Observing and Recording Behavior

Philip N. Chase
Simmons University

Continuous Measurement/ Recording

- Behavior analysts make a distinction between continuous measurement and sampling.
- Up to this point we have mostly discussed continuous measurement/recording
- The disadvantages of continuous recording, however, are many.

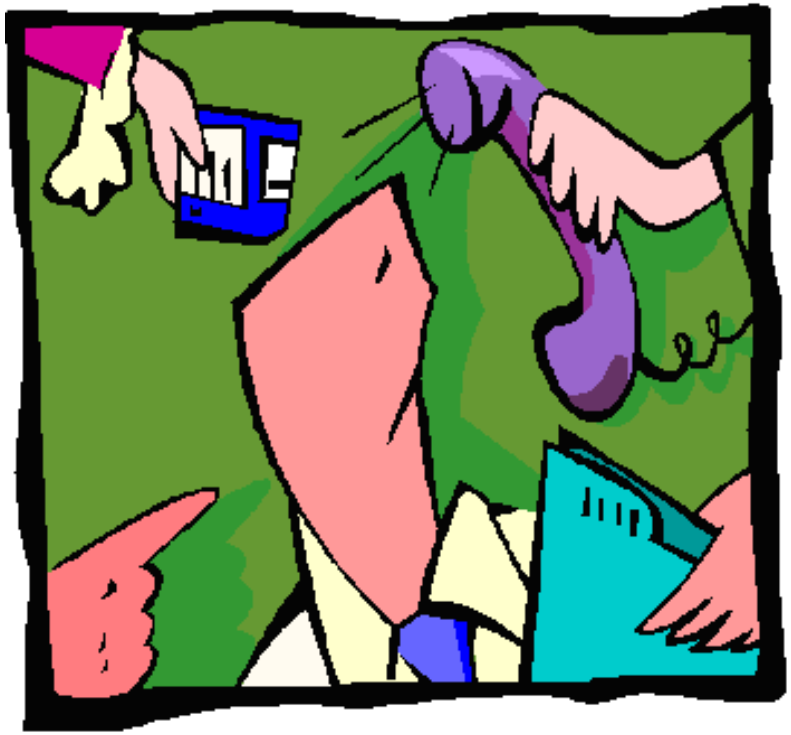
Disadvantages of Continuous Recording

- Sometimes the behavior occurs at too high a frequency to get a reliable recording-**SIB**
- Sometimes the behavior of interest occurs at times that are inconvenient or inaccessible to the applied behavior analyst-**Drug use. Graffiti**
- Often the applied behavior analyst has other things to do besides observing and recording behavior-**Next slide**

Too much to do, too little time!

www.atozadminsolutions.com

- In these cases it is to our advantage to have other methods of measuring behavior



Products of behavior

- One way to be more efficient in recording and measuring behavior is to measure products of behavior.
  - Environmental changes produced by behavior that leave a tangible outcome.

www.boston.com

- **Examples:**

  Behavior: Calculates simple math facts.

  Product: Number of math facts written

  Behavior: Amelia bites her brother

  Product: Bite marks on brother’s arm

  Behavior: Mary smokes marijuana

  Product: THC in Mary's hair.

More Examples:

- Behavior: Observe child writing.

  Product: Number pages written.
- Behavior: Observe the number of balls kicked into the goal during practice.

  Product: Count the number of balls in the goal
- Behavior: Observe people drawing graffiti

  Product: Number of drawings on park buildings and statues

What are the benefits of measuring the outcome or product?

Benefits:

- Many important behaviors produce products
- Do not have to observe behavior *as it occurs*
- Products can be quantified
- Measures can be very accurate
- Measures can be very reliable
- Measurement can be very efficient.

Special Case of Functional Response Class

- A product is simply a special case of a functional class
- Any or all of the behaviors that result in the product.

Teams

- Give an original example of a behavior that might be recorded as a product. Make sure it conforms to the rules for defining behavior.
- For products, a clear, consistent, complete definition describes who produces what, as measured by what, under what conditions.

Other Alternatives to Continuous Recording

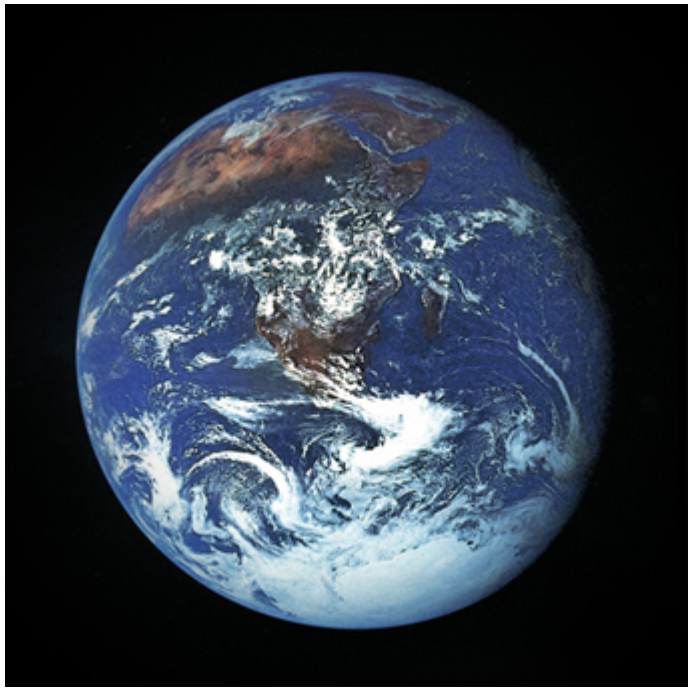
- Sampling Techniques
  - Whole Interval
  - Partial Interval
  - Momentary time sampling

Sampling

- Observation period is divided into brief intervals (e.g., 10s, 1 minute,1 hour).
- The interval selected is likely to produce the best estimate for the behavior and be practical.
- Observers record whether the behavior occurred during the interval.
- Typically reported as percentage of intervals.
- And percentage of intervals is an estimate of a continuous measure of the behavior.

Whole-interval

- Record whether behavior occurred **during the entire interval-**
- **Think Whole Earth-The entire earth-the entire interval**
- **The behavior has to occur throughout the whole interval**

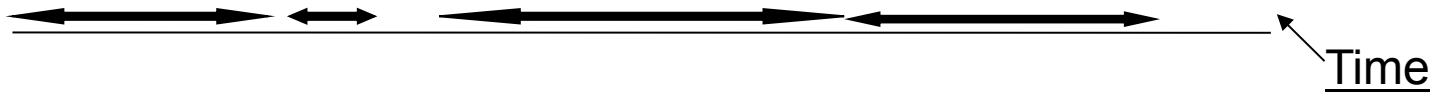


www.as.utexas.edu

Whole-Interval recording*

*graphic based on Alavosious 2004

Instances of behavior, for example talking outloud during a class without being called on, recorded with continuous recording of duration and frequency:



Whole-Interval recording of the same behavior:

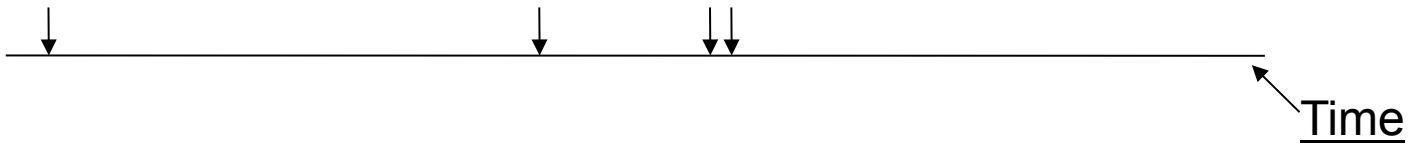
Interval	l 10-sec	2 10-sec	3 10-sec	4 10-sec	5 10-sec	6 10-sec	**TOTAL**
Behavior	X	-	X	X	X	-	4/6 or 66%

- Estimated the frequency of behavior perfectly: 4 out of 4 behaviors
- Slightly underestimated duration: 40 seconds vs. over 50 seconds
- But provided a good estimate of each
- How about this next one?

Whole-Interval recording

charts adapted from: http://homepages.wmich.edu/~malavosi

Instances of short duration behavior, for example, brief noise, recorded with continuous recording:



Whole interval recording of the same behavior:

Interval	1 10-sec	2 10-sec	3 10-sec	4 10-sec	5 10-sec	6 10-sec	**TOTAL**
Behavior	-	-	-	-	-	-	0/6 or 0%

- Grossly underestimated the frequency and duration
- We can improve the estimates by shortening the intervals.
- **In general use whole interval recording when duration is of interest**
- **Set interval relative to duration expected.**

Problems with Whole Interval

- Not good for short duration behaviors
- Requires undivided attention of observers for the whole interval

Partial-interval

- Record whether behavior occurred **during any part** of the interval
- Think: Partial Eclipse, observing any part of the moon.

Partial-Interval recording

Instances of short-duration behavior, for example brief noises:

Interval	1 10-sec	2 10-sec	3 10-sec	4 10-sec	5 10-sec	6 10-sec	**TOTAL**
Behavior	X	-	X	X	-	-	3/6 or 50%

- Slightly underestimated frequency: 3 of the 4 instances of the behavior.
- Provided very little information or estimate of duration.

Partial-Interval recording

Instances of longer duration behavior, for example talking outloud without being called on:

Interval	Int.1 10-sec	2 10-sec	3 10-sec	4 10-sec	5 10-sec	6 10-sec	**TOTAL**
Behavior	X	X	X	X	X	X	6/6 or 100%

- Greater overestimation of behavior: 100% of intervals vs. 70-75% of the time
- This is why it is not recommended for long duration behaviors

Partial Interval Recording

Recommended for short duration or behaviors that are likely to be measured with frequency

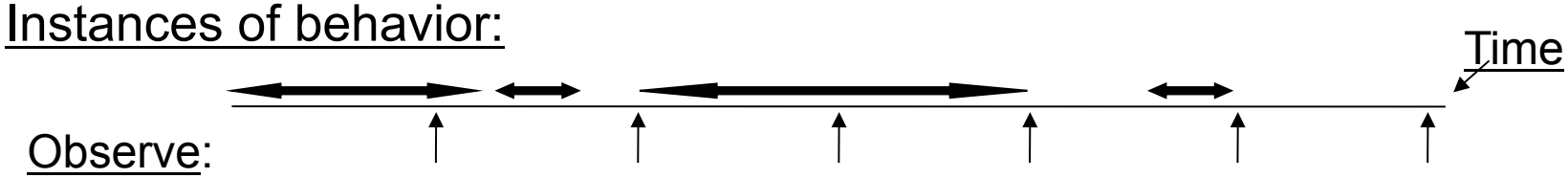
Other Problems with Partial Interval

- Requires undivided attention of observers until the behavior is observed.
- One cannot always do this!
  - What if you have more than one client to observe?
  - What if you have more than one behavior to observe?

Momentary Time Sampling

- Behavior is recorded only **at the end of each interval.**
- **Think: Record at the End of the earth**

Momentary-time sampling



Interval	1 10-sec	2 10-sec	3 10-sec	4 10-sec	5 10-sec	6 10-sec	**TOTAL**
Behavior	X	-	X	X	X	-	4/6 or 66%

- Slightly underestimates behavior
- Good for high frequency behaviors
- Good for longer duration behaviors as well
- Useful when recording a number of individuals in a group engaging in same behavior

Momentary-time sampling

Observe: Marco, Luca, Nina, Monica playing cooperatively

Interval	Int.1 10-sec	2 10-sec	3 10-sec	4 10-sec	5 10-sec	6 10-sec	**TOTAL**
Marco	X	-	X	X	X	X	5/6
Luca		X	X		X		3/6
Nina	X	X		X		X	4/6
Monica					X		1/6

- Also useful for recording a number of different behaviors for one individual

Momentary-time sampling

Observe: Monica, self-stimulating, playing cooperatively, sitting, or arguing

Interval	1 10-sec	2 10-sec	3 10-sec	4 10-sec	5 10-sec	6 10-sec	**TOTAL**
S. Stim.	X	-	X	X	X	-	4/6
Playing		X	X				2/6
Sitting	X	X		X		X	4/6
Arguing					X		1/6

Another Good Feature of Momentary Time Sampling

- Requires the observers attention at the end of the interval only
- Allows you to Do other things – Like teach!

Teams

- Describe how you would use momentary time sampling to record three behaviors for one child.
- Make sure the method is clearly identified in your example. Include a chart like those illustrated in class (see your study questions).

Time Sampling Exercise

- Watch the Youtube Link below:
  - Goat

    https://www.youtube.com/watch?v=0VNBm5H8NSg
- Select a behavior and write a clear, complete and objective operational definition:

2) During a one-minute timing record the rate of the behavior. What was the rate of the goat's behavior?:

3) Divide a one-minute timing into 6, 10 second intervals
4) Record the behavior using Partial interval recording
5) Record the behavior using Whole interval recording
6) Show your interval recording in tables below
7) Calculate the percentage of intervals the behavior occurred

Partial Interval Data:

____/____ = _____%

Whole Interval Data:

____/____ = _____%

Which method typically underestimates short duration behaviors? Did it in your example?

Which method typically overestimates short duration behaviors? Did it in your example?

Which measurement method would you use to measure this behavior change if you were working to change it? Why?

Skip To The Literature

- Applied Behavior Analysis is a set of Evidence-Based Practices
- The best evidence is in scientific journals
- Most rigorous evidence of ABA is in the *Journal of Applied Behavior Analysis*
- Important to fluently look for and critique the evidence for procedures you might use.

- So we go to the computer to look up articles:
  - Google: JABA
  - Browse
  - Advanced search
  - Type in key words of interest: e.g., feeding disorders, duration
  - Find one article that used whole interval recording, one that used partial interval recording, and one that used one of a momentary time sampling method.
  - Briefly describe each article
    - Authors, year and title
    - Definition of behavior (participants, behavior, measure)
    - Results

Example

- JABA
- JABA Abstracts
- Addiction, rate
- Glenn and Dallery
- CO samples
- Number of cigarettes per day

Brief Description

- Glenn & Dallery (2007) Effects of Internet-Based Voucher Reinforcement and a Transdermal Nicotine Patch on Cigarette Smoking
- Amount of CO in lungs and number of cigarettes per day for 14 smokers between 18-60 years old who smoked at least 15 cigarettes per day
- Found that voucher system worked better than patch.

Teams

- Repeat with three studies you and your small group examine, one that uses whole interval recording, one that uses partial interval recording, and one that uses a momentary time sampling procedure
- Briefly describe the article
  - Authors, Title, and year
  - Purpose
  - Definition of behavior
  - Results-make sure measure is described in abstract

Teams

- Finish all of the study questions for today with your group
- One person submit one copy with everyone's names and email addresses by **19:00 on October 16.**

Isabella

June

My Team