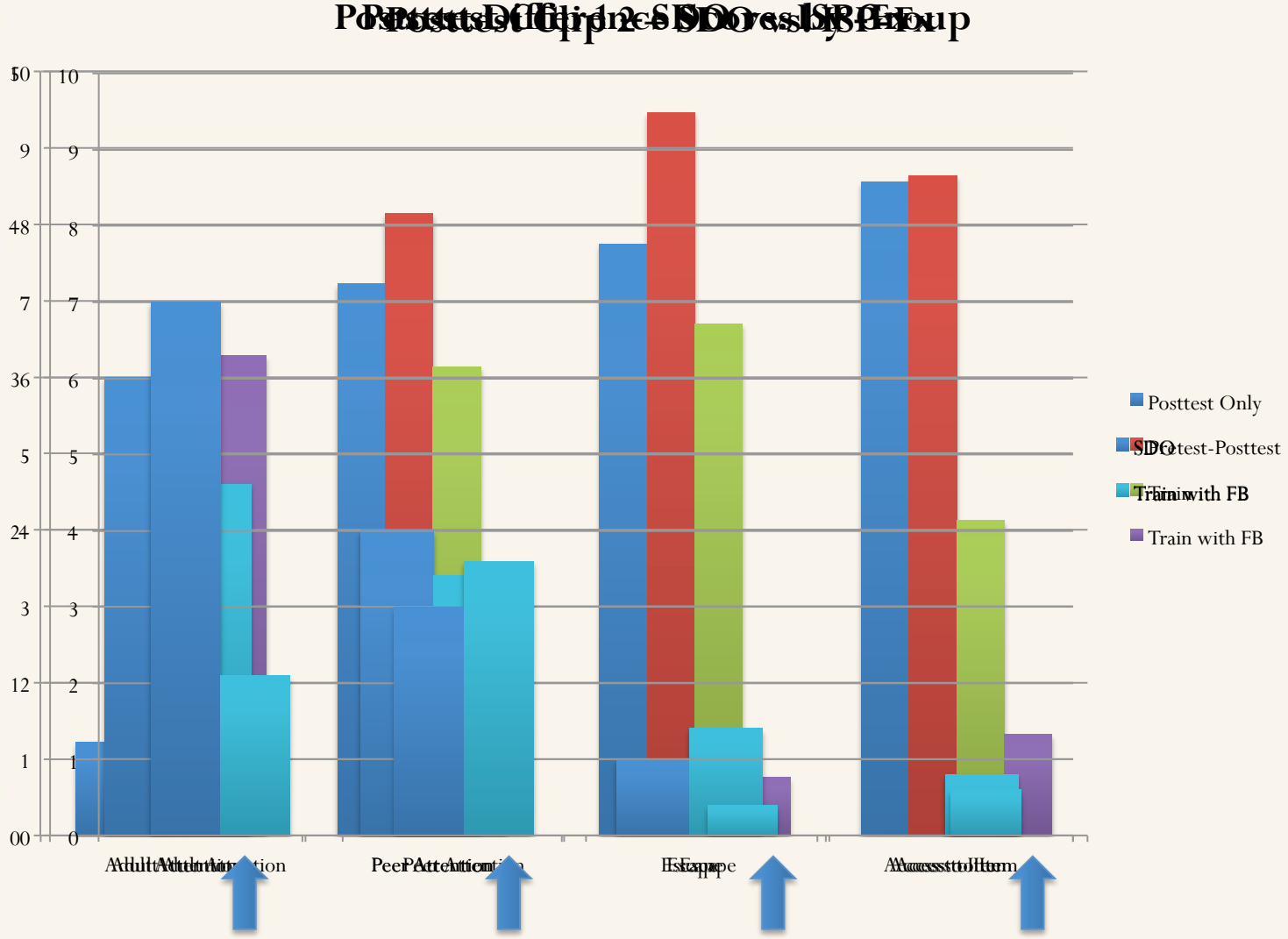
	Kruskal-Wallis ANOVA	Repeated Measures MANOVA	
Function	**χ^2**	**Wilks' Lambda F (Time*Group)**	**Partial η^2**
Adult Attention	**97.98	**56.59	0.46
Peer Attention	**84.30	**53.80	0.45
Escape	**92.45	**67.63	0.51
Access to Items	**72.90	**40.31	0.38
Disruptive	**74.27	**48.30	0.43

Note: Dependent variables correspond to corrected (absolute) accuracy scores

- **Mann Whitney *U*** → Statistically significant difference ($p < .001$) between **Training with Performance Feedback** and all other groups across all functional targets

Experiment 1: Results

Comparison Score	Group	Adult Attention M	Adult Attention SD	Peer Attention M	Peer Attention SD	Escape/ Avoidance M	Escape/ Avoidance SD	Access to Tangibles/ Activities M	Access to Tangibles/ Activities SD	Disruptive Behavior M	Disruptive Behavior SD
Experiment 1											
Pretest-	PO*	-	-	-	-	-	-	-	-	-	-
Uncorrected	PP	-2.30	2.02	-1.86	2.13	-3.26	2.05	-2.39	2.17	-3.58	1.51
	T	-2.03	1.89	-2.06	1.83	-2.71	1.41	-2.17	1.81	-3.18	1.38
	TF	-2.29	2.12	-2.13	1.93	-2.91	1.59	-2.39	1.86	-3.54	1.42
Posttest-	PO	-0.61	1.78	-3.61	1.89	-3.87	2.08	-4.28	2.60	-3.56	1.24
Uncorrected	PP	-0.66	1.72	-4.07	1.88	-4.73	2.28	-4.32	2.40	-4.10	1.36
	T	-0.09	1.61	-3.07	1.89	-3.35	2.15	-2.06	1.83	-3.41	1.60
	TF	3.14	1.09	0.02	1.40	-0.38	0.91	-0.66	0.73	-1.10	1.26
Pretest-	PO	-	-	-	-	-	-	-	-	-	-
Corrected	PP	2.70	1.57	4.73	1.21	3.26	2.05	2.39	2.17	3.72	1.44
	T	2.34	1.67	5.10	1.29	2.71	1.41	2.17	1.81	3.40	1.25
	TF	2.87	1.77	4.83	1.53	2.91	1.59	2.39	1.86	3.97	1.29
Posttest-	PO	2.56	0.96	3.78	1.68	3.87	2.08	4.28	2.60	3.61	1.17
Corrected	PP	2.45	0.88	4.20	1.63	4.73	2.28	4.32	2.40	4.15	1.25
	T	2.63	1.03	3.30	1.63	3.35	2.15	2.06	1.83	3.41	1.60
	TF	3.27	0.91	1.43	0.79	0.46	0.88	0.66	0.73	1.55	0.99


Posttest Only
SDO
Posttest-Posttest
Train with FB

Experiment 1

- Training with feedback provided the most accurate ratings
  - Within 10% of SDO true scores
  - However, adult attention was less accurate
    - Training Modification

Motivation for a second experiment

- % of target student disruptions met with each consequence was similar among practice clips
  - Bias in posttest?
- Increased focus on FBA in general
  - More focus on DBR-SIS in particular
- Similar posttest clips
  - Inadequate sampling of performance

Experiment 2: Method

- Participants
  - 213 undergraduates
- Randomly assigned
  - Training with feedback
  - Training no feedback
  - Pretest-Posttest only
  - Posttest only

Experiment 2: Method

- Changes to PowerPoint
  - Less FBA
  - More detailed examples of rating
  - Clip order was modified
- Changes to Videos
  - 2 Videos added
  - Specific Script

Experiment 1: Results

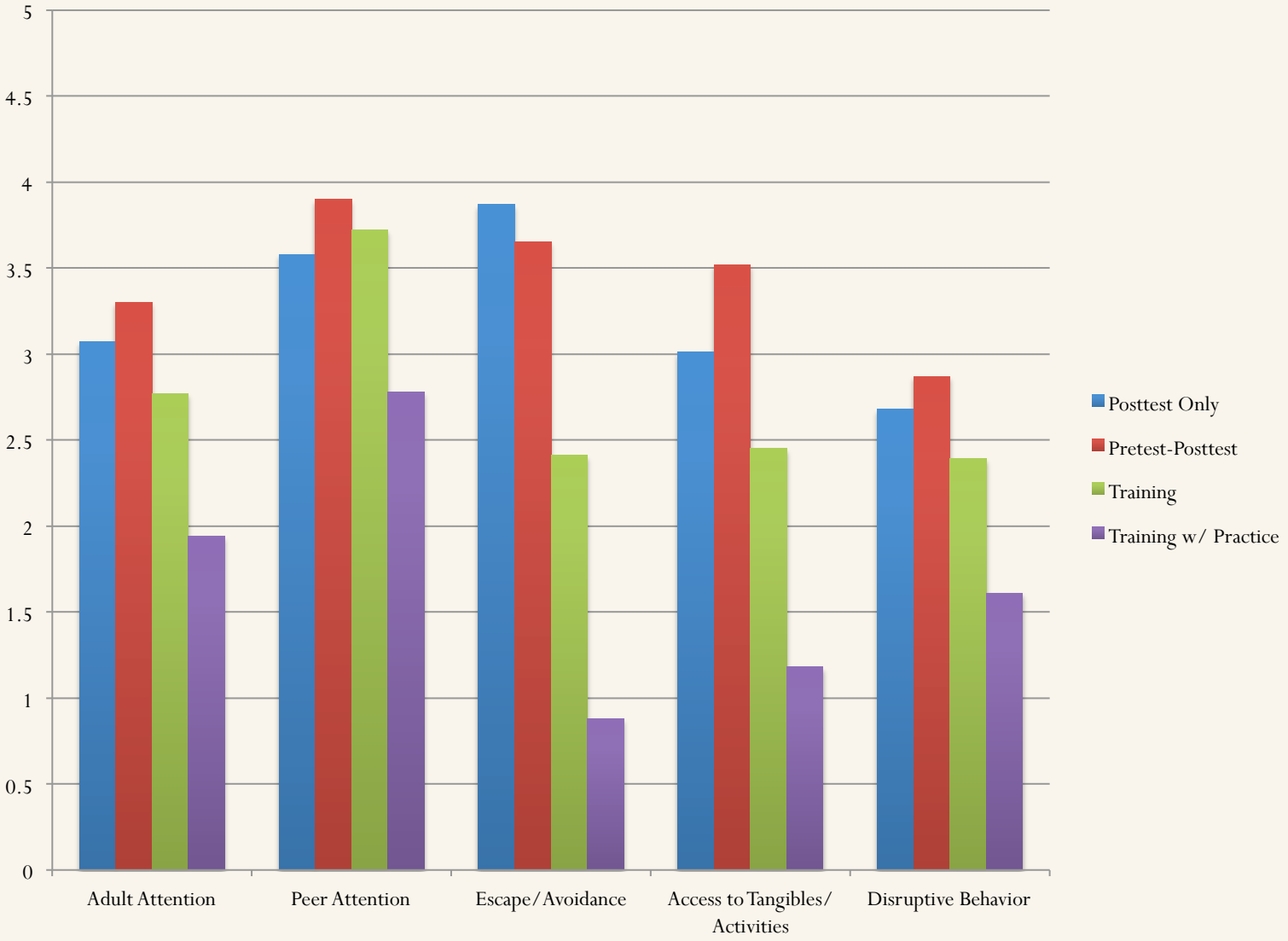
	Kruskal-Wallis ANOVA	Repeated Measures MANOVA	
Function	**χ^2**	**Wilks' Lambda F (Time*Group)**	**Partial η^2**
Adult Attention	**43.22	*3.12	0.04
Peer Attention	**20.12	**13.07	0.14
Escape	**86.45	**10.43	0.12
Access to Items	**27.56	*6.50	0.08
Disruptive	**29.49	*3.09	0.04

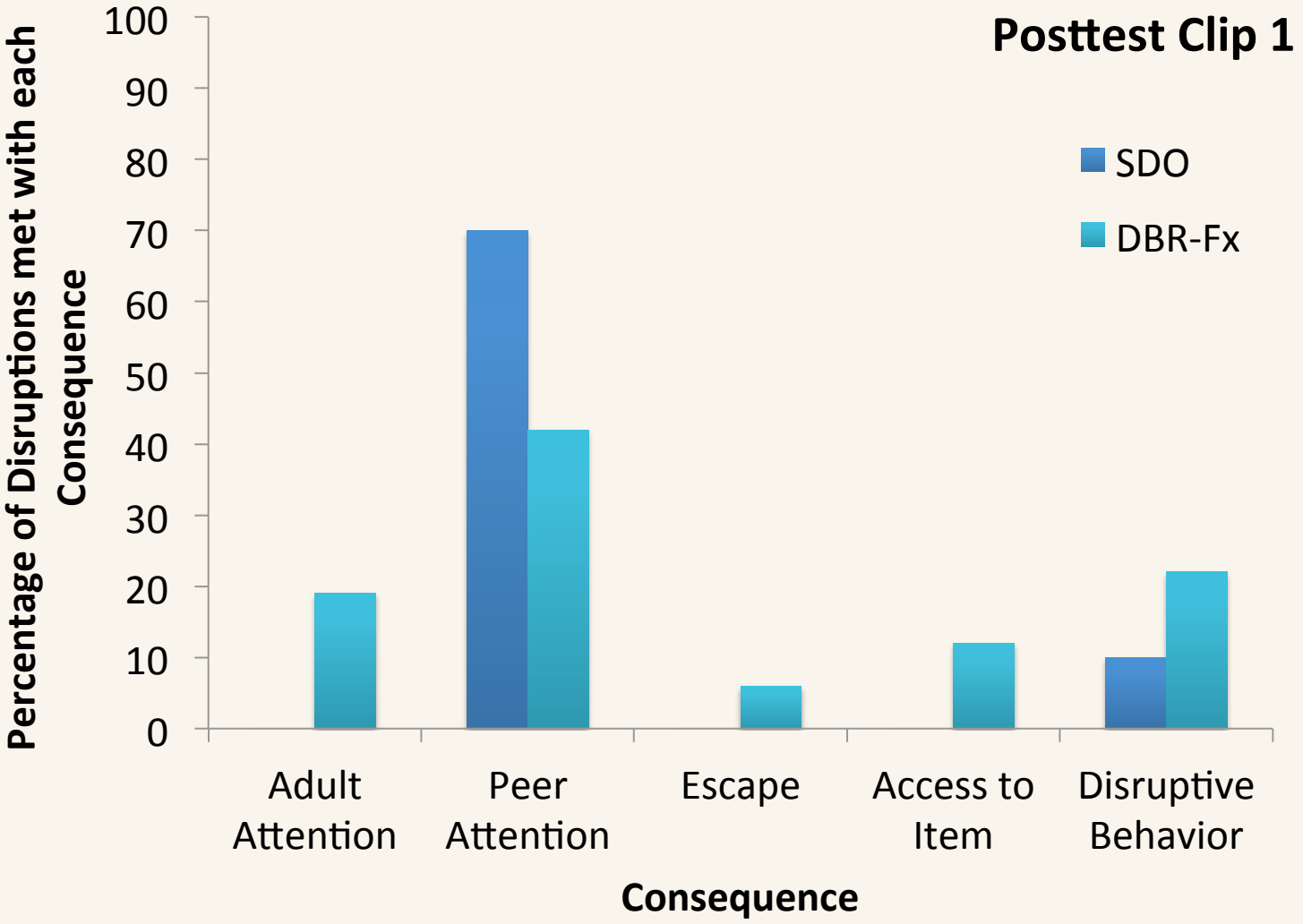
Note: Dependent variables correspond to corrected (absolute) accuracy scores

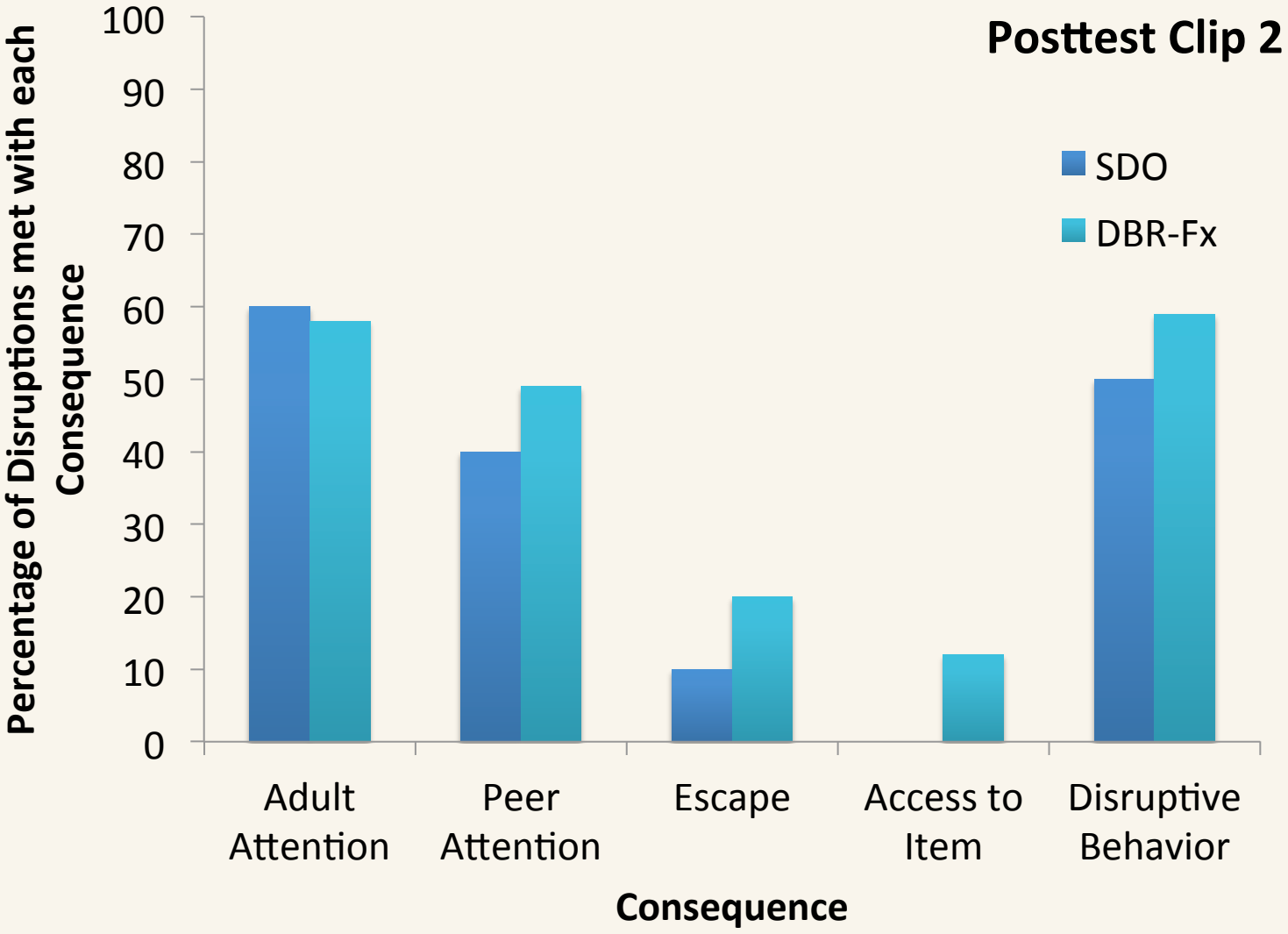
- **Mann Whitney *U*** → Statistically significant difference ($p < .001$) between **Training with Feedback** and all other groups across all functional targets

Experiment 2: Results

Comparison Score	Group	Adult Attention		Peer Attention		Escape/ Avoidance		Access to Tangibles/ Activities		Disruptive Behavior	
		M	SD	M	SD	M	SD	M	SD	M	SD
Experiment 2											
Pretest-	PO*	-	-	-	-	-	-	-	-	-	-
Uncorrected	PP	-4.90	1.87	-2.21	1.70	-3.87	2.25	-3.59	2.35	-5.14	1.21
	T	-5.18	1.56	-2.19	1.32	-3.53	2.50	-3.59	2.57	-5.31	1.14
	TF	-4.88	1.92	-2.05	1.85	-2.97	2.42	-3.02	2.31	-4.69	1.53
Posttest-	PO	-2.50	1.90	-0.25	1.85	-3.87	1.81	-3.01	2.66	-2.40	1.61
Uncorrected	PP	-3.05	1.96	-0.78	1.79	-3.65	1.53	-3.52	2.49	-2.57	1.47
	T	-2.62	2.00	-0.14	2.14	-2.31	2.03	-2.45	2.77	-1.91	1.36
	TF	-0.86	1.72	0.92	2.11	-0.82	1.50	-1.18	2.05	-1.00	1.42
Pretest-	PO	-	-	-	-	-	-	-	-	-	-
Corrected	PP	5.15	1.49	2.65	1.10	4.10	1.94	3.59	2.35	5.19	1.14
	T	5.20	1.52	2.56	1.07	3.84	2.13	3.59	2.57	5.31	1.14
	TF	4.89	1.92	2.92	1.15	3.34	2.08	3.02	2.31	4.70	1.50
Posttest-	PO	3.07	1.50	3.58	1.46	3.87	1.81	3.01	2.66	2.68	1.46
Corrected	PP	3.30	1.83	3.90	1.23	3.65	1.53	3.52	2.49	2.87	1.27
	T	2.77	1.82	3.72	1.33	2.41	1.94	2.45	2.77	2.39	1.07
	TF	1.94	1.23	2.78	1.12	0.88	1.47	1.18	2.05	1.61	1.03


5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Adult Attention
Peer Attention
Escape/Avoidance
Access to Tangibles/ Activities
Disruptive Behavior
Posttest Only
Pretest-Posttest
Training
Training w/ Practice


Posttest Clip 1
Percentage of Disruptions met with each Consequence
100
90
80
70
60
50
40
30
20
10
0
SDO
DBR-Fx
Adult Attention
Peer Attention
Escape
Access to Item
Disruptive Behavior
Consequence


Posttest Clip 2
Percentage of Disruptions met with each Consequence
100
90
80
70
60
50
40
30
20
10
0
SDO
DBR-Fx
Adult Attention
Peer Attention
Escape
Access to Item
Disruptive Behavior
Consequence

Discussion

1. Can the DBR-SIS generate accurate ratings of behavioral consequence?
    1. **Yes – within 10-20% of SDO data**
2. What level of training is needed for accurate DBR-SIS ratings?
    1. **Training with practice and feedback**
3. Can users collect both ratings of behavior and consequences and still remain accurate?
    1. **Yes – ratings of behavior and consequences both fell within 10-20% of SDO data**
    2. **Behavior accuracy similar to that found in previous training DBR-SIS studies (e.g., Chafouleas et al., 2012)**

Discussion

- Accurate functional assessment instrument within Tier 2 (with teacher training w/ feedback)
  - Collect DBR-SIS disruptive behavior + behavioral consequences
  - Use data to plan function-based interventions
  - Continue to progress monitor with DBR-SIS

Limitations

- Participant population
- Observation period not analogous to traditional DBR-SIS periods.
- Higher levels of adult and peer attention
- Utilization of student actors, not a typical classroom setting

Future Research

- DBR-SIS ratings compared to a comprehensive FBA
- Treatment Utility

Thank you!