Data…How Does Yours Measure Up?

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Why measure behavior?

- Measuring behavior prior to intervening gives us a baseline of what is occurring
- Can compare baseline to after intervention has begun
- Provides a rationale for needing behavioral intervention
- Be sure to watch for observer bias.

Operational Definitions

- Use active and observable terms
- Do not use the label as the description
  - The label is simply used to label—a definition is needed
- Clear and unambiguous
  - So each person observing the behavior will see the same thing
- Avoids using "feeling" or "intent" terms
  - If you can’t see it, how do you know?
- Inter-observer agreement (IOA) should be gathered and relatively high
Data Collection

- Ongoing data collection versus data collected for the functional assessment
- Data should be collected when the behavior is occurring
- Ask:
  - When does the behavior occur?
  - Where does it occur?
  - Does it occur with certain people only?
- Also observe when the behavior is not occurring for additional information

On-going Data Collection

- Once a system is used to gather baseline data, the same system should be used to monitor progress of intervention
- Determine who will collect on-going data
  - Someone who sees the behavior
  - Someone with the time to record the behavior
  - Someone who has been trained on taking the data
- Important to choose a measurement system suitable for the defined behaviors
  - Non-example: Self-report for lying
  - Example: Interval recording for on-task behavior
- Once a system has been chosen and developed, it should be tested for contextual fit & reliability

Permanent Product Recording

- **What is it?**
  - Gather information about the enduring outcome of a behavior
- **Counts a physical result**
  
  Examples:
  - Correctly completing homework problems
  - Number of assignments ripped or crumpled
  - Number of pencils thrown
  - Number of items broken
  - Photographs of self injury
Pros and Cons of Permanent Product

Advantages
- You do not need to observe the student while he or she is engaging in the behavior.
- Teachers can use without any major changes to their daily activities and responsibilities.
- Easy to use and can be applied to many different settings and situations.
- Can be filed or stored for review or verification later as needed.

Disadvantages
- Not always clear whether the student actually created the product.
- Sometimes a work assignment or item created is the product of another student's behavior but there is no way to identify who engaged in the behavior of interest.
- At times, direct observational measures are more useful than permanent product recording because you can see how the student is engaging in a behavior and better understand the context in which these behaviors occur.

Use Permanent Product When...

- The behavior results in a lasting product or outcome.
- There is limited time/opportunity to observe the behavior.
- Method can be combined with direct observation methods.

Event Recording/Frequency

What is it?
- Gather information about the number of times the behavior occurs over a specific time period

Type of behavior
- Clear beginning and end
- Low-incidence
- Examples:
  - Raising one's hand
  - Physical Aggression
  - Self-Injurious Behavior
  - Tantrums
Pros and Cons of Event/Frequency

- **Advantages**
  - Easy to implement and can be used while teaching class.
  - Wrist counters, tally marks, post-its, or paperclips

- **Disadvantages**
  - Not as helpful when behavior occurs at a really high rate or for extended periods of time.
  - Behaviors that may occur at a high rate or over extended periods could include temper tantrums, reading, staring off into space, or talking to peers.

Event recording can be used if your objective is to increase

A behavior can be easily counted when:

- The behavior has a clear beginning and end so that you can easily tell when the behavior starts and when it ends, and
- It does not happen at such a high rate that it is hard to document.

Duration Recording

- **What is it?**
  - Gather information about the length of time the behavior occurs

- **Type of behavior**
  - Clear beginning and end
  - Example: Sitting at the desk, Time “alone”, cooperative play
Latency Recording

What is it?
- Gather information about the length of time it takes for a behavior to occur after a particular event takes place

Type of behavior
- Clear beginning
- Examples:
  - Complying with a request to take a bath
  - Beginning an assignment after instruction

Useful when you are interested in the length of time between a specific cue, event, or verbal prompt and the occurrence of a behavior.

Can tell you whether a student is getting better at starting to work on in-class assignments when prompted to begin working, preparing for class activities, or returning to class after lunch.

When to use:
- Clear beginning and end
- Can be used to prevent problem behavior by identifying the length of time between a triggering event (also called an antecedent) and the occurrence of problem behavior.
- Used to find out exactly when to prompt a new communication skill that will result in the same outcome as the problem behavior.
- Can be used when a teacher is interested in the time it takes for a student to engage in an academic behavior after an instructional prompt is given.
Momentary Sample Recording

- What is it?
  - Gather information about presence or absence of a behavior at the end of each time interval
  - Look at the end of the interval and check if behavior is occurring at that time

- Type of behavior
  - Not clear beginning or end
  - High rate or long lasting
  - Ex. Reading

Pros and Cons

- advantage
  - A teacher does not need to be attending to a student's behavior all of the time.

- disadvantage
  - It can underestimate a student's behavior since the student may engage in a behavior throughout an interval but stop right before the end of the interval.

Partial Interval Recording

- What is it?
  - Gather information about presence of a behavior anytime during each time interval
  - Look throughout the interval and check when the behavior occurs

- Type of behavior
  - Fleeting behavior
  - Ex. Smiling
Whole Interval Recording

- **What is it?**
  - Gather information about presence of a behavior throughout the entire time interval
  - check only if the behavior occurs throughout the interval
  - Important that behavior occurs without interruption
  - **Examples:**
    - Being on-task
    - Self-stimulation
    - Skin-picking

Pros and Cons of Whole Interval Recording

- **Advantages**
  - estimates the duration of a behavior
  - provides information about where behaviors are occurring or not occurring within an observational session.

- **Disadvantage** of whole interval recording is that
  - it requires an observer's undivided attention.
  - Observing and recording data can be challenging, especially if using a stopwatch since the person recording must attend to both the timing of intervals as well as the student.

So, how do you measure up?

**What method would you use...**

- If the behavior generates a product?
- If the behavior can be counted and has a defined start and stop?
- If the behavior is difficult to count and lasts for a long time?
- If the behavior is difficult to count but happens quickly?
- If you want to know how long it takes to get a response after a demand?
- If it is important to know how long the behavior lasts?
- If you want to know that the behavior happens without interruption?
Other Methods of Data Collection

- Per opportunity—number of times the behavior occurs out of the possible opportunity
- Checklist—behaviors that are to occur are marked if they do
- Scatter plot—a designated time is charted out and data is collected on when behaviors occur
- Task Analysis—behavior is sequenced in order of occurrence
- Antecedent, Behavior, Consequence - data is collected on what occurred before and after the behavior
- Narrative data recording—taking written anecdotal notes of what is occurring

Activity: Mix it up!

- Shape Groups: Review operational definition
- Letter Groups A & B: Collect frequency data
- Letter Groups C & D: Collect 10-second partial interval data
- Letter Groups E & F: Collect 10-second whole interval data

Number Groups: Discuss differences in data collection methods & agree on best fit for on-going measurement.

Calculate Reliability (Inter-rater agreement)

After data is collected…

- Data should be analyzed, shared and used to guide further actions
Remember

- The importance of
  - A good operational definition
  - Using the same label throughout
  - Addressing the function of the behavior
  - Addressing the problem routines
  - Using a sensitive method of measurement
  - Having reliable data
  - Having clear graphs

About Graphs

- In order to determine the effects of an intervention, it is important to:
  - Have clear data
  - Choose a sensitive scale
  - Use clear and consistent labels
  - Limit # of behaviors on one graph (3)
  - Add condition labels/lines
  - Add trend lines

Line Graphs & Pie Charts & Bars - Oh my!

- Line Graph
  - Can identify patterns and trends across data and label specific conditions over time

Uses & Limitations

**Physical Aggression**

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<thead>
<tr>
<th>Data days</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>Baseline</td>
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<td>Intervention</td>
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**Tantrums**

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Baseline Started motivation chart and increased reinforcement for appropriate behaviors February 2005.

**February 2005**

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Bar Graphs

- Shows comparison between overall values or %

- Uses and Limitations?
Pie Charts

- Shows ratio of portion to a whole (%)

![Pie Chart Example](http://www.specialconnections.ku.edu/cgi-bin/cgiwrap/specconn/main.php?cat=assessment&section=main&subsection=ddm/graphing)

- Uses and Limitations

Scatter Plots

- Represents measures that are not necessarily collected consecutively

![Scatter Plot Example](http://www.specialconnections.ku.edu/cgi-bin/cgiwrap/specconn/main.php?cat=assessment&section=main&subsection=ddm/graphing)

- Uses and Limitations

Questions???