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We've Done An FBA. Now what?

Implementing Function-Based Intervention in Schools
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Today

- Brief review of function and FBA
- Interventions
- Intervention Protocols
- Treatment Fidelity

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Function of Behavior

- The reason a specific behavior is occurring
- The consequence(s) that maintain a behavior
- The environmental change produced by the behavior

Functions of Problem Behavior

- Four Broad Classes (Miltenberger, 2012)
  - Social Positive Reinforcement
  - Social Negative Reinforcement
  - Automatic Positive Reinforcement
  - Automatic Negative Reinforcement

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Behavior in Schools

	Automatic	Social
Positive	•Access to sensory	•Attention (Social) •Access to tangible •Access to activity
Negative	•Escape from sensory discomfort	•Escape from work demands •Escape from social situations
Almost all reinforcement in schools is socially mediated!		

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Functions of Problem Behavior

- Escape v. Access (Cipani, 2011)
  - Positive Reinforcement
    - Direct Access
    - Socially Mediated Access
  - Negative Reinforcement
    - Direct escape
    - Socially mediated escape

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The Function-Based Diagnostic Classification System (Cipani, 2011)

1. Direct Access (DA)
   - 1.1.DA: Immediate sensory stimuli
   - 1.2. DA: Direct chain to tangible reinforcers
2. Socially Mediated Access
   - 2.1.SMA: Adult/staff attention
   - 2.2.SMA: Peer attention
   - 2.3.SMA: Tangible reinforcers
3. Direct Escape
   - 3.1.DE: Unpleasant social situations
   - 3.2.DE: Relatively lengthy task/ chores
   - 3.3.DE: Relatively difficult task/ chores
   - 3.4.DE: Aversive physical stimuli/ events
4. Socially Meditated Escape
   - 4.1.Unpleasant social situations
   - 4.2.DE: Relatively lengthy task/ chores
   - 4.3.DE: Relatively difficult task/ chores
   - 4.4.DE: Aversive physical stimuli/ events

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Functional Assessment

"One of the goals of functional assessment is to bring clarity and understanding to otherwise chaotic and confusing situations"
(O'Neil et.al., 1997)

Determine the antecedent conditions that make the behavior more likely to occur, and the consequences that maintain it's occurrence

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Clarity and Understanding

- Minimal results
  - When presented with work, John becomes aggressive to escape demands
- Optimal results
  - When presented with independent work requiring at least 10 minutes of sustained effort…
  - John will hit, kick, and bite
  - This happens an average of 2 times per day with between 4 and 6 presentations of work.
  - 75% of occurrences result in escape (due to removal from classroom)…
  - Time away from instruction average 45 minutes per occurrence.

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FBA - Desired Outcomes

- Specificity of function(s) (the contingencies maintaining the behavior)
- Details surrounding antecedent conditions
- Baseline data describing behavior
  - Frequency/intensity/duration
- Rate that the behavior actually produces reinforcement
- The characteristics of the reinforcer

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Interventions

- Non-contingent reinforcement (NCR)
- Demand fading (DF)
- Extinction (Ext)
- Differential Reinforcement of Other behavior (DRO)
- Differential Reinforcement of Alternative behavior (DRA)

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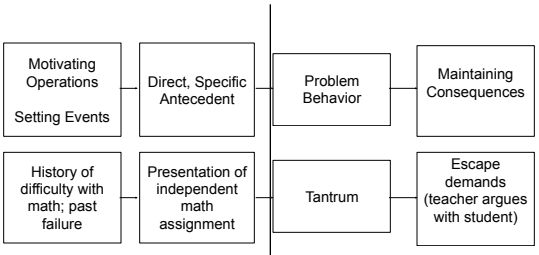
Where to Intervene



- Non-Contingent Reinforcement
- Demand Fading

- Extinction
- DR - Other
- DR - Alternative

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Extinction

- Not the first choice (in isolation)
- The maintaining reinforcer (identified in the FBA) is withheld, regardless of the behavior.
  - Positive reinforcer (attention, access)
  - Negative reinforcer (escape)
  - May be difficult for sensory (automatic)
    - With automatic reinforcement, response blocking is not extinction

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Extinction Example

	FBA	Intervention
Behavior	Yelling	Yelling
Frequency/Rate/ IRT	Average every 15m	
Reinforcer	"Take a break" (Escape)	Break withheld (maintain demands)
Magnitude of reinforcer	5m	N/A

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Considerations

- Extinction Burst: temporary increase in rate, duration, or intensity of behavior
- Extinction induced aggression
- Emergence of novel behaviors
- Spontaneous recovery
- Poll (how long will you work)

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More Considerations

- Extinction in isolation may take a long time to change behavior… very dependent on the individual and past history of reinforcement.
- Maintaining extinction can be extremely difficult
  - The Hallways
- Novel behavior may be inadvertently reinforced, shaping up new behaviors
- Withholding the reinforcer may not be completely possible (aggression - attention)

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Extinction - Planning

- Identify the problem behavior and the maintaining reinforcer.
- Describe what will be done when the behavior occurs.
- Describe the response to an extinction burst.
- Identify any novel behaviors that can be expected and describe the response.
- Communicate the plan to anyone who could inadvertently reinforce the behavior.

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Advantages and Disadvantages

- Advantages
  - Is effective
  - May not require additional resources (reinforcers)
  - Easy to obtain buy-in
- Disadvantages
  - Previously discussed
  - Not teaching a prosocial behavior
  - May take an extended period of time

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Non-Contingent Reinforcement (NCR)

- Provide access to a known reinforcer on a fixed-time or variable-time schedule
- Access is provided regardless of behavior that occurs during the time interval
- Reduces motivation for reinforcer; negates the need for problem behavior
- Effective for
  - Socially mediated positive
  - Escape
  - Automatic

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Non-Contingent Reinforcement (NCR)

- **With extinction**: Reinforcer is delayed if problem behavior is occurring at the end of the interval
  - Avoids reinforcing problem behavior
- **Without extinction**: Reinforcer delivered regardless of problem behavior.
  - Avoids inherent problems with extinction (extinction burst, aggression)

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NCR - Socially Mediated Positive (Attention)

- Student engages in disruptive behaviors an average of 4 times per hour for attention (Teacher reprimands and redirects student)
- Teacher provides positive attention to student every 12 minutes

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NCR - Attention

	FBA	Intervention
Behavior	Disruptive comments	N/A
Frequency/Rate/ IRT	Average every 15m	fixed-time 12 minutes
Reinforcer	Attention (verbal reprimand)	Verbal praise with positive affect
Magnitude of reinforcer	5 second redirection	5 seconds

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NCR - Access to Tangible

- New student arrives in life-skills classroom
- Attempts to use computer an average of once per hour. Staff block access.
- Student bites himself when denied access; causes tissue damage.

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NCR - Access to Tangible

	FBA	Intervention
Behavior	Self-injury	N/A
Frequency/Rate/ IRT	Average 1 per hour	Every 45m
Reinforcer	Computer	Computer
Magnitude of reinforcer	Unknown	10m

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NCR - Planning

1. Identify problem behavior, conditions under which it occurs, and baseline rate.
2. Identify reinforcer and estimated magnitude maintaining the problem behavior
3. Determine time interval for delivery of reinforcer (lower than average produced by problem behavior)
4. Identify reinforcer and magnitude to be delivered (as similar as possible to FBA results if using the same reinforcer)
5. Establish a targeted, acceptable reduction rate
6. Develop criteria to increase/decrease reinforcement based on response to the intervention

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NCR - Escape

Problem behavior/conditions/ baseline	Tantrum after an average of 15m Independent work in 75% of opportunities (average 4x per day)
Problem Reinforcer/Magnitude	Escape: average 20m when placed on extinction
Delivery of Reinforcer	Every 10m
Reinforcer/Magnitude to be delivered	5m break from work
Target problem behavior rate	average 1x per day for 3 days
If target met, decrease reinforcement	Extend time interval by 3 minutes, **and/or** decrease break time
If target not met, increase reinforcement	Decrease interval by 2m, **and/or** increase break time

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NCR - Escape Implementation

	Phase 1	**Phase 2**
Condition	Independent Work	Independent Work
Time Interval	10 minutes	13 minutes
Problem behavior at end of interval	Wait 20 seconds	Wait 20 seconds
Reinforce	Remove work materials and tell student "you have a 5 minute break".	Remove work materials and tell student "you have a 5 minute break".
Reset Time	10 Minutes	13 Minutes
If target met, decrease reinforcement	Extend interval by 3 minutes	Extend interval by 4 minutes
If target not met, increase reinforcement	Decrease interval by 2 minutes	Decrease interval by 3 minutes

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NCR - Advantages and Disadvantages

- Advantages
  - Can produce an immediate reduction or elimination of problem behavior
  - Can be used without extinction, avoiding extinction problems
- Disadvantages
  - May require high rate of reinforcement (resources?)
  - Does not teach an alternative behavior
  - May reinforce problem behavior (w/o extinction)

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Demand Fading

- Specific to escape from instructional demands
- The removal of all instructional demands, followed by their gradual reintroduction
- Reintroduction is planned, with reinforcement for work behavior
- Lack of demand does not mean access to preferred, reinforcing activities
- Often combined with escape extinction

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Demand Fading

	FBA	Intervention
Behavior	Tantrum	Complete task
Latency	Completed 2-3 work jobs (5 minutes) before problem behavior occurs	Complete 1 work job (1-2 minutes)
Reinforcer	Escape	Escape + verbal praise and access to low value reinforcer
Magnitude of reinforcer	Average 30 before return to work	10m break
End result	2-3 jobs in 35m w/tantrum	3 jobs in 30m without tantrum

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Demand Fading - Planning

1. Identify problem behavior, conditions under which it occurs, and baseline rate.
2. Identify reinforcer and estimated magnitude maintaining the problem behavior
3. Determine the amount of work required for reinforcement
4. Identify initial time period for delay to next demand; identify low to medium value additional reinforcer
5. Establish a targeted, acceptable reduction rate
6. Develop criteria to increase/decrease reinforcement based on response to the intervention

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Demand Fade Implementation

	Phase 1	Phase 2
Condition	Direct Instruction	Direct Instruction
Work Requirement	1 sort/match task requiring around 3m	1-2 sort/match task requiring around 5m of effort
Reinforcer	Escape + access to book, 10m	Escape + access to book, 10m
If problem behavior occurs	Maintain demands (extinction)	Maintain demands (extinction)
Target rate of problem behavior	5 work cycles with no more than one problem behavior	5 work cycles with no more than one problem behavior
If target met, increase work	Add additional task, or introduce a single task requiring 1-2m more effort	Add additional task, or introduce a single task requiring 1-2m more effort
If target not met, increase reinforcement	Decrease task requirement by 1m	Decrease task requirement by 1m

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Considerations

- Rich schedule of reinforcement for work
- Reinforcement for work always available (Should student desire to work during no-demand period)

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Advantages and Disadvantages

- Advantages
  - Immediate reduction/prevention of problem behavior
  - Reinforces a desired behavior (work)
  - More acceptable to classroom staff
- Disadvantages
  - Period of no instruction can be disruptive to other students, or difficult to gain buy-in
  - Takes planning and skills to implement (too fast, too slow)
  - Complacency with low/easy demands

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Differential Reinforcement (DR)

- Withhold reinforcement of a problem behavior (extinction)
- Provide reinforcement for the absence or lower rate of the problem, or for an incompatible or alternative behavior.

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DR Example

	Antecedent	Behavior	Consequence	Process
FBA	John sees starbucks	Cuts the line and yells "give me coffee"	Given coffee	Socially mediated positive reinforcement
Problem Behavior	John sees starbucks	Cuts the line and yells "give me coffee"	Sent to back of line	Extinction
Desired Behavior	John sees starbucks	Stands in line, orders, and pays for coffee	Barista provides coffee	Socially mediated positive reinforcement

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DR Examples

	Antecedent	Behavior	Consequence	Process
FBA	Teacher present	Child yells "come here"	Reprimand student	Socially mediated positive reinforcement
Problem Behavior	Teacher present	Child yells "come here"	Withhold attention	Extinction
Desired Behavior	Teacher present	Child raises hand and waits	Teacher attends to child	Socially mediated positive reinforcement

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Multiple Functions

	Antecedent	Behavior	Consequence	Process
FBA	Work presented, no attention, desired item present	Self-Injury	Withhold demands, provide attention, access	Positive reinforcement, escape
Problem Behavior	Work presented, no attention, desired item present	Self-Injury	Blocked	Extinction
Desired Behavior	Any condition	No Self-Injury	Desirable reinforcer	Socially mediated positive reinforcement

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Considerations

- Identified reinforcer vs. Competing reinforcer
  - Sometimes the identified reinforcer is not something we can provide
  - Use a more valuable reinforcer instead
- Sometimes extinction is impossible
  - Cannot control every aspect of environment
  - Aggression/elopement
  - Vary quality of reinforcer

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Example

	Antecedent	Behavior	Consequence	Process
FBA	Steven sees Don	Steven hits Don	Don cries (Attention)	Socially mediated positive
Problem Behavior	Steven sees Don	Steven hits Don	Don cries (Attention), Steven loses recess	Socially positive reinforcement and punishment
Desired Behavior?	Steven sees Don	Steven asks teacher to hit Don	Don cries (Attention)	Socially mediated positive
Desired Behavior	Steven sees Don	No hitting	Access to iPad	Socially mediated positive

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Reinforcers

- Reinforcer should be of similar magnitude
  - If aggression results in 20m of escape, an appropriate request should not result in 2m.
- Reinforcer should not be excessive
  - 10m of work should not result in 45m of free access to all desirable reinforcers
- When using competing reinforcers, rotate access to maintain value

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Differential Reinforcement of Other Behavior

- Provide access to the reinforcer contingent upon the **absence** of the problem behavior.
- Withhold reinforcement (or minimize) if the problem behavior occurs.

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DRO Planning

1. Identify problem behavior, conditions under which it occurs, and average time between occurrences.
2. Identify reinforcer and estimated magnitude maintaining the problem behavior
3. Determine time interval for delivery of reinforcer (slightly lower than average produced by problem behavior)
4. Identify reinforcer and magnitude to be delivered (as similar as possible to FBA results if using the same reinforcer)
5. Establish a targeted, acceptable reduction rate
6. Develop criteria to increase/decrease reinforcement based on response to the intervention

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DRO Implementation

	FBA	Phase 1	Phase 2
Condition	Instruction	All	Instruction
Time	average 1 hour between occurrences, 4x day	45m	50m
Reinforcer	Escape (average 20m)	Token (exchange 4 tokens for 20m computer time)	Token (exchange 4 tokens for 18m computer time)
If problem behavior occurs		Restart time	Restart time
Target rate of problem behavior		1x day	1x day
If target met for 3 days		Increase interval by 5m, decrease access by 2m	Increase interval by 5m, decrease access by 2m
If not met, or no change		Decrease interval by 5m	Return to previous phase

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Advantages and Disadvantages

- Advantages
  - Provides continued access to reinforcers
  - Does not require teaching of new behaviors
  - Useful when function is sensory, or when functional reinforcer cannot be delivered
- Disadvantages
  - Employs extinction
  - Continues monitoring may be required
  - Does not directly reinforce an appropriate behavior

Differential Reinforcement of Alternative Behavior (DRA)

- Provide access to the reinforcer contingent upon a desirable or acceptable behavior
- Withhold reinforcement (or minimize) if the problem behavior occurs.

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DRA Planning

1. Identify problem behavior, conditions under which it occurs, and average time between occurrences.
2. Identify reinforcer and estimated magnitude maintaining the problem behavior
3. Determine alternative behavior, how it will be taught to the student, any how often it will be reinforced (as close to 1:1 reinforcement as practical)
4. Identify reinforcer and magnitude to be delivered (as similar as possible to FBA results if using the same reinforcer)
5. Establish a targeted, acceptable reduction rate
6. Develop criteria to increase/decrease reinforcement based on response to the intervention

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DRA Implementation

	FBA	Phase 1	Phase 2
Problem/ Condition	Screaming - Instruction	Instruction	Instruction
Rate of Reinforcement	6 x day	6x day	5x day
Alternative Behavior		Request break	Request break
Reinforcer	Escape (average 20m)	20m break	15m break
If problem behavior occurs	Time out	Maintain demands	Maintain demands
Target rate of problem behavior		2x day	2x 3 days
If target met for 3 days		Decrease available break by 1, decrease break by 5m	Decrease available break by 1, decrease break by 5m
If not met, or no change		Increase break by 5m	Return to previous phase

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Considerations

- Alternative behavior may need too be taught
  - Break Card
- Alternative behavior may need to be prompted and shaped
  - Prompting/fade
  - Reinforce closer approximations
  - Pre-cue behavior

Advantages and Disadvantages

- Advantages
  - Directly reinforces a desired behavior
  - Provides continued access to a reinforcer
- Disadvantages
  - Employs extinction
  - Continuous monitoring may be required
  - Frequency of reinforcement may be difficult to gain buy-in

Selecting an Intervention

Decision Question	Yes	No
Is the behavior often dangerous?	NCR; Demand Fading; DRO or DRA w/o EXT	EXT; DRO; DRA
Can the extinction burst be managed?	EXT; DRO; DRA	NCR; Demand Fading; DRO or DRA w/o EXT
Can extinction be maintained?	EXT; DRO; DRA	NCR; Demand Fading; DRO or DRA w/o EXT

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Selecting an Intervention

Decision Question	Yes	No
Are there multiple conditions and functions?	EXT; DRO	Any
Is the function automatic sensory?	DRO	Any
Is there clearly a more desirable alternative?	DRA w/ or w/o EXT	Any

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Selecting a Reinforcer

Decision Question	Yes	No
Is the reinforcer readily available?	Functional Reinforcer	Competing Reinforcer; possible token
If escape from demands, is a "break" adequate, or does the student get bored?	Escape + low value reinforcer	Escape
If attention, is it "the bad kind"?	Competing reinforcer	Praise and Recognition; earned time with desired person
If automatic sensory, is the behavior acceptable to perform?	Functional Reinforcer	Competing Reinforcer

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Intervention Protocol

- Provides a teaching tool
- A reference for staff when practitioner is gone
- Describes the intervention and withdrawal
- A future resource for classroom staff

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Characteristics of a Good Protocol

- Describes the conditions under which the intervention should be implemented
- Identifies the problem behaviors and replacement behaviors adequately
  - Gives examples and non-examples as needed
- Account for characteristics of extinction if necessary
- Describes reinforcers, reinforcement schedule, and delivery procedures

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Characteristics of a Good Protocol

- Describes replacement behaviors
  - Teaching/prompting procedures
- Provides criteria to fade or increase intervention based on performance
- Provides specific words and phrases as examples or requirements

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DRO Example

Student: James
Date: September 28, 2015
Target Problem Behavior: Leaving assigned area

Baseline Rate: 12x day
Identified Function(s): Access to tangible

Planning

Condition for Implementation	All academic instructional periods
Problem Behavior	Leaving assigned area
Data Collection	Rate per day
Reinforcer	Token; 10m access to desired items w/6 tokens
Initial Reinforcement Interval	5m
If target behavior occurs	Reset time; provide feedback or prompt; Utilize physical guide. Refer to BIP is escalation.
Criteria to fade reinforcement	< 3x days for 3 consecutive days; increase interval by 2m
Criteria to increase reinforcement	> 10 times per day for 2 consecutive days; decrease interval by 1m

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DRO Example

Procedure

1. Set a timer for the reinforcement interval.
2. Provide James with his instructions.
3. Reinforce when the time expires.
   - 3.1. Provide James with a token.
   - 3.2. Verbally praise his behavior ("Here's a token, you stayed in your area!"; "Nice working. Thanks for staying in your area")
   - 3.3. If James has reached 6 tokens, allow 10m access to reinforcer. (Do this regardless of the current activity)
   - 3.4. Do not provide tokens during times when James in access reinforcement.
4. Reset time for the next interval.
5. If James leaves his area, or attempts to leave his area, provide feedback and a prompt. Reset the timer.
   - 5.1. Feedback: "James, I have to reset the time. 5m until your next token. Try to stay in your area."; "James, stay in your area. I'm resetting to 5m."
   - 5.2. Prompt: "James, return to work."; "Sit at your desk."; "Remain in your area."
   - 5.3. If James becomes aggressive or engages in self-injury, follow the protocol in the behavior intervention plan.

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Fidelity

- The extent to which the intervention is carried out as planned
- The 90/10 rule
- Potential Problems
  - Failure to implement at appropriate time
  - Failure to incorporate appropriate steps
  - Treatment drift (Cooper, et al., 2007)
  - Secret stash
- Poor implementation leads to bad decisions
  - Continue/adapt/discontinue

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Promote Fidelity

- Increase Buy-in (Miltenberger, 2015)
  - Develop rapport with staff
  - Work collaboratively
  - Provide a good rationale for procedure, describe how and why it works
  - Describe common problems
  - Solicit and answer questions

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Promote Fidelity

- Describe the procedure to be used (Protocol)
- Behavior Skills Training (Miltenberger, 2014)
  - Instructions, modeling, rehearsal, feedback
  - In-Situ Training
    - Prompting; coaching

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Assess Fidelity

- Self-assessment; direct observation; permanent product (Sheridan, et al., 2009)
- Direct Observations
  - Steps in protocol
  - Qualitative factors (demeanor, quality of attention and praise; ability to remain "neutral")

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Steps

Procedure

1. Set a timer for the reinforcement interval.

2. Provide James with his instructions.

3. Reinforce when the time expires.

   3.1. Provide James with a token.

   3.2. Verbally praise his behavior ("Here's a token, you stayed in your area!"; "Nice working. Thanks for staying in your area")

   3.3. If James has reached 6 tokens, allow 10m access to reinforcer. (Do this regardless of the current activity)

   3.4. Do not provide tokens during times when James in access reinforcement.

4. Reset time for the next interval.

5. If James leaves his area, or attempts to leave his area, provide feedback and a prompt. Reset the timer.

   5.1. Feedback: "James, I have to reset the time. 5m until your next token. Try to stay in your area."; "James, stay in your area. I'm resetting to 5m."

   5.2. Prompt: "James, return to work."; "Sit at your desk."; "Remain in your area."

   5.3. If James becomes aggressive or engages in self-injury, follow the protocol in the behavior intervention plan.

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Direct Observation

	Stays in Area	Leaves Area
Implement during academic instruction		
Set a timer for the reinforcement interval.		
Provide James with his instructions.		
At timer expiration, Provide James with a token.		
Verbally praise his behavior		
If James has reached 6 tokens, allow 10m access to reinforcer.		
Reset time for the next interval.		
If James leaves his area, or attempts to leave his area, provide feedback and/or a prompt.		
Reset the Timer		
Total Successful Steps	___/6 (___/7)	___/5

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In Closing

- Be prepared to change
  - Sometimes FBA is wrong
  - Cannot achieve fidelity
  - Intervention not a good match for circumstances
- Close Continuous Contact with Relevant Outcome Data (3C-ROD) (Bushell & Baer, 1994)

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Thanks!

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DRO Protocol

Student: James Date: September 28, 2015

Target Problem Behavior: Leaving assigned area
Baseline Rate: 12x day
Identified Function(s): Access to tangible

Planning

Condition for Implementation	All academic instructional periods
Problem Behavior	Leaving assigned area
Data Collection	Rate per day
Reinforcer	Token; 10m access to desired items w/6 tokens
Initial Reinforcement Interval	5m
If target behavior occurs	Reset time; provide feedback or prompt; Utilize physical guide. Refer to BIP is escalation.
Criteria to fade reinforcement	< 3x days for 3 consecutive days; increase interval by 2m
Criteria to increase reinforcement	> 10 times per day for 2 consecutive days; decrease interval by 1m

Procedure

1. Set a timer for the reinforcement interval.
2. Provide James with his instructions.
3. Reinforce when the time expires.
   - 3.1. Provide James with a token.
   - 3.2. Verbally praise his behavior (“Here’s a token, you stayed in your area!”; “Nice working. Thanks for staying in your area”)
   - 3.3. If James has reached 6 tokens, allow 10m access to reinforcer. (Do this regardless of the current activity)
   - 3.4. Do not provide tokens during times when James in access reinforcement.
4. Reset time for the next interval.
5. If James leaves his area, or attempts to leave his area, provide feedback and a prompt. Reset the timer.
   - 5.1. Feedback: “James, I have to reset the time. 5m until your next token. Try to stay in your area.”; “James, stay in your area. I’m resetting to 5m.”
   - 5.2. Prompt: “James, return to work.”; “Sit at your desk.”; “Remain in your area.”
   - 5.3. If James becomes aggressive or engages in self-injury, follow the protocol in the behavior intervention plan.