Functional Analysis in School Settings

Michael M. Mueller, Ph.D., BCBA-D

Southern Behavioral Group
Welcome

• About me

• About SBG

• About Stimulus Publications
• BACB says…

3.01 Behavior-Analytic Assessment. RBT

(a) Behavior analysts conduct current assessments prior to making recommendations or developing behavior-change programs. The type of assessment used is determined by client’s needs and consent, environmental parameters, and other contextual variables. When behavior analysts are developing a behavior-reduction program, they must first conduct a functional assessment.

(b) Behavior analysts have an obligation to collect and graphically display data, using behavior-analytic conventions, in a manner that allows for decisions and recommendations for behavior-change program development.
Functional Assessment

Functional assessment, also known as functional behavior assessment, refers to a category of procedures used to formally assess the possible environmental causes of problem behavior. These procedures include informant assessments (e.g., interviews, rating scales), direct observation in the natural environment (e.g., ABC assessment), and experimental functional analysis.
• BACB says...

3.03 Behavior-Analytic Assessment Consent.

(a) Prior to conducting an assessment, behavior analysts must explain to the client the procedure(s) to be used, who will participate, and how the resulting information will be used.

(b) Behavior analysts must obtain the client’s written approval of the assessment procedures before implementing them.
A Good FBA?

• BCBAs have wide latitude to conduct an FBA as they see fit

• There are no mandates describing exactly what has to be included in an FBA

• There are a lot of possible combinations of methods to use, some better than others

• It is ultimately up to you
  - Although others may disagree with your decision
FBA is federally mandated as a result of 1997 and 2004 amendments of IDEA

• When student with disability exhibits problem behavior that interferes with his or her learning or that of others

• Failure to address problem behaviors deprives students of a free appropriate public education (FAPE)
Child is working, takes peer’s pencil, teacher sends to office
  – Escape?
  – IS the child working the “reason” the student took his peer’s pencil?
  – No, of course not, but more on this later…
• Disabilityrightstx.org

**Functional Behavioral Assessment (FBA)**

Functional behavioral assessment is a *problem-solving process* for addressing student problem behavior. It relies on a variety of assessments, techniques and strategies to identify the purposes of specific behavior and to help ARD committees select interventions to directly address the problem behavior. FBAs can be used, as appropriate, throughout the process of developing, reviewing and, if necessary, revising a student’s IEP.
California and DoD

- California passed the Hughes Bill codifying the functional analysis assessment (FAA) which is a highly complex and lengthy assessment procedure and may only be conducted by a person with documented training in behavior analysis.
• Functional behavioral assessment is less formal than the functional analysis assessment, and has been defined as follows:

• U.S. Department of Defense: functional behavioral assessment is a “process for identifying the events that predict and maintain patterns of problem behavior” (Provision of Early Intervention and Special Education Services to Eligible DOD Dependents, 32 C.F.R. § 57.3(dd) (2006)).
Functional behavioral assessment is an “assessment process for gathering information regarding the target behavior, its antecedents and consequences, controlling variables, the student's strengths, and the communicative and functional intent of the behavior, for use in developing behavioral interventions” (Ill. Admin. Code tit. 23, § 226.75 (2006)).
Indiana

• Functional behavioral assessment “means a systematic collection and analysis of data that will vary in length and scope depending on the severity of a student's behavior. Results and analysis of the data collection are used in developing the student's behavioral intervention plan. A functional behavioral assessment shall identify patterns in the student's behavior and the purpose or function of the behavior for the student” (Ind. Admin. Code 7-17-38 (2006)).
• Functional behavioral assessment “means an individualized assessment of the student that results in a hypothesis about the function of a student's behavior and, as appropriate, recommendations for a behavior intervention plan” (Or. Admin. R. 581-015-0550(4) (2006)).
Functional behavioral assessment “means the process of determining why a student engages in behaviors that impede learning and how the student's behavior relates to the environment. The functional behavioral assessment includes, but is not limited to, the identification of the problem behavior, the definition of the behavior in concrete terms, the identification of the contextual factors that contribute to the behavior (including cognitive and affective factors) and the formulation of a hypothesis regarding the general conditions under which a behavior usually occurs and probable consequences that serve to maintain it” (N.Y. Comp. Codes R. & Regs. tit. 8 § 200.1(r) (2005)).
Four Outcomes of FBA (Horner, et al., 1993)

- Operational definition of the problem behavior
- Identification of the factors that predict the occurrence and nonoccurrence of the problem behavior
- Hypotheses about the consequences responsible for the problem behavior
- Verification through direct observation
Obscenity Example

• "I shall not today attempt further to define the kinds of material I understand to be embraced within that shorthand description (hardcore pornography), and perhaps I could never succeed in intelligibly doing so. But I know it when I see it, and the motion picture involved in this case is not that."

– Justice Potter Stewart (1964; Jacobellis v. Ohio on defining obscenity and the Roth test)
A Higher Standard

- As BCBAs, we should work to set a new standard
- Generating a hypothesis is not enough
- Describing the general conditions is not enough
- “Knowing it when we see it” is not enough
- We know from 20 years of research that challenging behaviors are going to be reinforced about 75% of the time
  - Escape, Attention, or Access
Functional Behavioral Assessment

- Method for identifying the variables that reliably predict and “maintain” problem behavior (Carr et al., 1994; O’Neill et al., 1997)

- Identify and address the “function” of problem behavior (Carr & Durand, 1985)

- Determine the **REINFORCER** for an identified behavior (me)
  - This should be the standard
  - This should be the definition
The First FBA?

• The original method for determining a “function” was functional *analysis*

• Every other method has been an attempt to replace this method with others
  – Interviews
  – Rating Scales
  – Observational techniques
Descriptive Methods

• The purpose of all descriptive methods should be to inform the functional analysis

• No descriptive methods alone or in combination should be used as the means to derive function
  – There are some exceptions
  – But, this is the way we should begin each FBA
Environmental Variables

• Antecedents- events that precede problem behavior
  – Most antecedents do not evoke the target behavior

• Consequences- events that follow problem behavior
  – Most consequences do not reinforce the target behavior

• “Setting Events”- broad contextual variables that influence the likelihood that a specific antecedent will evoke problem behavior
  – MO
    • EO
Descriptive Methods

• Use whichever descriptive methods you want to
• Use them correctly
• Know their limitations
• Know what they can and cannot provide
• Have those guide the FA
Indirect Methods

• Record review

• Interviews

• Questionnaires/Rating Scales
Record Review (Watson & Steege, 2003)

- Attendance history
- Standardized test scores
- Medical history
- Social history
- Disciplinary history
- Results of previous FBA or related assessments
- Previous interventions
- Recent IEP
Interview

• Three key topics in the interview:

  – A description of the problem behavior

  – The typical situations during which target behavior is more likely

  – The effect the problem behavior has on the environment!
“Consequences”

• My experience
  – Almost all school staff relate “consequences” to the behaviors staff engage in following problem behavior – and not the effect the behavior has on the environment
    • These are not the same thing!
    • Planned ignoring
    • Redirection
    • Disciplinary actions
  – Knowing staff responses can be helpful, but they are not the full picture in the behavior’s effect
• Limitations of Interview

  – Verbal reports upon which they are based may be unreliable

  – Not supported by research
Questionnaires/Rating Scales

- **Motivation Assessment Scale**
  - (Durand & Crimmins, 1988)

- **Functional Analysis Screening Tool**
  - (The Florida Center on Self-Injury; 5th edition, 2002)

- **Questions About Behavioral Function**
  - (Paclawskyj, Matson, Rush, Smalls, and Vollmer, 2000)
• Limitations of Questionnaires/Rating Scales
  
  – Unreliable
  
  – Results often do not match function of problem behavior obtained from functional analysis
Descriptive Observations

• Scatterplot (Touchette & MacDonald, 1985)

• ABC Recording (Bijou et al., 1968)
• ABC Recording
  – Involves collecting data only when the behavior of interest is observed

  – Observer simply records the occurrence of the problem behavior and the events that immediately preceded and followed it

• Limitations:
  – May not be reliable
  – There is no consensus on how data should be summarized and interpreted

  – Read the Bijou et al. (1968) article

• Very different than the way people use ABC data now
• In schools
  – The predominant method is to use a preformatted checklist
  – Several As, several Bs, several Cs
  – Raters check the relevant boxes pertaining to an event
  – Most have multiple checks
  – None have a complete array of possible As and Cs
  – Difficult to tell chronologically which came before others
  – Impossible to tell when multiple Bs are checked
• I’ll show an example later of how this exact issue:
  – Lost a school a due process hearing
  – Cost the school a lot of money
  – Denied appropriate services
  – Destroyed a relationship between a family and a school
Narrative Recording

• How much time?

• What to record/What’s relevant?
  – Everything might be…
  – Every interaction, demand, vocalization, mand, compliance, behavior, peer interactions, teacher interactions, time of events, transitions, responses to behaviors, type of work, schedule, number of peers, staff, location of student, etc.
Narrative Recording

• IMHO, the best method
  – Relies on BCBAs as the trained observers
  – Can make ABC data from narrative data
  – Easy to go back and get details of the observation

• Time consuming
  – We observe 12 – 20 hours in most FBAs
  – Finished when we ”feel” we understand what to test
  – There’s a point where additional observations are useless
Functions of Problem Behavior

- Attention
- Access (to Materials or Activities)
- Escape
- Automatic Sources
• Attention
  – Teachers and school personnel often respond to problem behavior with reprimands, response interruption, comfort etc

  – Attention may reinforce student problem behavior (Thomas et. al., (1968))
• Access to Materials or Activities
  
  – Teachers, school personnel, and other students often respond to problem behavior by giving the student tangible items or access to a preferred activity

  – Aberrant behavior may be positively reinforced by access to materials or activities that a student wants (Iwata, et al., 1982; Patterson et. al., 1987)
• Escape-Avoidance of Aversive Demand Conditions
  
  – Problem behavior in schools are often responded to by removing task demands/aversive conditions from the student

  – Removal of task demands/aversive conditions may negatively reinforce aberrant behavior (Carr et. al., 1980)
• Sensory and Perceptual Consequences

– Aberrant behavior may persist independent of social consequences found in school settings

– Aberrant behavior may be positively or negatively reinforced by perceptual and sensory consequences produced by the behavior itself (Iwata, et al., 1982)
Functional Analysis

• Benefits
  – Ability to identify environmental determinants behavior
  – Possesses a high degree of precision
  – Allow for the development of individualized treatment plans based on sound empirical data
  – Result in a higher degree of treatment success

• Limitations
  – Perceived as being too time consuming
  – Perceived as requiring a high degree of expertise
  – May result in increase in problem behavior
  – Difficulty in assessing low-frequency behaviors
Basic Experimental Conditions and Arrangement
Different Techniques to Accomplish the Same Goal

• Traditional (Iwata et al., 82/94)
  – Manipulate an antecedent and a consequence
  – Use of a control condition(s)

• Brief (Northup et al., 1991)
  – Fewer repetitions with contingency reversal

• Antecedent based (Carr and Durand, 1985)
  – Manipulate antecedents while holding consequences constant
Functional Analysis

• Arrange simple test situations “conditions”

• A potential EO, antecedent stimuli, and consequences for the behavior in each condition

• Compare target behaviors across conditions
Functional Analysis

• *Experimental manipulation* of environmental conditions
  – Control of variables
  – Manipulate variables in isolation/one at a time

• Attempt to create situations that will CAUSE the behavior to determine under which conditions this behavior is likely to occur
  – By consistently providing reinforcers *for* problem behavior
  – Attempt to reinforce problem behavior one purported reinforcer at a time
Functional Analysis

• If you can identify what is causing the problem— you can use the reinforcer (in some cases) to reinforce an appropriate response

• Repeated presentation of conditions

• Compare results over time

• High levels of behavior in one condition
  – Suggests we’ve identified reinforcer
  – Suggests which variables are (and are not) associated with problem behavior
• We are recreate situations that currently contain the target behavior in the classroom

• It’s not simply an attempt to upset a child

• We are not “experimenting” ON students

• The conditions we run are the exact same situations that are currently being “run” in the classroom
• You HAVE to read this

• http://specials.myajc.com/psychoedexperiment/

• Our language matters

• The perception of what we do, matters

• Our ability to communicate to others in every day terms matters
Conditions

Named for the reinforcers presented during the session

- Academic demand
- Escape
- Escape from noise
- Escape from sensory stimulation
- Escape from attention
- Tangibles
- Materials
- Interrupt

- Adult attention
- Peer attention
- Alone
- Ignore
- Toy play
- Control
- Escape to attention
What are the possible reinforcers?

• Positive Reinforcers
  – Attention delivered by people
  – Tangibles

• Negative Reinforcers
  – Breaks from things
  – Escape from things

• Automatic Reinforcers
  – Access to internal stimulation
  – Breaks from internal stimulation
How do we test these?

• Create a possible *deprivation* situation to test positive reinforcers
  – Attention
  – Tangibles

• Create a potentially *aversive* situation to test negative reinforcers
  – Task demands
  – Sensory situation

• Leave by self, ignore, do not interact with to test for automatic

• NEED some control condition
Establishing Operation

• Any change in the environment which alters the effectiveness of reinforcement and simultaneously alters the momentary frequency of the behavior that has been followed by that reinforcement

• Two major effects.
  – Increases the momentary effectiveness of reinforcement supporting operant behavior
  – Increases the momentary probability of responses that in the past produced such reinforcement

• MO/AO
EOs in Functional Analysis

- **Attention**: Deprivation of attention
- **Divided Attention**: Deprivation of attention AND attention to someone else
- **Escape from academic**: Presentation of work and task demand
- **Escape from other**: Presentation of other
- **Tangible**: Removal of tangible
- **Interrupt**: Interruption on ongoing activities
Reinforcers in FA

• Attention- Attention
• Divided Attention- Attention
• Escape from academic- Break from work
• Escape from other- Break from other
• Tangible- Tangible
• Interrupt- Activities/tangibles
The Logic

• You can test any reinforcer

• Some conditions are so common as to be “standard” but anything is testable

• What you test should be determined by your descriptive data
The Logic

• Positive Reinforcers
  – Withhold or restrict access
  – Present access contingent on problem behavior
  – Control condition provides noncontingent access

• Negative Reinforcers
  – Present the aversive event/stimuli
  – Remove contingent on problem behavior
  – Control condition does NOT present the aversive event/stimuli
Attention

• Tell you will be doing some work nearby

• Each instance of target behavior is followed by a reprimand or disapproving statement

• High TB over time in this condition is Positive Reinforcement (i.e., social attention)*
Attention

- Iwata, et al., 1982/1994
  - “Social Disapproval”
  - Therapist present
  - Brief (one sentence) verbal statement of disapproval
  - Ignore all other behavior
  - Materials present

- Northup, et al., 1991
  - Therapist present
  - 10-15 s verbal statement of disapproval
    - Continue until the behavior stopped
  - Ignore all other behavior
  - Materials present
Our Attention

• No materials
  – Less risk of affecting EO

• “I have to read” type statement

• Attention is reprimand unless observations suggest otherwise
What are ramifications of differing lengths of attention?

- If the absence of attention is the EO, does longer attention delivery create less potential opportunity for deprivation?

- What is affect of not stopping attention until behavior stops?
  - Could this relatively deliver more of a reinforcer than conditions that use a time based reinforcers delivery?
Attention is Attention?

• Does the type of attention matter?
  – Stop doing that, you’re going to hurt me
  – It’s sunny outside and I like your shirt
  – Ok, stop that, what’s the matter?
Errorless

3-step prompting, 10 s ITI

30 s ITI

No verbal with gestural prompt

20 s between prompts, no verbal with physical prompt

Errorless

3-step prompting, 10 s ITI

30 s ITI

No verbal with gestural prompt

20 s between prompts, no verbal with physical prompt
Diverted Attention

• Child and peer at table

• Therapist seated between them

• Give 2-3 minute attention to target child
  – Talk, read, play (but not with tangibles)

• Remove attention from target child and divert to peer

• Occurrence of TB results in attention back to target child
Escape

- Academic or other difficult task
- 3-prompt procedure
- Each occurrence of TB: Exp removes task and attention for 30 s
- Re-present task demand after the escape period times out
Higher levels of TB over time in this condition leads to assumption that negative reinforcement is maintaining TB*

• “Academic Demand”

• Difficult task, 3-step prompting, therapist present, work present

• 30 break from task, 30-s COD for repeated SIB
  – COD specifies that a target behavior cannot be reinforced for that duration

• Praise for compliance at all levels of prompting
• Difficult task, 3-step prompting, therapist present, work present

• Task presented at stable rate

• 15-30 break from task
  – Or until the participant discontinued the behavior

• NO Praise for compliance at any level of prompting
Differences

• Different escape periods lengths
  – 15-30 s
  – Does this matter?
  – Is it only relevant if the other reinforcer periods are the same in the other conditions within the same analysis?

• Praise versus no praise for compliance

• Might praise lessen the aversiveness of a task?
  – Should this only be used if the person normally delivering the task praises?
• Tasks from teacher
  – Difficult
  – Previously associated with TB

• Low level Praise if teachers observed using it in class
  – Only for V
  – Not for M or P

• 10-15s break on 5 min conditions
Tangibles

- Identify preferred stimulus
- Allow child to engage for short period and then restrict
- If TB, allow access to item for 30 s
- Highest TB in this condition positive reinforcement (tangible items)
Tangibles—Northup, et al., 1991

• Deprivation of item

• Therapist had item

• No interaction during session

• Deliver the item for 15-30 s on target behavior
Tangibles Derby, et al., 1994

• Item in view of client

• No interaction from therapist

• Deliver item 15-20 s or until target behavior stops
Tangibles - Differences

• Iwata did not use a Tangibles condition
  – Attention

• Neither Derby or Northup mention the removal
  – Others have described giving access for 1-2 minutes prior to the session

• Quite different than simply having the item
Our Tangibles

- 1-2 minute access
- Physically remove the item
- NO ATTENTION
- Return item for 10-15s (5 min conditions)
- Restrict item again
Interrupt

• Highly preferred items and activities placed in room

• Child has free access to all items and activities

• After a couple minutes, the child is verbally and physically interrupted from whatever they are engaged with to begin session
  – Don’t and do requests
  – You can’t play with the cars right now, please do something else
 Interrupt

• Fixed time interruptions 20 or 30 s

• Child can engage any other activity in room following and interruption
  – Could go from item to item to item

• If target behavior occurs, child can access the most recently interrupted activity

• No verbal attention delivered following problem behavior
Interrupt

• Different than tangible condition
  – More items/activities

  – Other items/activities are available when any item/activity is interrupted

  – Verbally told of interruption and to do something else rather than simply physically restricting something
The Reinforcer?

• Can be positive
  – Continued access to activity

• Can be negative
  – Termination of the demand to change activities

• How can you tell positive or negative?
  – Other conditions that are high
  – Engagement with interrupted activity
• Child left completely alone for the condition

• If high levels of TB occur in this condition over time: Automatic Reinforcement

• No socially mediated consequences

• Reinforcement derives from the behavior itself, not extrinsic
Alone

• No therapist

• No materials

• No anything besides the kid
• Similar
  – “Ignore”
    • Therapist present
  – “No interaction”
    • Therapist present

• Are used as test for automatic reinforcement
  – Extinction burst when attention is removed?
  – Extended alone
    • Auto-consistent rates
    • Extinction-decreasing rates
Toy Play (Control)

• Engage child in play with toys etc.

• Exp. stays within 3-4 ft making neutral statements, and praising appropriate play

• Controls for variables that exist in other conditions experimenter presence, proximity, verbalizations, praise, toys
Attention in Ignore?

• Because a therapist is present
  – Behavior could be extinction of attention reinforced behavior

• Run extended ignore sessions
  – Repeated 30 minute sessions
  – One of two patterns will emerge
    • Consistently high levels
      – Automatic
    • Decreasing levels
      – Extinction
What does control *mean*?

• To control for something….

• To rule out an effect by something….

• To provide something in one context so that it’s presence (and potential effect on behavior) in another context can be evaluated across the two contexts
What are We Controlling?

• Therapist attention

• Therapist presence

• Therapist proximity

• Presence of materials (items, toys, etc.)

• Absence of demands
Why do we need these conditions?

• To rule out potential effects of some extraneous variable by providing those extraneous variables in at least two context

  – Person could be reacting to the presence of the therapist, to their attention, to certain materials, etc.
Control

• Provide noncontingent access to anything being tested as a reinforcer

• The logic of the analysis requires a control
  – Contingent access in the test condition
  – Noncontingent access in the control
“Unstructured play”

Variety of toys

Experimenter proximity

Attention on DRO 30 s

Ignore target behaviors
Control—Northup, et al., 1991

- Did not use a control
- Has stated in other articles that the control for relevant variables can come from other conditions
- Contingency reversal
Control-Derby, et al., 1994

- Two controls based on ability to sit and wait without disruption
  - “Diverted attention”
    - Similar to an ignore
    - In wait room, therapist talking to parents
    - Problems?

- Noncontingent attention
  - NCR attention during play

- Ignore target behavior in both
Our Control

- Noncontingent access to any reinforcer from a test condition
- Constant or near constant attention
- Free access to tangibles
- Free access to activities from interrupt
- No demands
Escape from Attention

• A child can find attention aversive

• Present attention

• Remove attention contingent on target behavior

• Rule out attention a reinforcer by the typical attention condition

• Control is constant attention of a different variety
EB Functional Analysis of Aggression

5-Minute Conditions

10-Minute Conditions

Frequency of Aggression

Tangibles | Attention | Control | Escape

5-Minute Sessions
Functional Analysis: Escape From Negative Attention

Control (Baseline)  
Escape from Negative Attention  
Control (Baseline)
Functional Analysis of Aggression

- Interrupt
- Escape

Frequency of Aggression vs. 5-Minute Sessions
Functional Analysis of Aggression
Escape from Attention
Contingent Access v. Escape Extinction Analysis
Functional Analysis of Aggression
Escape from Attention Analysis

Frequency of Aggression

3-Minute Sessions

Control
(No Attention/Ignore)

Escape from Negative Attention
What Descriptive Data Leads to Condition Inclusion

- What data collected in the indirect and direct triggers inclusion of certain conditions into the analysis?
  - Things you were told
  - Things you read
  - Things you observe
Attention

• Reprimand
• Assistance
• Calming down
• De-escalation
• Corrective teaching
• Explanation
• Reasoning
• Any attention of any kind!
Peer Attention

- Peer laughter
- Peer heckling
- Peer making fun of
- Peer physical reaction
- Peer crying
- Peer tattling
Diverted Attention

• He’s “jealous”

• When I talk to another child…

• When I help someone else…

• As soon as I walk away from him…

• She doesn't like it when others get attention
• Going to work from time with preferred items

• Taking his things

• If you take his…. He’ll aggress

• If you don’t let her have her… She’ll bite herself

• Teacher uses tangibles to calm him down

• Teacher gives preferred items, sensory items, access to other activities following TB
Preference Assessments

• Single Item

• Paired Choice

• Multiple stimulus without replacement (MSWO)
Single Item

• Present item

• Record duration of engagement

• Repeat with each item in array

• Kids with will often engage anything in front of them
Paired Choice

• Present 2 items
• “Pick one”

• Will ALWAYS create a hierarchy of percentage of choices made

• Cannot result in all items rated equally high as in single item
Paired Choice Results

Southern Behavioral Group, Inc.
Using Science to Improve the Lives of Children
# The ASAP Preference Assessment Form

**Student Name:**

**Date:**

<table>
<thead>
<tr>
<th>Write Item Name Next to Number</th>
<th>Write Item Name Next to Number</th>
<th>Circle</th>
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<tbody>
<tr>
<td>1</td>
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</tbody>
</table>

**Steps:**

1. For every number chosen in the preference assessment, shade in the corresponding number to reveal the hierarchy of preferences for your student. The higher the shading, the more preferred is the item.

**ITEMS:**

1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
The ASAP Preference Assessment Form

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</tr>
</thead>
<tbody>
<tr>
<td>1 Crackers</td>
<td>2 Chips</td>
<td></td>
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<tr>
<td>4 M&amp;M's</td>
<td>3 Skittles</td>
<td></td>
</tr>
<tr>
<td>2 Chips</td>
<td>5 Funyuns</td>
<td></td>
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<tr>
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For every number chosen in the preference assessment, shade in the corresponding number to reveal the hierarchy of preferences for your student. The higher the shading, the more preferred is the item.
• Line up several items in array
• Kid chooses one
• Access to that one
• Line up all remaining
• Creates hierarchy by dividing number of choice by how many times an item was in array
  – Fewer presentations, higher preference
• Trouble transitioning from task to task

• TB when you change his schedule

• TB when you change her routine

• When you tell her “no”

• When you they are “expecting something” and they can’t have it
Escape from Academic Demand

• Happens during work

• Teacher tells you that teacher stopped presenting some task due to behavior

• TB changes, delays, postpones, ends activities

• Teacher tells you:
  – That if TB during work, they wait till she calms down
  – If they are given a sensory break
  – If they wait until the child is “ready to work”
Escape from Other

• Told they do not like certain sensory events
  – Noises, buzzers, bells, commotion, crowds

• If a typical response to the TB is to remove the child from the scene (non-work)
Alone/Ignore

• “It’s self stimulation”
• They’re “stimming”
• Happens when no one is around
• “Happens all the time, regardless of what we do”
• If it is a behavior that has typically been found to be maintained by automatic reinforcement
  – Mouthing
  – Hair pulling, hair twirling
  – Pica
  – Hand flapping
  – Etc.
Classroom Variables and Considerations
• Ecological Validity
  • Vs
• Experimental Control
Where to Conduct Analyses

- In the classroom during ongoing instruction
- In the classroom when others have left
- In different classroom
- In other room
Where to Conduct Analyses

• In Classroom during ongoing activities
  – The most ecologically valid approach
    – Ecological validity
  • All the same people
  • Same sounds
  • Same teachers
  • Same tasks
• **In Classroom during ongoing activities**
  
  – Highest likelihood of confounds in conditions
    • Attention
    • Disruptions
    • Distractions
    • Other objects to engage with
    • Most difficulty containing/restricting a child’s movement around the room
• In Classroom during ongoing activities
  – Highest likelihood of disrupting other students
    • Need to minimize the disruption to the learning of others
    • May limit the topographies of behavior for analysis
    • A slight increase in TB might be worth the disruption to end or decrease it
      – It is happening anyway in that environment
    • Make sure no students are at risk for injury
• In Classroom during ongoing activities
  
  – Highest likelihood of negative comments about the assessment from faculty or administration

  • This should not be taken lightly

  • Consultants v. school personnel might weigh this differently

  • Might affect ability to complete if something goes wrong
Where to conduct the analyses

• In the classroom when others have left
  – Second highest in ecological validity
    • Some of the sites and sounds are there
  
    • But no peers
  
    • Could be problematic if relevant variables leave with the children
      – Does the presence of the children relate to an EO for TB?
      – Diverted attention
      – Seeing others with preferred activities
      – Working when others are not
  
    • Could be advantageous
      – Fewer distractions
• In the classroom when others have left

  – Some likelihood of confounds
    • Not attention from others as they are not there

  • Other items available to compete with EOs

  • Difficulty in restricting a child’s movement around the room
• In the classroom when others have left
  – Low likelihood of disrupting other students
  – Little likelihood of receiving negative comments from administration

• Could come in form of disrupting target child’s schedule

• Could come from teacher or para whose schedule is changed
Where to conduct the analyses

• In different classroom
  – If there is another one, can be a great option
  – Lower ecological validity

  • Depends on the similarity of the classroom to that of the referral environment

  • Most likely the differences limit the ecological validity

• Could be problematic if relevant variables leave with the children
  – Does the presence of the children relate to an EO for TB?
  – Diverted attention
  – Seeing others with preferred activities
  – Working when others are not

• Could be advantageous
  – Fewer distractions
• In different classroom
  – Some likelihood of confounds
    • No attention from other students as they are not there
    • Might be other items available to compete with EOs
    • Might be empty
    • Might be difficult to restrict a child’s movement around the room
• **In different classroom**
  
  – Low likelihood of disrupting other students
    
    • Depends on topography and location of other room
  
  – Little likelihood of receiving negative comments from administration
    
    • Could come from the use of the room
    
    • Could come from the person who uses the room at other times
      
      – Speech, OT, PT, etc.
Where to conduct the analyses

• In another room
  – Least ecological validity
  • Probably no similarity between environments
  • No peers, teachers, objects, sounds, etc.
  • Could be problematic if relevant variables leave with the children
    – Does the presence of the children relate to an EO for TB?
    – Diverted attention
    – Seeing others with preferred activities
    – Working when others are not
  • Could advantageous
    – Fewer distractions
• In another room

• Can create space to have fewest confounds
  • Remove distractions and potential confounding items

• Fewer disruptions
  • Should not be any if coordinated properly

• Depends on where the room is

• Depends on what the room is typically used for

• Depends on scheduling
• In another room
  – Fewer negative comments

• If coordinated with the right people, should not be any

• Depends on location of other room
  – Conference room
  – Extra room in office
  – Sensory room
• Initial lengths from seminal research were all 10 or 15 minutes

• Most still are 10-15 in clinical settings

• We almost always use 5 minutes
  – We have used 2 minutes
  – We have used 10 minutes
  – We have changed from 5 to 10 minutes
Condition Length

- Shorter lengths (2-5 minutes)

  **Advantages**
  
  - Less disruption when TB is high
  
  - Short analysis length
  
  - Less danger to therapist or to child
  
  - Fewer disruptions to others
  
  - Less likelihood of negative comments
Condition Length

• Shorter lengths (2-5 minutes)

Disadvantages

– Might not be long enough to produce the EO
  • Attention
  • Escape

– Might not be long enough to allow child to experience the contingencies in each condition

– Disruptions may have longer effect in the condition
Condition Length

• Longer lengths (10 minutes or more)

Advantages

– Should be long enough to produce the EO in all conditions

– Should be long enough to allow child to experience the contingencies in each condition

– Disruptions may have shorter effect in the condition
Condition Length

- Longer lengths (10 minutes or more)

**Disadvantages**
- More disruption when TB is high
- Longer analysis length
- More danger to therapist or to child
- More disruptions to other students, classes
- Higher likelihood of negative comments
Condition Length

• Changing condition length
  – Start at 5 minute in schools
    • Hopefully there will be separation
    • Using good descriptive info should help create similar situations as described in referral
  – Run 4-5 series
  – If flat, or if descriptive hypothesis is not elevated change to 10 minutes
Physical Arrangement of Room

• To control for potential confounds (discussed later)

• For safety
Physical Arrangement of Room

• Keep classroom the same
  – Less experimental control
  – Less safe
  – More ecological validity

• Modify classroom
  – More experimental control
  – More safe
  – More ecological validity
Room Arrangement

• Total control would entail no distracting stimuli
• Anything else around is a potential confound
  – Block doors
    • From the inside and from the outside

  – Block access to preferred areas/objects
    • Remove from the room or block with objects

  – Block other students
    • Set up partitions
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Partitions

• Divide part of the room into a session area
• Use:
  – Bookshelves
  – Desks
  – Tables
  – Other dividing materials
  – Pads
    • From PT, from P.E.
Pads, Doors, Partitions

• Child will more than likely:
  – Pull on pads
  – Try to access doors
  – Lean on partitions
  – Crawl under tables

• These behaviors might be equally distributed across conditions

• These might go down over time
  – Blocking may punish the response
What Materials to Include in Each Condition

• Attention
  – Therapist, Child, nothing else
  – Others have included “moderately preferred” items
  – Object engagement may compete with the EO of deprivation of attention
  – Therapist needs some materials to read
What Materials to Include in Each Condition

• Tangible
  – Therapist, child, tangible items

  – Need good preference data
    • From teacher if it is one specific items
    • If variety, assess

  – Preference assessment should be completed
What Materials to Include in Each Condition

• Escape
  – Therapist, Child
  – Desk or table
  – Chairs
  – Work materials
    • Discussed later
    • Multiple sets of materials and utensils
What Materials to Include in Each Condition

- Interrupt
  - Therapist, Child
  - Multiple preferred objects/activities
  - Arrange around room in stations
What Materials to Include in Each Condition

• Toy Play (Control)
  – Therapist, Child
  – Multiple preferred objects or activates
Experimental Design

• Multielement/Alternating Treatments
  – Rapid comparison of conditions
  – Can result in very brief analyses
  – Only NEED two of each series
  – Can have many series for comparison
  – Might have multiple treatment interference
  – Randomize presentation
Experimental Design

• Can use any experimental design

• The multielement is the design that will use the fewest number of session

• There are times to use others though
  – Multiple treatment interference
  – Use an ABAB withdrawal design
    • ABACADAE etc.

• Use a pairwise arrangement
How Do You Know When the Analysis is Finished?

• You have to run multiple series
  – At least two, absolute minimum

• At least one series has to be elevated from control

• At least one series has to be elevated above all others
How Do You Know When the Analysis is Finished?

- Determining separation is subjective
- Identification of function can be subjective
- Some are easier than others
- Good descriptive data, clearer results?
Escape from academic demands

Aggression per minute vs. Sessions
Tangibles
The graph illustrates the percentage of intervals over different sessions for two conditions: "Alone" and "Attention". The x-axis represents the sessions, and the y-axis represents the percentage of intervals. The trend shows an increase in the percentage of intervals from session 1 to session 5 for both conditions, with a slight decrease in session 6 for the "Attention" condition.
Attention or Undifferentiated
When is Analysis Finished?

• What if more than one series is elevated?
  – Is this multiple control?
  
  – Is there a standard for determining multiple control?
  
  – When to run more series, when to be satisfied that the results suggest multiple control

• Ask your self about confounds that could elevate one condition artificially
Attention and Tangibles

The graph illustrates the responses per minute for Attention, Tangible, Play, and Demand across different sessions. The x-axis represents the sessions, while the y-axis shows the responses per minute. The graph shows trends and changes in behavior over the sessions.
When is Analysis Finished?

• If all are elevated*

• If all are low*
  – *This should also trigger re-examination of other data

• Re-evaluate descriptive data, run a new analysis

• Lengthen condition durations
Identifying & Overcoming Issues, Problems, & Confounds in Each Condition
• What data to collect and why
  – Child Behaviors
    • Engagement: Is the child actively engaged with an object during the interval?
      – Record as partial interval

• Engaging with objects COULD compete with deprivation---especially during shorter sessions

• What is engagement?
  – Define before the session
  – What if a child is playing with her sock or with a string?
  – Make notes of those things for later analysis if they appear to interfere
**Attention**

– **Child Behaviors**
  
  • **Target Behaviors**: Of course…

– **Therapist Behaviors**
  
  • **Attention**: Record ANY attention delivered in any form in partial interval or as frequency if multiple forms of attention are used in the interval

  • **Use as a measure of treatment integrity**
    – Can generate percentages of accurate implementation
• **Recording Attention**
  
  – Should be a one-to-one correspondence between target behavior intervals and attention
    
    • Additional attention will decrease the motivation for the target behaviors
  
    • Undelivered attention can be extinction, especially early in the session or early in the analysis
  
    • The child is learning the contingencies, not delivering the consequences teaches the child something other than what delivering the consequence teaches the child
Attention

**Attention from others**

- Other children, teachers, others
  - We typically do not record this as a different behavior unless we are in an active classroom environment (record as attention)

  - In a more restricted setting, you can mark the attention interval and record the attention from other elsewhere on the data sheet

  - This is potentially very important when later analyzing the session
Attention

• **Attention from others**
  
  – A deprivation of attention includes all attention
  
  • Possible confounds in schools
    – Announcements over the intercom
    – Others asking the teacher questions
    – Students talking, laughing, moving around
    – Scheduled changes
    – Unscheduled changes in routine
Attention

• Confounds
  – Things that jeopardize the control in the condition
  – In schools, our sessions rooms are not designed for these procedures
    • Partitioned areas
    • Temporary padding
    • Doors with no locks
    • Desks, chairs, bookshelves, other furniture
    • Dangerous items- pencils, pens, scissors, etc.
• What do you do if there is a disturbance or other attention during the session?

  – End the session and wait until disturbance has finished

  – Give NON-verbal cues to the adult

  – Make notes and evaluate the potential impact after the session has ended
• What do you do when a child attempts to, or does, access these things in an attention session?
  – If it is dangerous, you have to block it or remove child
    • Climbing on desk- without talking, grab child and set him on ground
    • RECORD!
  – If you have two people, have the data collector continue to record data and the therapist perform all actions
    • This will allow accurate recording of all the possible confounds
• What do you do when a child attempts to, or does, access these things in an attention session?

  – If you are alone- Do the best you can to do everything and then attempt preventative action after the session

    – Can the key to lock the door be obtained?
    – Can someone block it from outside?
    – Can objects be removed from the room?
    – New room?
• Confounds
  – Pulling pads off the wall/hanging on partitions
    – Try to keep them on/up- Weigh the safety versus the confound
    – Do not provide attention
    – Block with your body
    – Create a better system of pads
  – Going for the door
    – Try to sit in front of the door
    – Have the data collector sit in front of the door
    – Lock it or block it
    – Do not provide attention
• Needing to provide touch for nontargeted behaviors
  – Possible confound
  – This will happen for safety reasons
    • Climbing etc.
  – Record data and evaluate later
  – Change room so it does not happen
• Eye contact with child?
  – Possible confound
  – Avoid this in session
  – If it happens, minimize it
  – This does not matter in non-attention conditions
  – This is like delivering verbal attention to some kids
    • This might confound the contingent use of attention
Diverted Attention

• Introduction of other person to analysis

• Train the child
  – No talking during the analysis
  – No reaction
  – No looking

• Explain procedure and gain permission from teacher

• Get consent

• Ensure safety of child
Diverted Attention

• Select the other child based on:
  – Teacher report of previous incidents
  – Observation of previous incident
  – Proximity of other child to target child in academic setting
  – Intellectual level of the other child
    • Ability to follow training
Diverted Attention

• What data to collect and why
  – Target-Child Behaviors
    • TB
  – Peer Behaviors
    • Peer attention
    • There is a possibility that the child might talk
    • Be prepared for it
  – Therapist Behaviors
    • Attention to target child
    • Attention to Peer
Diverted Attention

- The treatment integrity measures in this condition:
  - Is the therapist delivering attention to the other child
  - Is the therapist ONLY delivering attention to the target child following TB
  - Is the other child NOT delivering attention to the target child
Diverted Attention

• Keeping the children separated

• Keep yourself in between them at all times

• Plan and block aggression to peer even if that is not the TB
Diverted Attention

• If target child gets out of his seat during attention to peer
  – No attention to target child
  – Try to minimize touch
  – Block/protect other child
  – Keep target child at arms length from other child even at risk of experimental confound by the touch

• Do not run this condition if TB is aggression to peer
Diverted Attention

- Other Potential Confounds
  - Other child talking to the target child
  - If reading a story of book to the other child, target child could be interested in the attention
  - All other attention confounds discussed
Escape From Academic Demands

• What data to collect and why
  – Child Behaviors:
    • Compliance to demands
      – Compliance as defined as correct responding following verbal or gestural prompts in a 3-step prompt
      – If compliance is very high might need to choose another task
      – If compliance is high TB will probably be low
    • TB
Escape From Academic Demands

• What data to collect and why
  – Therapist Behaviors:
    • Task Demands – Level of Prompting
      – Some record partial interval of whether demands were placed in the interval
      – Some record each demand
      – We record each individual prompt*

• Recording each individual prompts allows for much more specific post-session analysis
In these intervals, you do not know how many prompts were delivered, and what level of prompting was required to obtain compliance.

Any of these intervals could contain multiple task demands
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- These intervals allow a prompt by prompt analysis of when the TB occurred with a demand sequence
- You can use this information to check the integrity of the prompting sequence
- There should be prompts every 5 s
Escape From Academic Demands

• What data to collect and why
  – Therapist Behaviors:
    • Escape From Demands
      – As defined as the therapist removing the materials and turning away from the child for the reinforcement interval
      – This is another treatment integrity measure
      – There should be the correct amount of time in escape
      – There should be a one-to-one relationship between the number of intervals with the onset of TB and the escape intervals
• Which tasks to use
  – Ask the teacher
    • Which tasks have been associated with TB in the past?
    • Which are difficult or require assistance to complete?
    • Which are her least preferred tasks?

  – Observe/Test
    • What was the task when you observed TB during academics?
    • What does child select and not select when given a choice?

  – Look at work samples
    • Is there a noticeable difference between some tasks?
      – Completion
      – Accuracy
Escape From Academic Demands

- What is series is flat and escape is a the leading hypothesis?

- What if child complies with all demands?
  - Always record which tasks were given on the data sheet for later analysis
  - This can help if tasks change AND TB is variable
    - Are some tasks associated with higher or lower TB than others being used?
Escape From Academic Demands

• Small differences might influence TB in sessions
  – “Use DTT tasks”… “Use Language Tasks”

• We hear this and these can be wildly different tasks

• Others are the same way “Any Language Arts Task”

• Child who responds differently when the response is varied, or new, or…..
Escape Conditions With Novel and Old Tasks

Vocalizations

Percentage of intervals

Sessions

Novel task

Old

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Escape Conditions With Verbal and Non-Verbal Response Requirements

Percentage of Intervals

Sessions

Verbal Response
Non-Verbal Response

Vocalizations

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Escape From Academic Demands

- Changing tasks mid analysis
  - If you have multiple tasks from which to choose

  - If you are varying tasks across sessions, change the task if there is no or low TB

  - If you are varying task within session watch for differences

  - Do not change the task from academic to non-academic within or across sessions
    - This is a different type of session
Escape From Academic Demands

• Prevent escape except following TB
  – The biggest area of confound is the child creating breaks in the prompting sequence without demonstrating the TB

  – Getting out of the seat

  – Demonstrating other PBs that are not targeted

  – Throwing, breaking, tearing, etc. materials
Escape From Academic Demands

• What happens if the child gets out of their seat during the session?
  – Use physical management during academic task to keep them in their seat
    • Body position
  – During escape period:
    • Do not do anything unless:
      – Doing so becomes dangerous
      – If they climb or pull things down
      – If they aggress towards you

• If they do the above:
  – Do not use attention
  – Block
  – Remove them from objects
  – Protect yourself
Escape From Academic Demands

• What happens if the child gets out of their seat during the session?
  – If they are out of their seat following the escape period:
    • Make getting back to the seat the next demand
      – Use three-step prompting to get back in their seat
    • Back in the seat, begin academic demands
    • TB during the back-to-seat demands- escape period
Escape From Academic Demands

• What happens if the child gets out of their seat during the session *and accesses tangibles*?
  – The break is supposed to be a break from the task and the therapist
  – Keep this in mind when making decisions about when to intervene
    • Will your immediate intervention cause more issue then waiting till the reinforcement interval is over?
    • Wait, remove the tangible(s) from the area and prompt back to seat
Escape From Academic Demands

• Demonstrating other non-targeted PBs
  – Do not give break
  – Do not slow down prompting sequence
  – Do not give attention
  – Block, protect yourself, keep going
• Destroying academic materials
  – Writing utensils, papers, other materials
  – Have extras
  – Keep them close by, but out of reach of the child
  – Anticipate these behaviors
  – Any attempt to throw or destroy should be treated as an incorrect response and should signal the next level of prompting
• Target behaviors during escape period
  – Ignore
  – Do not extend the break
  – At end of escape period, present next demand
  – Only TB during demand sequence should be followed by the break
What data to collect and why?

- Child Behaviors- As defined in FBA

- Access: Does the child have access to a tangible item during the interval? The child is physically engaging the item

- Restriction: Does the therapist have access to the tangible item during the interval? The therapist has physical possession of the tangible item

- Use partial interval recording
Tangible

- Confounds
  - Child has prior access to tangible item before session begins
  - Presence of competing items
  - Extraneous noises outside of analogue room
  - Child attempts to leave room
  - Therapist attention
What do you do if the child attempts to touch or take the item during the tangible session?

- Without providing any verbal comments or reprimands, lift or move the item away from the child’s grasp
- However, make sure that the child can visually see the item throughout the entire session
• What do you do if the child upon receiving the item contingent upon problem behavior attempts to chew, eat or swallow the item?
  
  – Restrict the item immediately, but continue the session
  
  – Should this continue to occur, repeat the above process throughout the entire session
• What do you do if the child upon receiving the item contingent upon problem behavior hits you with it?

  – Response Blocking With No Verbal Comments
  
  – Ignore Problem Behavior
  
  – Wait 15-20 seconds and then restrict the item again
  
  – Contingent on problem behavior return the item to the child throughout the remainder of the session
What do you do if the child upon receiving the item contingent upon problem behavior throws it across the room?

- Ignore

- Wait 15-20 seconds and then restrict the item again

- Contingent upon problem behavior give the child access to the item again

- Repeat the above cycle throughout the entire session if necessary
• What data to collect and why?
  – Child Behaviors- As defined in FBA
  – Scheduled Interruptions: Therapist attention for child to stop engaging in any behavior or activity engaged in at the time
  – Types of activities: What type of activity is the child being interrupted from
    • May suggest preferred activities
    • May suggest which interrupted activity is likely to lead toward problem behavior
  – Use partial interval recording
Interrupt

• Confounds

  – Child has prior access to preferred items and activities before session begins
  – Inconsistency with scheduled interruptions during sessions
  – Who is interrupting the child?
  – Therapist Attention
Interrupt

• What do you do if the child does not engage with any item or activity scattered throughout the room?
  
  – Continue to interrupt the child every 15-20 seconds regardless of what he or she is doing

  • Ex. If the child is simply sitting down in a chair, you would interrupt the child by saying something like “You can’t sit down right there, you have to do something else.”
• What do you do if the child attempts to verbally engage you during the interrupt session?

  – Continue to interrupt the child every 15-20 seconds

  – The only verbal attention given to the child are the scheduled interruptions every 15-20 seconds

  – Avoid subtle forms of attention during this session (e.g. eye-contact, glances, smirks, etc.)
• Additional Issues

  – Be consistent with do versus don’t commands throughout session

  – Maintain steady tone of voice when interrupting child

  – Decide before the session whether you will you any type of physical prompting
• What data to collect and why?
  – Target Behaviors
  – Use partial interval recording
Ignore

- Confounds
  - Unexpected sounds/noises (e.g. intercom announcements, school bells, etc.)
  - Unexpected entry of school personnel
  - Possible that child will attempt to physically engage you
Ignore

• What do you do if the child attempts to hit, kick, scratch, or bite you during the ignore condition?
  – Response blocking
  – Ignore problem behaviors
  – Do not provide any verbal or physical attention

• Remember: The child is “supposed” to be alone
Alone

• What data to collect and why?
  – Target Behaviors
• Additional Issues

– Is not always feasible in school settings

– Perception of leaving student alone

– Safety Concerns

– Problems with observing child in potential blind spots
• What data to collect and why?
  – Child Behaviors- As defined in FBA
    • Engagement- Times when child engaged with specific item or activity
  – Therapist Behaviors- Noncontingent attention delivered by therapist
  – Allows us to determine the influence of two antecedent variables (attention and task difficulty)
  – Use partial interval recording
• Additional Issues & Concerns
  – Unintentional reinforcement of problem behavior
  – Consistent spacing of noncontingent reinforcement
  – Have NCR be “constant”
Cautionary Tale
Problem Behavior(s):

The behaviors that have most frequently interfered with progress have included the following:

- Physical Aggression: any instance or attempt of Drake hitting, kicking, scratching, biting, or pinching an adult.
- Self-Injurious Behavior - head-banging attempt: any attempt by Drake to forcefully move his head into an object or a person.
- Self-Injurious Behavior - head-banging: any self-initiated, forceful contact between Drake’s head and another object or person.
- Self-Injurious Behavior attempt - any attempt Drake makes to pull out his hair, bite his forearm, or scratch/pinch his arms or legs.
- Self-Injurious Behavior: any instance of Drake pulling out his hair, biting his forearm, or scratching/pinching his arms or legs.
- Elopement: any instance of Drake leaving a designated space after direction to stay there or after requesting to go elsewhere and being told to stay there.
- Throwing/Swiping Materials: any instance of Drake using his hands and/or feet to eject or swipe materials away from his workspace.
- Vocal Stereotypy: any instance of Drake emitting non-functional, non-contextual words, or phrases
- Motor Stereotypy: any instance of Drake positioning his fingers in front of his eyes
Common Flaws

The following graph indicates the number of episodes of problem behavior exhibited by Drake each day during the data collection period. Over 10 days, a total of 98 episodes of problem behavior were recorded. On average, Drake exhibited an average of 9.8 episodes of problem behavior each day.
Common Flaws

• Distribution
  – These actually support multiple behaviors are NOT part of the same response class
  – These actually demonstrate that “episodes” should not be used
The following graphs depict the distribution of specific target behavior during episodes. That is, this graph details what episodes generally look like. The first chart indicates for how many episodes (from a total of 98) specific behaviors were observed to occur. The second is a representation of the percentage of episodes (of 98) for which specific behaviors were observed to occur.

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Number of Episodes During which the behavior was observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Aggression</td>
<td>49</td>
</tr>
<tr>
<td>Head-banging Attempts</td>
<td>33</td>
</tr>
<tr>
<td>Head-banging</td>
<td>3</td>
</tr>
<tr>
<td>SIB Attempts</td>
<td>15</td>
</tr>
<tr>
<td>SIB</td>
<td>22</td>
</tr>
<tr>
<td>Elopement</td>
<td>4</td>
</tr>
<tr>
<td>Throwing/Swiping Materials</td>
<td>63</td>
</tr>
</tbody>
</table>

Distribution of Problem Behavior Across Episodes

- Physical Aggression
- Headbanging - Attempt
- Headbanging
- SIB - attempt
- SIB
- Elopement
- Throwing/Swiping Materials
The following graphs depict the distribution of antecedents across episodes of problem behavior. That is, which environmental changes usually immediately preceded episodes of problem behavior. The first graph represents the number of episodes of problem behavior each antecedent preceded; the second graph represents a percentage. The following antecedents were not observed to precede any instance of problem behavior: loud or chaotic environment, interruption of inappropriate behavior, delay in delivery of reinforcement, or presentation of an unexpected event. The data indicates that the most common antecedent for problem behavior is academic demands.

Why Decide What “Antecedents” are in Advance of the Observations??
## Distribution of Antecedents Across Episodes

### Antecedent | Number of Episodes that Antecedent Preceded
---|---
Academic Demand | 58
Non-Academic Demand | 3
Denied Activity/Told “no” | 11
Preferred Activity Interrupted | 14
Unknown | 2
The following graphs depict the distribution of consequences across episodes of problem behavior. That is, what environmental changes usually immediately followed episodes of problem behavior. The first graph represents the number of episodes of problem behavior each consequence followed; the second graph represents a percentage. The following consequences were not observed to follow any instance of problem behavior: task removal, removal from environment, physical restraint, and access to preferred items. Data indicates that most of the time, a combination of physical and verbal redirection followed problem behavior. In some cases, that may have included verbal attention to the problem behavior.
<table>
<thead>
<tr>
<th>Consequence</th>
<th>Number of Episodes that Consequence Followed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned Ignoring</td>
<td>26</td>
</tr>
<tr>
<td>Verbal Redirection</td>
<td>96</td>
</tr>
<tr>
<td>Physical Redirection</td>
<td>62</td>
</tr>
</tbody>
</table>

**Distribution of Consequences Across Episodes**

![Graph showing the distribution of consequences across episodes. The graph indicates the percentage of episodes for Planned Ignoring, Verbal Redirection, and Physical Redirection.]
Common Flaws

• Are these the ONLY events that followed these behaviors?

• Are these “consequences” the effect the behavior had on the environment or teacher reactions?

• How can some of these exist together?

• Supports NOT using episodes
The following graph depicts the total duration of episodes of problem behavior each day, as well as the average duration that each problem behavior lasted each day. Across all days, the total duration of episodes of problem behavior was 19.3 minutes per day. The total average duration across all days was 2.4 minutes per episode.
Where’s the Support?

Attainment of preferred items/activities.

In general, do not allow Drake access to preferred items and/or activities immediately after inappropriate behavior. If he tries to avoid a task to access a preferred item/activity, he should not be able to access that reinforcer until he completes the original task/instruction.

Adult Attention.

Descriptive data indicates that it is likely that attention serves to reinforce Drake’s behavior—even if that attention might seem “negative” in response to inappropriate behavior.

Escape/Avoidance.

Descriptive functional analyses suggest that Drake’s target behaviors are most often a function of escape/avoidance. In order to address this potential function, the goal of this
Distribution of Antecedents Across Episodes

- Academic Demand
- Non-Academic Demand
- Denied Activity/Told "no"
- Preferred Activity Interrupted
- Unknown

Distribution of Consequences Across Episodes

- Planned Ignoring
- Verbal Redirection
- Physical Redirection
Logic?

• Antecedents are not reinforcers
  – Behavior during academics does not make the behavior reinforced by escape

• You cannot logically conclude from ABC data that behaviors are reinforced by events you did not record
  – No “escape” category
  – No “access” category
Logic?

• Also, no…
  – Peer attention, escape from noise, access to food, escape from attention, escape to attention
  – You cannot go beyond the data
  – ABC data is useful for suggesting patterns that might contain Sr+ contingencies, nothing else
  – Do not limit the As and Cs by using a prefab form
  – Read
<table>
<thead>
<tr>
<th>Time</th>
<th>Antecedent Event</th>
<th>Response</th>
<th>Consequent Social Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:14</td>
<td></td>
<td>1. T. throws bucket and shovel into corner of sandbox.</td>
<td>6. Mrs. S. turns toward Timmy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. . . . stands up.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. . . . walks over to monkeybars and stops.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. . . . turns toward teacher.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. . . . says, “Mrs. Simpson, watch me.”</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8. . . . looks toward teacher.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9. . . . says, “Look how high I am. I’m higher than anybody.”</td>
<td></td>
</tr>
<tr>
<td>9:16</td>
<td></td>
<td>10. Mrs. S. says, “That’s good, Tim. You’re getting quite good at that.”</td>
<td></td>
</tr>
</tbody>
</table>
10. Mrs. S. says, That's good, Tim. You're getting quite good at that.”

11. T. climbs down

12. . . . runs over to tree.

13. . . . says, “Watch me climb the tree, Mrs. Simpson.”

14. Mrs. S. turns and walks toward classroom.

14. Mrs. S. turns and walks toward classroom.

15. T. stands, looking toward Mrs. S.


17. Girl cries.

18. T. proceeds to sandbox

19. . . . picks up bucket and shovel.

20. . . . resumes play with sand.
The Effect of Changing Session Duration
Functional Analysis - Self Injurious Behavior

- 2 Minute Sessions
- 5 Minute Sessions
- Escape
- Attention
- Interrupt
- Control
- Ignore
Implications

• Severe SIB in the form of ear flicking

• Assumed by staff to be automatic

• First analysis suggested automatic

• “Type 2” Automatic pattern?
  – Ripping his ear in half
  – Blood transmission to staff and peers
  – Interruption to clean up and change clothes
  – Protective equipment?
Implications

• Results of changing session duration
  – Clear delineation of one condition
  – Results “moved” from automatic to socially reinforced

  – Recommendations changed
    • No protective equipment
    • No sensory extinction
    • Do/Don’t
Baseline: Don't

Treatment: Do

Baseline: Don't

Treatment: Do

Baseline: Don't

Treatment: Do
Outside the Box
Data Analysis
Case 1
Average SIB in Sessions With
Noncontingent v. Contingent Physical Attention

Average Frequency of SIB

- NON
- CONT/DENY
Results

- All conditions in which physical attention was noncontingently delivered contained low SIB.

- All conditions in which no physical attention was delivered contained very high SIB.

- Conditions in which physical attention was delivered contingently contained moderate rates.
Physical Attention With and Without Verbal Attention

- Constant Physical Attention/
  Contingent Verbal Attention
- Constant Physical Attention/
  Noncontingent Verbal Attention

Frequency of SIB

5-Minute Session
Verbal Attention With and Without Physical Attention

- Constant Verbal Attention/Contingent Physical Attention
- Constant Verbal Attention/Noncontingent Physical Attention

Frequency of SIB

5-Minute Sessions
Results

• Typical visual analysis suggested multiply maintained SIB
  – Verbal Attention
  – Physical Attention
  – Automatic?

• Analysis of the amount of physical attention in each condition led to a new hypothesis
  – Tested that hypothesis
    • SIB reinforced by physical attention
    • SIB NOT reinforced by verbal attention
Outside the Box
Data Analysis
Case 2
Behavior During Sr+

• If the target behavior occurs during the reinforcement interval
  – Could simply be a burst

  – Could be the behavior is not efficient yet
    • Fewer attempts/less magnitude when the CRF is learned

  – Could be that the “reinforcer” is not a reinforcer
    • This might trigger additional analysis of current data or a new FA
Functional Analysis of Aggression (Frequency)

Frequency of Aggression

5-Minute Sessions

Interrupt
Escape
Tangibles
Control
Functional Analysis of Aggression
(Percentage of Intervals)
- **Frequency**
  - Highlights the overall amount of target behavior in a session
  - Bursts of behavior can occur in a single interval or two

- **Percentage of Intervals**
  - Highlights the relative distribution of behaviors across the session
  - Low rate efficient behavior can occur across the entire session
Freq and POI for DB

- He had just a few instances of aggression in sessions that contained aggression

- POI graph shows very low POI

- During the sessions we thought we noticed a pattern

- Mands
Data Collection and Analysis

• Use interval forms
  – Allows temporal/chronological sequences to be visually analyzed
    • (You can see things as they occurred in time)
  – Collect data on all previously discussed
    • AND on everything else
    • Never know what might be relevant later
    • Data sheets might be covered in notes, marks, shorthand
DB’s Interval Forms

• What thought we were observing a pattern during the sessions of behavior following his mands and not following the “Sds” we arranged in the analysis

• Went back and looked at his data sheets

• Conditional Probability Analysis
Conditional Probability Analysis (CP)

- Conditional probability analysis is used to determine the probability of one event following or preceding another event.

- We were interested in determining the probability of aggression following Drake’s mands in each condition and determining the probability of the programmed antecedents preceding aggression in each condition:
  - Task demands in the Escape condition
  - Item restriction in the Tangible condition
  - Interruptions in the Interrupt condition
  - Ignoring Drake in the Attention condition

- Comparing the probabilities of which events preceded aggression would allow us to determine which relationship was correlated with his aggression and provide further insight into what was evoking aggression.
CPs

• Requires interval data

• Choose a time frame
  – We used 3 intervals (30 s)

• What is the probability one of our “Sds” preceded aggression?

• What is the probability a mand preceded aggression?
• Total number of intervals of antecedent
  – Divide by the number of times the behavior occurs in the specified time frame
    • If more than one interval in your time frame contains the behavior, that time frame only counts as one
    • This is to avoid having more behaviors than time frames

• Or, given the occurrence of a behavior, what is the probability an antecedent preceded that behavior
  – Slightly different questions
| Task Demand | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Mand       | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| Aggression | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |

| Task Demand | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Mand       | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| Aggression | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |

30 Intervals w TD
7 Intervals w Mands
• With task demands in every interval, any behavior will be preceded by a task demands

• Given all the intervals with task demands, what is the probability of aggression?

• Given the intervals with mands, what is probability aggression follows?

• Given the intervals with aggression, what is the probability mands preceded those intervals?

• Is there a difference in these probabilities?
### CP Example

<table>
<thead>
<tr>
<th>Task Demand</th>
<th>0-10</th>
<th>11-20</th>
<th>21-30</th>
<th>31-40</th>
<th>41-50</th>
<th>51-100</th>
<th>101-110</th>
<th>111-120</th>
<th>121-130</th>
<th>131-140</th>
<th>141-150</th>
<th>151-200</th>
<th>201-210</th>
<th>211-220</th>
<th>221-230</th>
<th>231-240</th>
<th>241-250</th>
<th>251-300</th>
<th>301-310</th>
<th>311-320</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mand</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
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<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td></td>
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<tr>
<td>Aggression</td>
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<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Mand</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
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<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

This table illustrates the CP example with task demand and behavior levels indicated by 'X' and 'M' for Mand and 'A' for Aggression.
• 7 intervals with mands
  – $7/7 = 100\%$ had aggression in the designated time frame

• 8 intervals contained aggression
  – Of those 8, all 8 had mands precede in the time frame
  – Probability that aggression follows mands is $100\%$
• 30 intervals with task demands
  – 17 intervals preceded aggression
    • Not counting already counted intervals in time frame
  – $17/30 = 57\%$ probability aggression will follow an interval with a task demand
DB’s CPs

Probability of Aggression Following Programmed Antecedents and Manding in Each Functional Analysis Condition (FA of Aggression)

- Escape Condition
- Interrupt Condition
- Tangible Condition
- Attention Condition
- All Conditions

Probability of Aggression Given Antecedent Events

- Task Demands
- Mand in Escape
- Interrupt
- Mand in Interrupt
- Restriction
- Mand in Tangible
- Ignore
- Mand in Attention
- Mands in FA
• In each condition
  – Mands overwhelmingly predicted aggression

• This relationship is strong
  – But, it is still correlational
  – It was not demonstrated in a causal manner

• How to test it then?

• Create a new FA
  – Reinforce aggression or mands with
Mand Analysis

• **Access to Item Following Mand (Control)**
  – As soon as he requested an item or activity, that item or activity was given to him.
  • The duration of these trials was yoked to the duration of test trials in which aggression was reinforced with the delivery of a requested item

• **Access to Item Following Aggression (Test)**
  – Mands were not reinforced. Aggression led to immediate delivery of the item being requested.
Mand Analysis - Aggression

Aggression Reinforced by Requested Item

Mand Reinforced by Requested Item
Results

- Unclear FA results
  - Undifferentiated but Control was low
    - Suggests social reinforcement

- Pattern noticed in sessions
  - Mands were made - not met - aggression followed
  - Programmed consequences still delivered so elevation seen in FA graph
Results

• CPs computed for mands and programmed antecedents
  – Mands overwhelmingly predicted the occurrence of aggression

• New analysis created to analyze whether correlations from CPs were demonstrated in actual test for reinforcement
  – Results demonstrated that aggression was reinforced by access to requested items
Mueller, Nkosi, and Hine (2011)
Table 1. Student Characteristics

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Number of students</th>
<th>Percentage of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autism</td>
<td>47</td>
<td>68</td>
</tr>
<tr>
<td>PDD-NOS</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Aspergers</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>AD/HD</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>EBD</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Down</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>FAS</td>
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<td>1</td>
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<tr>
<td>Bi-Polar</td>
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<td>1</td>
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<tr>
<td>Landau-Kleffner</td>
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<td>1</td>
</tr>
<tr>
<td>MR</td>
<td>1</td>
<td>1</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Number of students</th>
<th>Percentage of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2 years</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3-4 years</td>
<td>5</td>
<td>7</td>
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<tr>
<td>5-6 years</td>
<td>13</td>
<td>19</td>
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<tr>
<td>7-8 years</td>
<td>16</td>
<td>23</td>
</tr>
<tr>
<td>9-10 years</td>
<td>16</td>
<td>23</td>
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<tr>
<td>11-12 years</td>
<td>8</td>
<td>12</td>
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<tr>
<td>13-14 years</td>
<td>6</td>
<td>9</td>
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<td>15-16 years</td>
<td>3</td>
<td>4</td>
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<td>17-18 years</td>
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<td>1</td>
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<tr>
<td>19-20 years</td>
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<td>0</td>
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<tr>
<td>21 and over</td>
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<table>
<thead>
<tr>
<th>Race</th>
<th>Number of students</th>
<th>Percentage of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian</td>
<td>50</td>
<td>72</td>
</tr>
<tr>
<td>African-American</td>
<td>18</td>
<td>26</td>
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<tr>
<td>Asian-American</td>
<td>1</td>
<td>1</td>
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</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number of students</th>
<th>Percentage of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>Male</td>
<td>55</td>
<td>80</td>
</tr>
</tbody>
</table>

Note. Student demographic information summary for 69 students whose behaviors were analyzed. Panels, from top to bottom describe, Diagnosis, Age, Race, and Gender.
Table 2. Topography

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Number of Analyses</th>
<th>Percentage of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggression</td>
<td>42</td>
<td>47</td>
</tr>
<tr>
<td>SIB</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Tantrum</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Property Destruction</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Aggression/Prop. Destruct</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Disruption</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Vocalizations</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Flopping</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Scream</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Aggression/SIB</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mouthing</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Touching</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Aggression/Scream</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note.* Number and percentages of behavioral topographies analyzed in 90 functional analyses.
Table 3. Length and Duration of Functional Analyses

<table>
<thead>
<tr>
<th>Number of Conditions</th>
<th>Number of Analyses</th>
<th>Percentage of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Six</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Five</td>
<td>25</td>
<td>28</td>
</tr>
<tr>
<td>Four</td>
<td>44</td>
<td>49</td>
</tr>
<tr>
<td>Three</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Two</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Duration of Sessions</th>
<th>Number of Analyses</th>
<th>Percentage of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-min</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5-min</td>
<td>75</td>
<td>83</td>
</tr>
<tr>
<td>10-min</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Increase 5- to 10-min</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Increase 5- to 30-min</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Duration of Analysis</th>
<th>Number of Analyses</th>
<th>Percentage of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-30 min</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>31-60 min</td>
<td>30</td>
<td>33</td>
</tr>
<tr>
<td>61-90 min</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>91-120 min</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>121-150 min</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>151-180 min</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>181-210 min</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>211-240 min</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>241-270 min</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>300 + min</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 4. Identified Reinforcers

<table>
<thead>
<tr>
<th>Specific Reinforcer</th>
<th>Number of Analyses</th>
<th>Percentage of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escape</td>
<td>23</td>
<td>26</td>
</tr>
<tr>
<td>Attention</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Access</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Tangible</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Attention/Tangible</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Little/no responding</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Automatic</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Attention/Escape</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Undifferentiated</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Escape/Tangible</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Access/Tangible</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Escape/Access</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Escape/Attention/Tangible</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Tangible/Interrupt</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General Reinforcer</th>
<th>Number of Analyses</th>
<th>Percentage of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Reinforcement</td>
<td>46</td>
<td>51</td>
</tr>
<tr>
<td>Negative Reinforcement</td>
<td>23</td>
<td>26</td>
</tr>
<tr>
<td>Combined</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Automatic</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Not Identified</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

*Note.* Top panel presents the number and percentage of specific reinforcers identified in the 90
Ethics

• Impractical

• Time-consuming

• “I’ve been doing this long enough that I do not need to run analyses”

• Unethical?
Ethics

• The behavior is happening currently or you would not be assessing

• Not using the best assessment methods is unethical
  – Cardiologist
  – Neurologist
  – Allergist
  – Dentist

• Jumping to treatment is unethical
Ethics

• We are simply replicating situations that currently exist

• Is presenting demands unethical?

• Is changing a child’s schedule unethical?

• Is restricting access to things unethical?