

DIRECT BEHAVIOR RATING (DBR): SUMMARIZING DATA FOR INTERPRETATION

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Overview

When collecting data for progress monitoring or behavioral intervention purposes, it is very important to organize the collected data in a meaningful way in order to understand it and make appropriate decisions. Data can be quantified, compared, combined, and summarized for both summative (pre/post) and formative (on-going) purposes. For example, DBR data of Susan’s disruptive behavior over the past week can be summarized into a statement of average daily or weekly rating (e.g., “On average, Susan displays disruptive behavior for 80% of math class”), or it can also be used to determine the most likely period of high or low disruption if multiple ratings per day are taken (e.g., “Susan is most disruptive just before lunch”). Summarized DBR data can be presented as a list of ratings or in a chart, table, or graph. Ratings may be examined individually or simple calculations performed to further summarize the data for interpretation. A simple way to summarize DBR data is to create a chart which displays the ratings. For example, if a teacher rates Susan’s on-task behavior using a DBR with a 0-10 scale (0=0%, 10=100%) three times a day for one week, the chart might look like this:

Example Chart of Susan’s On-Task Behavior

| | Morning Meeting | Reading | Social Studies |
|-------|-----------------|---------|----------------|
| Day 1 | 9 | 9 | 5 |
| Day 2 | 7 | 8 | 4 |
| Day 3 | 6 | 10 | 6 |
| Day 4 | 9 | 7 | 4 |
| Day 5 | 10 | 10 | 3 |

Looking at the information contained in the above chart, a clear difference in ratings can be noted based on time of day. That is, the Social Studies period appears to be the most problematic activity for Susan. Of course, in many situations you may want to do more with your data than simply list it out, particularly if there is too much data to digest. In these cases, you may want to create a data table (i.e., spreadsheet) as shown below, which includes mean (average) ratings in the last column.

Example of DBR Data Entry in a Spreadsheet for a Single Student

| Student Name Johnny | Disruptive Behavior | | | | | | | | | | Mean |
|------------------------|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|------|
| | Date 1 | Date 2 | Date 3 | Date 4 | Date 5 | Date 6 | Date 7 | Date 8 | Date 9 | Date 10 | |
| Silent Reading | 6 | 7 | 5 | 4 | 9 | 3 | 9 | 8 | 7 | 8 | 6.6 |
| Math | 6 | 5 | 4 | 2 | 4 | 2 | 7 | 1 | 1 | 3 | 3.5 |
| Science | 8 | 8 | 3 | 2 | 8 | 0 | 3 | 4 | 5 | 3 | 4.4 |

The above table demonstrates ratings of disruptive behavior entered for two weeks for one student. Note that the design of your spreadsheet will depend on your actual data, including the number of students. For instance, you may be rating a group of children or an entire class once per day. In such situations, the spreadsheet might be designed in the following manner:

Example of DBR Data Entry in a Spreadsheet for Multiple Students

| Disruptive Behavior | | | | | | | | | | |
|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| Student Name | Date 1 | Date 2 | Date 3 | Date 4 | Date 5 | Date 6 | Date 7 | Date 8 | Date 9 | Date 10 |
| Johnny | 7 | 3 | 8 | 9 | 7 | 8 | 5 | 6 | 7 | 9 |
| Bobby | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 0 |
| Sarah | 1 | 0 | 0 | 5 | 2 | 1 | 0 | 0 | 0 | 1 |
| Kim | 6 | 7 | 5 | 9 | 3 | 5 | 8 | 2 | 8 | 6 |
| Ryan | 8 | 7 | 8 | 6 | 3 | 6 | 2 | 1 | 6 | 5 |
| Julie | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 2 | 1 | 1 |
| MEAN | 4 | 3 | 3.5 | 4.8 | 2.5 | 3.7 | 3 | 2.2 | 4 | 3.7 |

Once the data are entered, you can use a spreadsheet program (e.g., Microsoft Excel) to make simple calculations. For example, if you want to average disruptive behavior data for each student, highlight the data you want to average, click the “AutoSum” button, and select “Average” to automatically create a new cell displaying the average. A row with the average scores is highlighted in green in the table above.

Typically you will want to summarize your data using an average or *mean* rating. However, you can also determine the *median* and/or *mode*. These terms are described below:

- **Mean**- a value that is computed by dividing the sum of a set of scores by the number of scores (e.g., if you want to know an average of Johnny’s disruptive behavior in science).
- **Median**- the value that half of the scores fall above and half of the scores fall below (e.g., if you want to know the midpoint academic engagement rating for a class of students).
- **Mode**- the most frequent value of a set of data (e.g., if you want to know the most common rating for Johnny’s disruptive behavior in math).

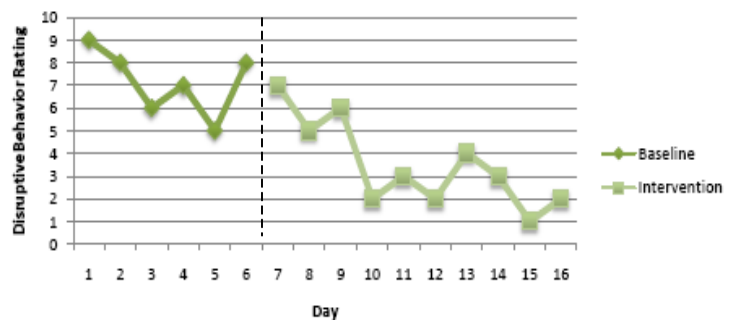
How to Graph DBR Data

Although calculating averages can be useful, it may be even more helpful to create a visual display of your data through a graph. Research has demonstrated that visual formats (rather than a table or list of numbers) are the most effective and efficient way to present data. DBR data are generally presented using line or bar graphs. Line graphs provide a simple way to review data collected over time (i.e., progress monitoring).

Line Graph:

If you are examining data for one student or a small number of students, it may be useful to graph data points individually. You may have collected data during a pre-intervention (e.g., baseline) phase and an intervention phase. To look at intervention effects, a line graph is a good option for visual display. Here is an example line graph for a student assessed during baseline and intervention phases of data collection.

Example of Disruptive Behavior during Baseline vs. Intervention



As you can see, the graph depicts daily DBR data, using a scale of 0-10, for six baseline days and ten intervention days. You can tell from the downward trend that the student is improving (e.g., amount of disruptive behavior is decreasing) on the intervention plan. Such graphs can be very useful when presenting data in child study team meetings, parent-teacher conferences, or when sharing with administrators or students. To create this graph, DBR data is placed on the y-axis and the observation interval (e.g., day or date) on the x-axis.

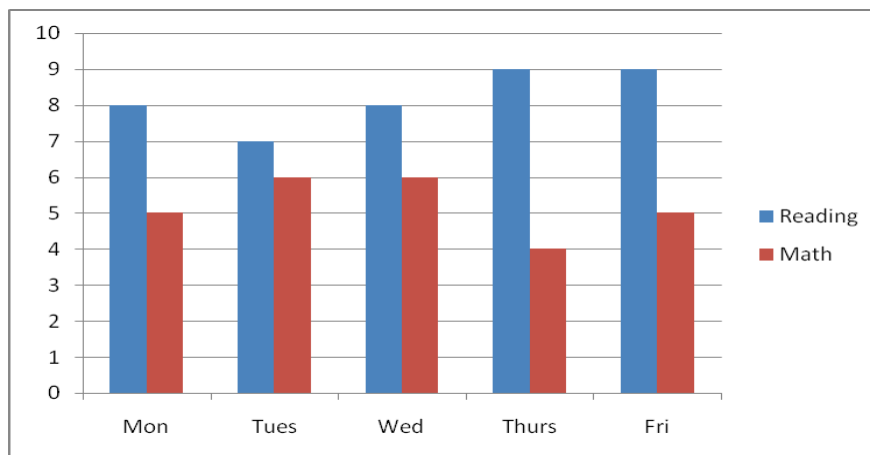
HOW TO CREATE A LINE GRAPH

- Label the y-axis (vertical axis) with the behavior of interest (e.g., disruptive behavior or academic engagement).
- Select the scale for the y-axis based on the data collected (e.g., percentage vs. 0-10 scale).
- Label the x-axis (horizontal axis) with the observation interval (e.g., day, week, date).
- Separate the data in the baseline (pre-intervention) and intervention phases with a vertical line.
- Connect points within a phase.
- Represent missing data points by a break in lines.

Bar Graph:

An alternate option to the line graph is to create a bar graph of DBR data. A bar graph can be useful when looking at multiple data for a group of students or whole class, or when comparing behavior across different observation periods.

Example of Susan's On-Task Behavior in Math vs. Reading



HOW TO CREATE A BAR GRAPH

- Label the y-axis according to the DBR scale used (e.g., percentage vs. 0-10 scale).
- Label the x-axis with the appropriate observation interval (e.g., day, month, class).
- Select the behaviors (e.g., disruption, academic engagement) and the data (e.g., means) to be presented.
- Make sure to assign a label to the bar colors (e.g., blue is Reading class).