Data Collection
SPCD 519

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Goals for this part of Class

- Be able to accurately explain why it is important/useful to collect information (data) on student's progress (academic, social, behavioral, etc.)
- Correctly define the dimensions for measuring behavior and accurately explain the characteristics of each dimension.
- Correctly define 3 general systems of data collection
  - Define basic observational recording systems <u>and</u> demonstrate accurate application of event and interval data collection using video
- Demonstrate selection of appropriate data collection system for a given situation
- Explain reliability, IOA, and list 4 things which may affect reliability and validity of measurement
- Correctly label parts of a simple line graph

How to Measure a Behavior:

After selecting an important behavior to teach/change, you must decide which <u>characteristic/aspect</u> of the behavior is most informative/useful to you in determining how a student is progressing. These are called the <u>dimensions</u> of the behavior.

Then you must decide how you can accurately and <u>practically</u> measure the behavior, especially in the context of a busy classroom.

Dimensions of behavior (characteristics of a behavior that can be measured):

- Frequency – number of times student performs a behavior

- Rate – how often a behavior occurs within a specified time period (frequency ÷ time)

- Latency – length of time between the cue (Sd) to begin a target behavior and when the student begins performing the target behavior

- Intensity – force of a behavior

- Duration – how long a behavior is performed

- Accuracy – how "correct" was a behavior

- Topography – what a behavior looks like

Know these – you will need to use these terms over and over in completing assignments and for quizzes and exam

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General Systems of Data Collection

- Analyzing Written Reports
  – Anecdotal reports

- Examining Permanent Products
  – E.g., math worksheet, video of student driving electric wheelchair

- Directly Observing/Measuring a Student's Behavior/Academic Response (Observational Systems)
  – Samples of behavior actually occurring

Types of Observational Recording Systems

- *Event recording*

- *Interval recording or time sampling*

- *Duration recording*

- *Latency recording*

Event recording – recording the **number of times** a behavior actually occurs is the most direct and accurate measure of the number of times a behavior occurs.

- CAUTION: Observation times must be uniform or you must use *rate* instead
- Works best with ***discrete*** behaviors (behaviors that have a clear beginning and a clear end)

Simple ways to use event recording

- Golf/Knitting Counters
- Bead Counters
- Passing coin/paperclips
  from pocket to pocket
- Clipboard
- Calculator

Show Me The Data

- Full of examples and forms you can use or adapt.

Show Me the DATA
Experimental Education Unit
University of Washington
Box 357925
Seattle, WA 98195-7925
Phone: 206 221-3139
Fax: 206 543-8480

Interval recording is recording whether or not a behavior occurs **during intervals** of a specified time period (partial or whole interval). It does NOT count the actual number of times the behavior took place.

It is useful with continuous or high frequency behaviors that frequency can't measure accurately. It provides an *approximation* of frequency. There are 3 types of interval recording methods.

_____

Whole Interval Recording

Does the behavior occur **throughout (during the entire)** the interval?

Data Collection Sheet

	1	2	3	4	5	6	7	8	9	10	
Whole							X				10%

Behavior ⊔__⊔ ⊔ ⊔__⊔ ⊔__⊔ ⊔__⊔__⊔ ⊔__⊔

_____

Partial Interval Recording

Does the behavior occur **at any time** during the interval (doesn't have to last throughout the entire interval)?

	1	2	3	4	5	6	7	8	9	10	
Partial	X	X		X	X	X	X		X		80%

Behavior ⊔__⊔ ⊔ ⊔__⊔ ⊔__⊔ ⊔__⊔__⊔ ⊔__⊔

Momentary Time sampling is recording whether a behavior occurs at the **end of an interval** during a specified time period.
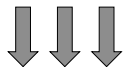
Both interval and momentary time sampling can be reported as either the number of intervals OR the percentage of intervals in which a behavior occurred.

John was on task in 5 out of 10 intervals. OR

John was on task in 50% of observed intervals.

Momentary Time Sampling

Does the behavior occur **during a fixed period at the end of** the interval?

	1	2	3	4	5	6	7	8	9	10	
Momentary	X			X	X	X	X				50%

Behavior   ⌴ ⌴   ⌴ ⌴   ⌴ ⌴   ⌴

Momentary Time Sampling

Student: Maurice
Start time: 8:05   **End time:** 8:15   **Setting:** seventh-grade English class
Definition of behavior: On-task behavior is defined as appropriately writing, reading, talking about the assignment, or waiting to ask the teacher a question regarding the assignment.
Observer: Mr. Haymaker (paraprofessional)

minute	10'	20'	30'	40'	50'	60'
1	O	O	X	X	X	O

Key: O = Behavior was not observed at the end of the 10 minute interval.
        X = Behavior was observed at the end of the 10 minute interval.
        10' = 10 minutes.

How do the three interval recording methods compare in terms of over or under-representing the actual occurrence of a behavior?
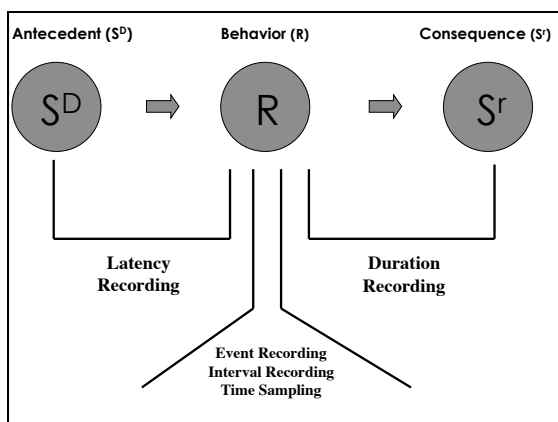
	1	2	3	4	5	6	7	8	9	10	
Whole							X				10%
Partial	X	X		X	X	X	X	X	X		80%
Momentary	X			X	X	X	X				50%
Behavior											

- *Duration recording* is recording the **length of time** a behavior occurs (how long it lasts).

- *Latency recording* is recording the amount of **time** it takes for a student **to begin** the targeted behavior (time between instruction and when targeted behavior occurs)

Antecedent (Sᴰ)   Behavior (R)   Consequence (Sʳ)

S^D ⇒ R ⇒ S^r

Latency Recording

Duration Recording

Event Recording
Interval Recording
Time Sampling

Reliability

- Reliability is the **Consistency** of measurement across conditions, regardless of who the observer is.

- Reliability is NOT a measure of the "truth" of the behavior! It is a measure of <u>consistency of measurement</u>

  - Interobserver Reliablity or Agreement (IOA)
  A second observer <u>independently</u> measures the target behavior(s). The two results are compared for accuracy, yielding a coefficient or percentage of agreement.

IOA: Event Recording

$$\frac{\text{smaller number}}{\text{larger number}} \text{ X 100\% = percent of agreement}$$

Observer	Number of Times Student Raises Hand							
Teacher	x		x		x	x	x	Total = 5
Paraeducator		x	x	x			x	Total = 4

$$\frac{4}{5} \text{ X 100\% = 80\% agreement}$$

Factors Affecting Accuracy of Measurement

- **Reactivity**
  - Behavior (of student <u>and</u> teacher) may be changed just by being measured
  - E.g., Accuracy may increase if observers know that reliability is being assessed
- **Observer Drift**
  - Observer doesn't adhere to operational definitions when recording behavior
- **Complexity/frequency of behaviors**
  - The more complex and the more frequently occurring the behaviors, the less likely that accurate data collection will take place
- **Expectancy** (Observers' awareness)
  - May have preconceived notions about student

Graphing Your Data

- y-axis (ordinate) – vertical; this is where you graph the target behavior (dependent variable)
- x-axis (abscissa) – horizontal; indicates the time dimension
- Phase/condition lines – vertical, dashed lines indicating changes in conditions or treatment phases
- Don't connect data points between phases
  - Connect data points only for consecutive data points within a phase
- Use break lines in the axis to represent "dead space"
- Use labels to make graphs "user-friendly"

Label each condition.

Phase line separates baseline from intervention condition

y axis

x axis

Data points within the same condition are connected by a line.

Label each axis.

Example of a Data Summary Table.

Summarize your daily data into a table.

Sessions/Date	# of Behaviors	Condition Mean
2/8	8	
2/9	4	
2/10	7	
2/11	8	
2/12	10	7.4
Intervention		
2/15	4	
2/16	3	
2/17	3	
2/18	0	2.5

Coming up. . .

- **Next Week (2/15):** Read Chapters 4 & 5 in your text.
- Be thinking about which dimension of the target behavior you selected for your FAP you will measure and how you will measure this. Might want to try out some ideas before writing up your plan for FAP SubSection 2 (due 2/22).

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(frequency · time)

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Behavior ⌣⌣ ⌣ ⌣⌣ ⌣ ⌣⌣ ⌣

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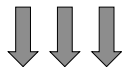
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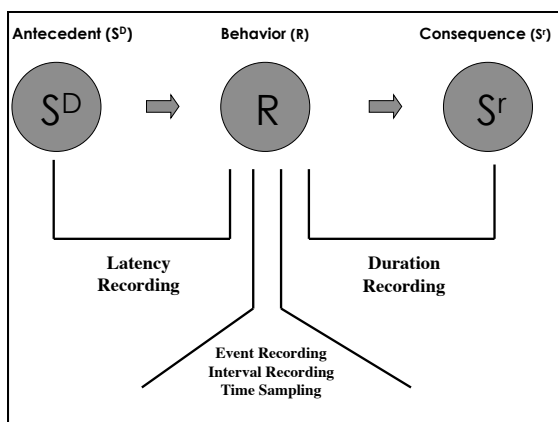   10' = 10 minutes.

13

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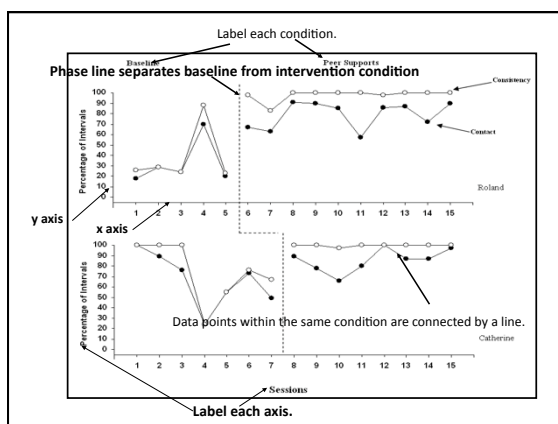| Observer	Number of Times Student Raises Hand							
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