

## Creating Single-Subject Design Graphs with Microsoft Excel™ 2007

### Creating a Comparison or a Reversal Design Graph

Usually, a comparison design graph will only have two conditions: Baseline and intervention, whereas a reversal design graph will have multiple conditions, including a return to baseline condition. The basic graphing directions are the same in both cases. In this example, a reversal design graph is illustrated. However, if it were a comparison design, we would only have data for one baseline and one intervention condition (as opposed to two of each), but the graphing procedure itself would be the same.

#### 1. Entering the data into the spreadsheet

- Enter the time element in which you are collecting your data (e.g. Days, Weeks, Sessions, Months, etc.) in the first column.
- For each behavior you are plotting, enter the data in the column to the right of the previous column. Enter the data in a consecutive manner, regardless of condition phase (i.e. Baseline, Intervention), so that the total for each day, week, session, month, etc., are next to the appropriate time element number (ex. If there were 14 incidents of throwing self on floor on day 4, make sure that 14 is to the right of 4). See Fig. 1
- Note: If you are missing data for some days, weeks, sessions, months, etc., simply leave the corresponding behavior data cell blank. Step 8 will direct you as to what to do in this case to ensure that all data points within your graph are connected.

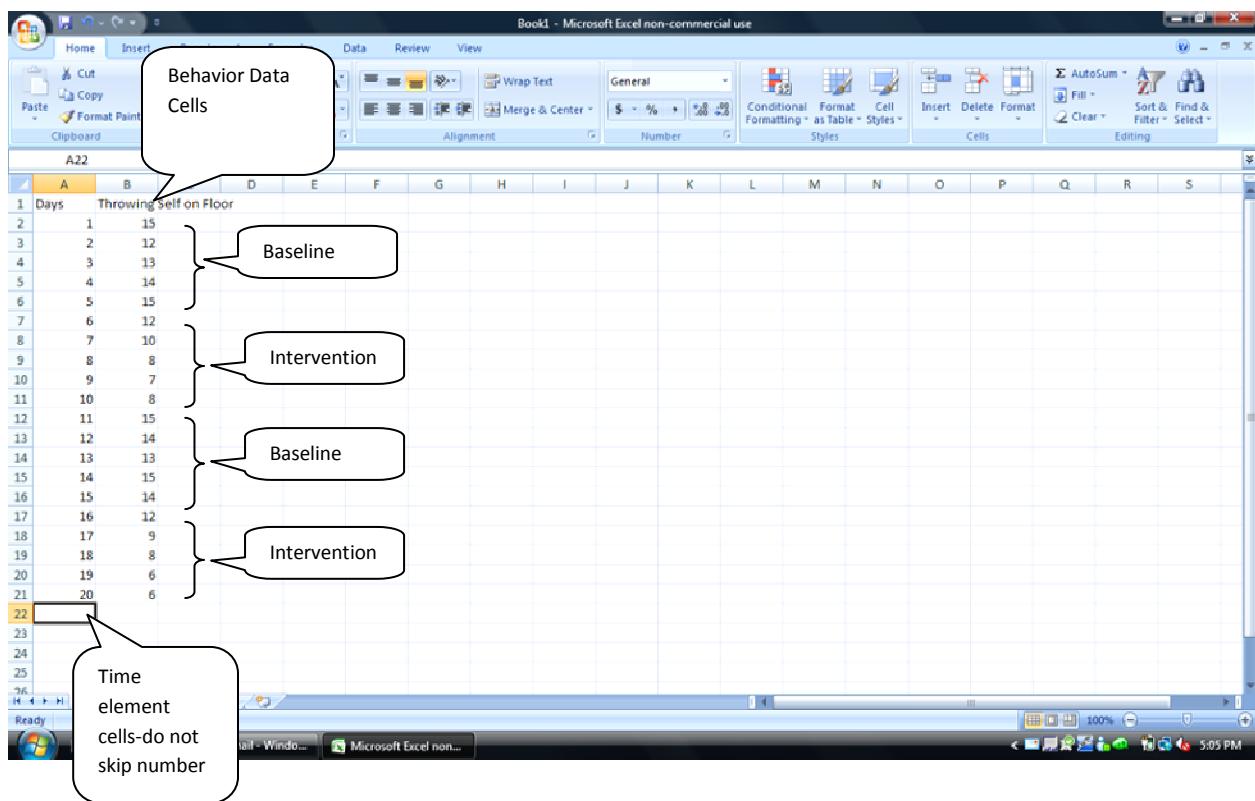


Figure 1

## 2. Creating the graph: Chart Type

- Step 1. Using your mouse, select the cells containing all the data
- Step 2. After the data are selected, click on Insert tab.
- Step 3. Select the Scatter graph tab.
- Step 4. Click on the lower right chart sub-type: Scatter with straight lines and markers
- See Fig. 2

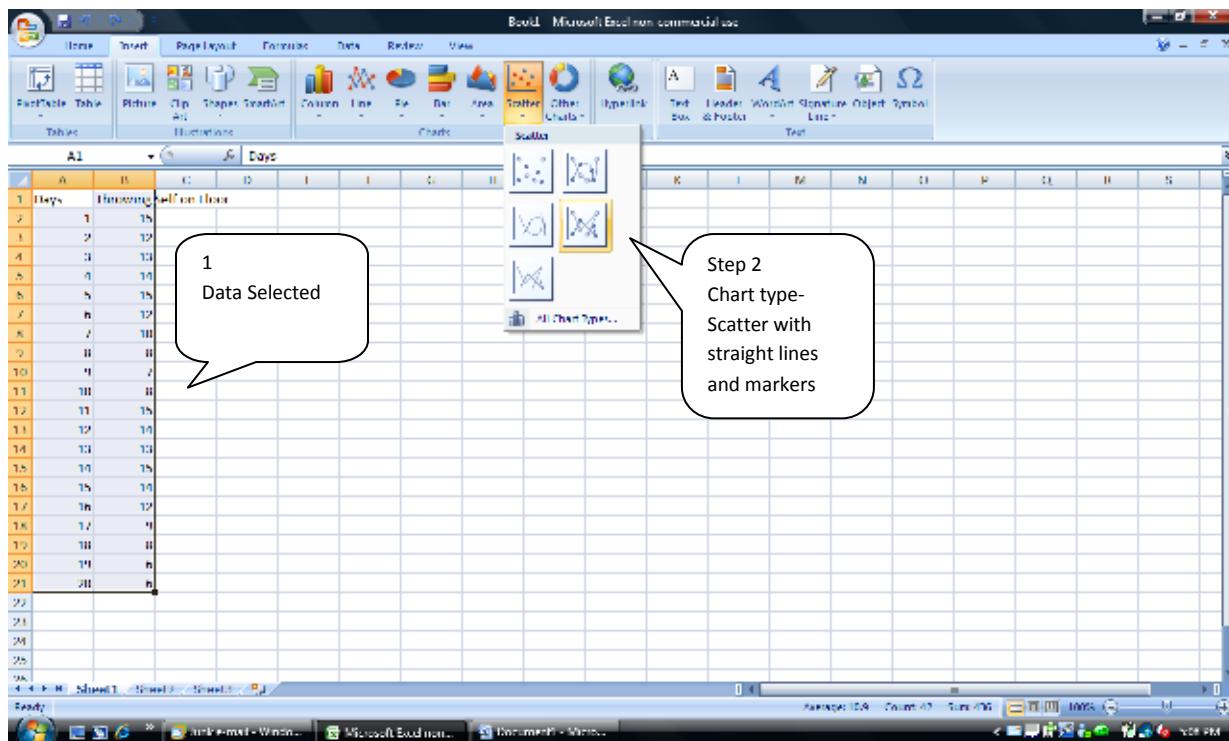


Figure 2

### 3. Creating the graph: Data range

- To check the string of coordinates for the selected data, select the Design tab and then click on the 4<sup>th</sup> button “Select Data”
- See Fig. 3

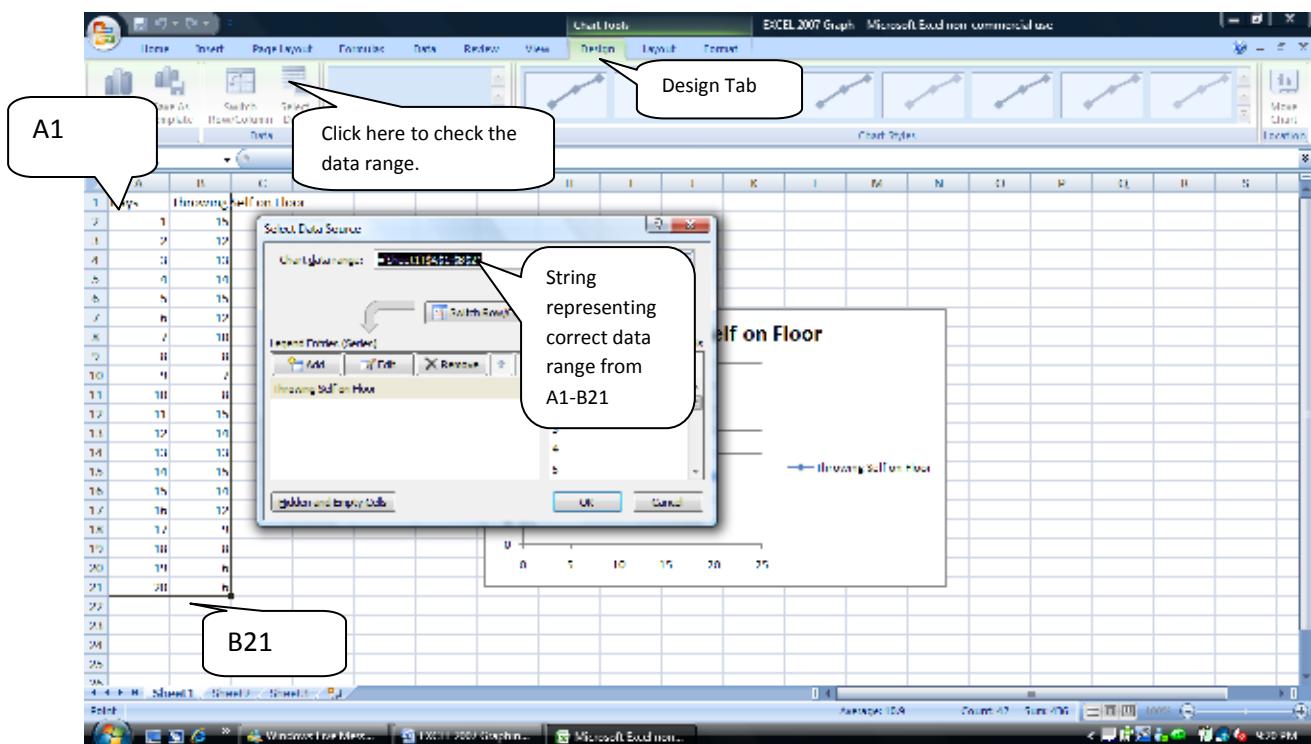


Figure 3

- When finished click “OK”

#### 4. Creating the graph: Graph title and axes labels

- To change the chart title, click on title in the graph itself and edit title as preferred.
- See Fig. 4

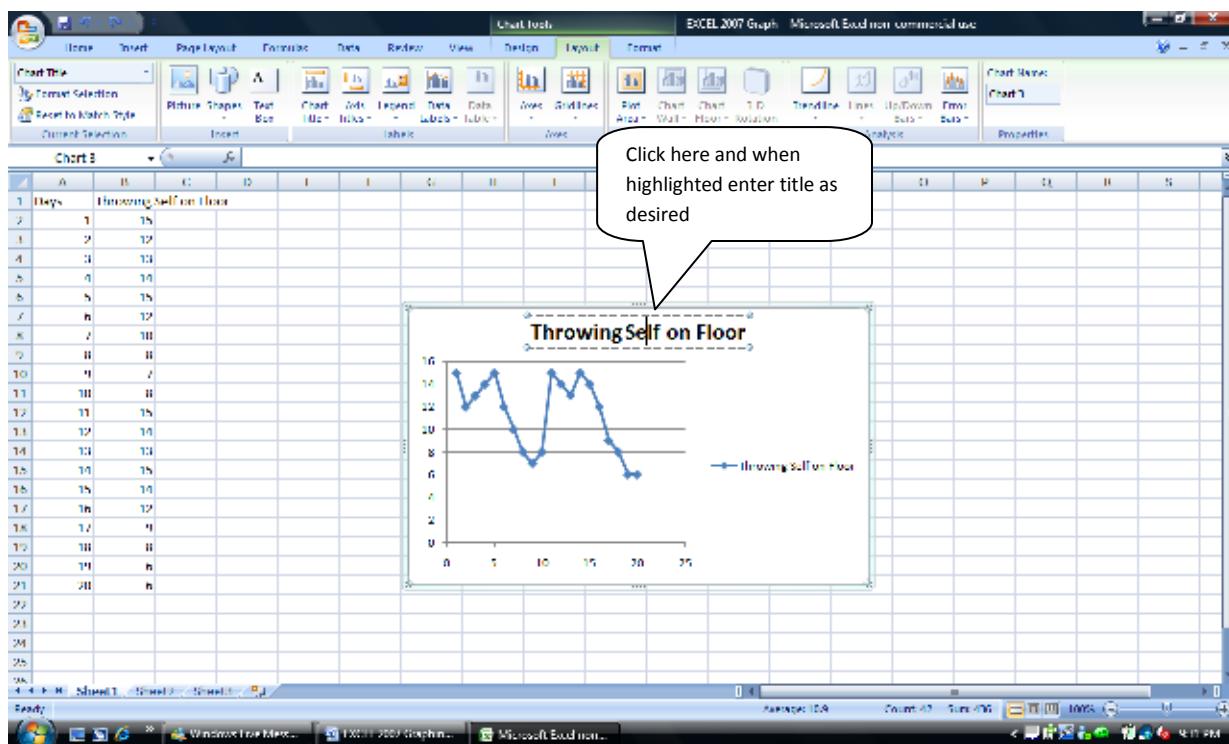


Figure 4

## 5. Adding Axes Labels

- To add axes labels, under Chart Tools click on the Layout Tab.
- Then select the button “Axis Titles” and choose horizontal “X” axis or vertical “Y” axis.
- Then Click on Title Below Axis for Horizontal Axis
- See Fig. 5

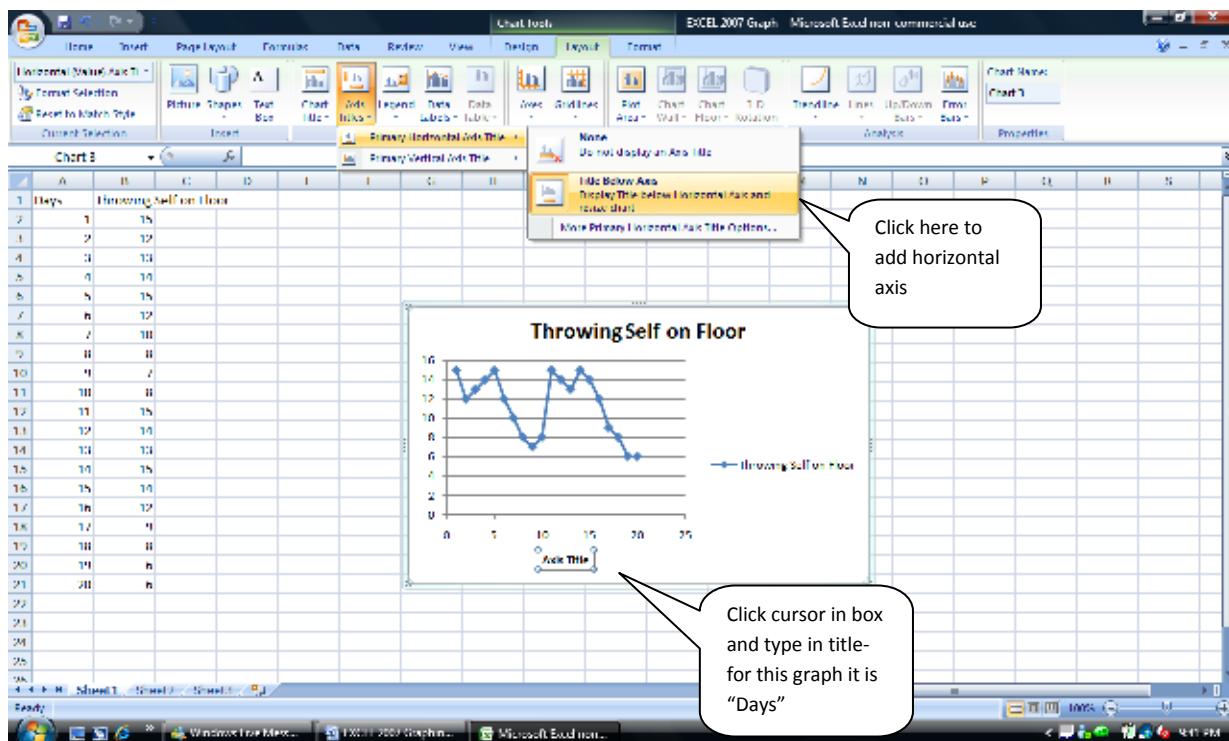


Figure 5

- To edit your vertical axis click on rotated title
- Then click in the text box and type in axis label
- See Fig. 6

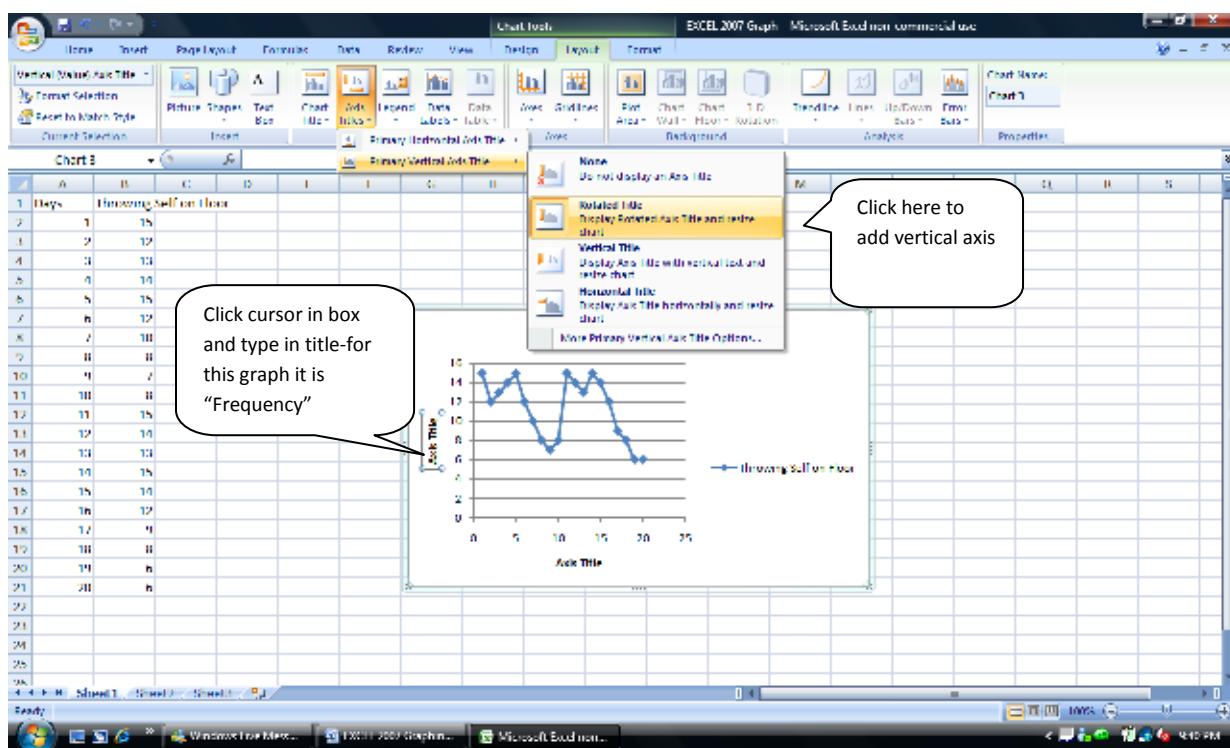


Figure 6

## 6. Creating the graph: Gridlines

- Next remove Major gridlines by clicking on “Layout” under Chart tools, then under primary horizontal gridlines click “none”
- See Fig. 7

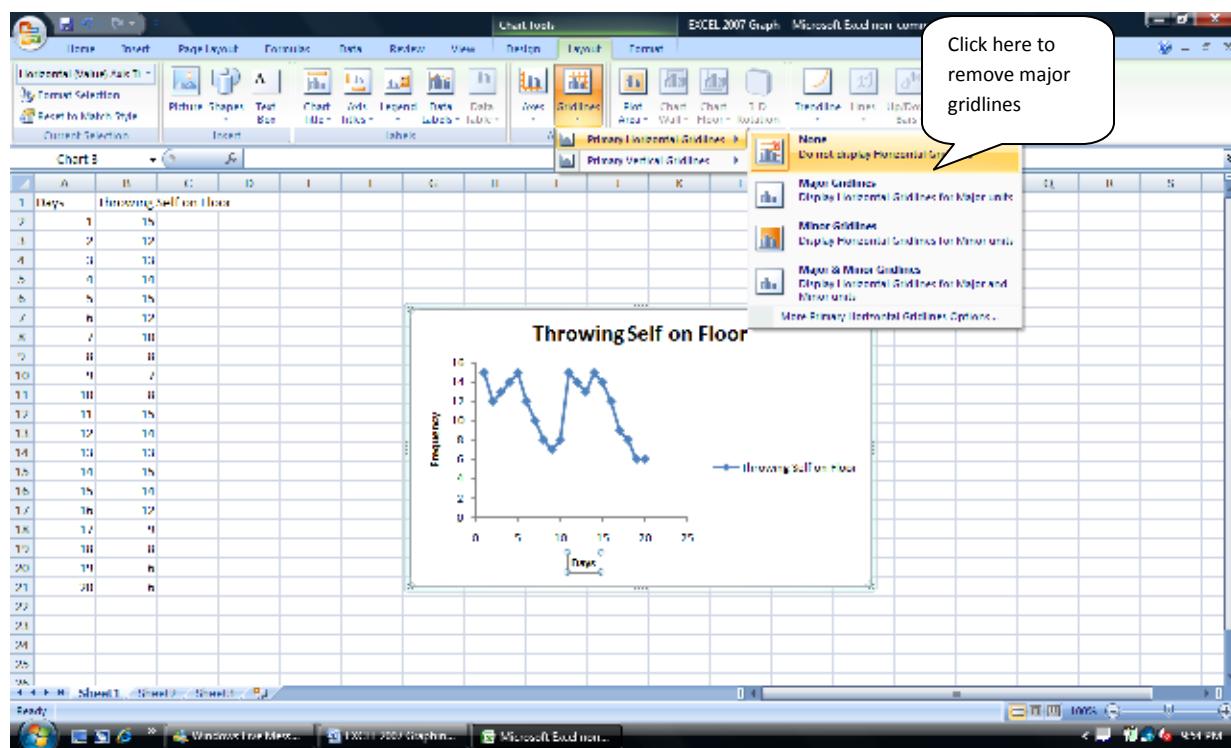


Figure 7

## 7. Creating the graph: Legend

- If you are graphing only one behavior and you have the name of the behavior at the top of the graph (as is the case in this example), you do not need a legend. To delete the legend, go to Chart tools then layout. Click the Legend button and click “None”
- See Fig. 8
- Note: If you were graphing several behaviors, you would want to leave the legend in, and you might want to label your graph something more general (such as Joe’s behavior). You can do this by clicking on

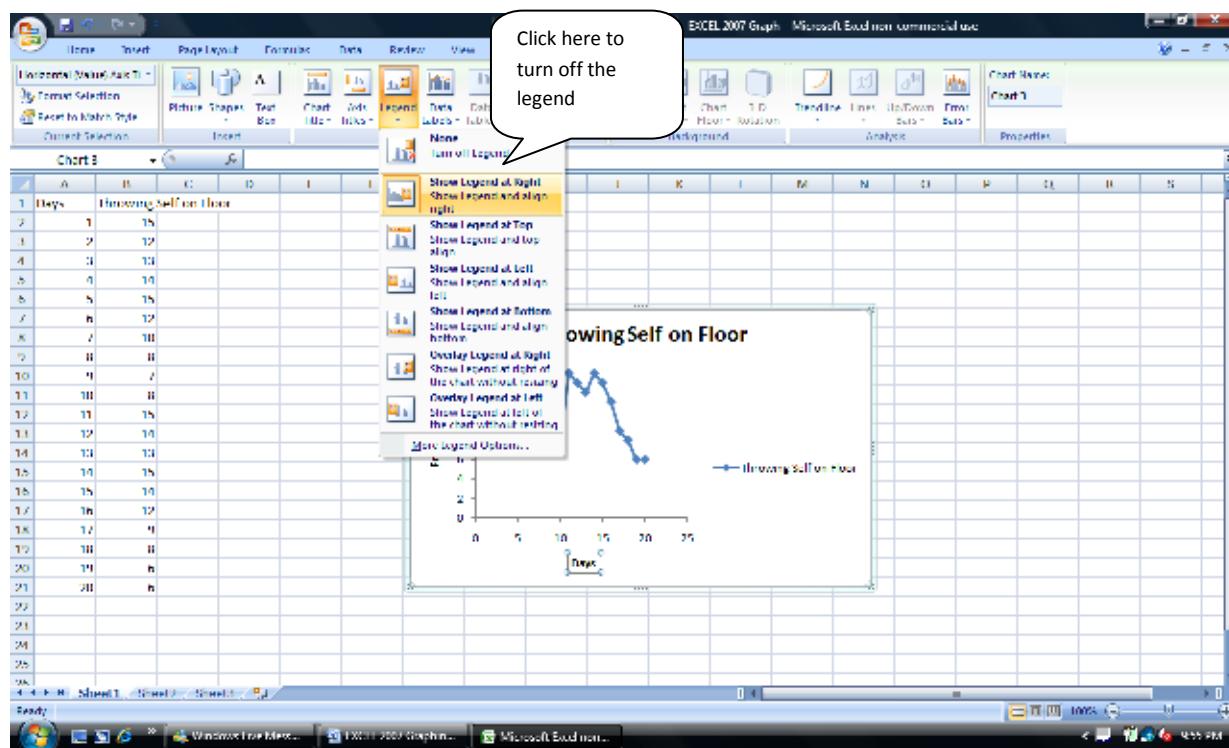


Figure 8

## 8. Creating the graph: Finishing the graph

- You can change the color of the plots by clicking a different color, this may be used if it defaults to a color that might not show up well
- You can leave the graph in the spreadsheet or save the chart into its own sheet

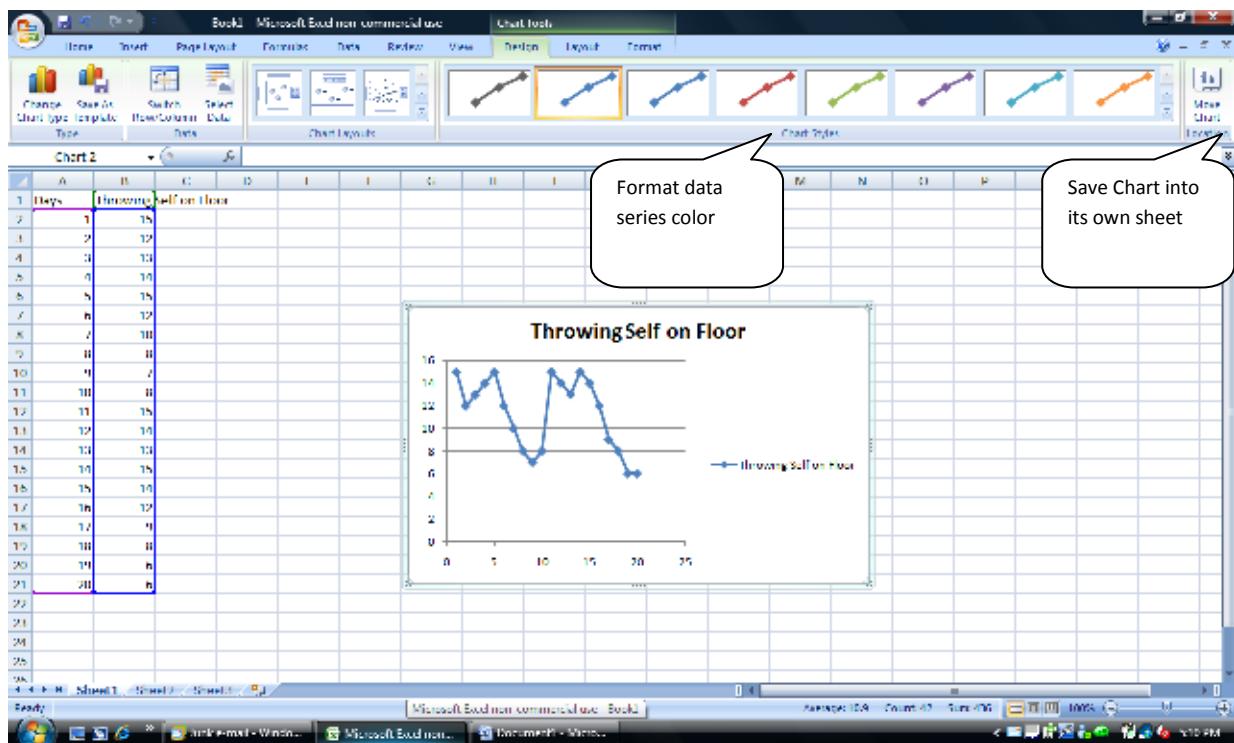


Figure 9

9. Customizing the graph: If you have data missing

- If you have data missing for certain days, weeks, sessions, etc... (in our example (see figure 10), suppose that we did not have any data for days 7 and 18) all data points in your graph will not be connected, as some cells have been skipped. (If you do not have data points missing, skip this step.)



Figure 10

- Under Chart Tools and the Design tab click on Select Data
- Then click on hidden and empty cells
- See Figure 11

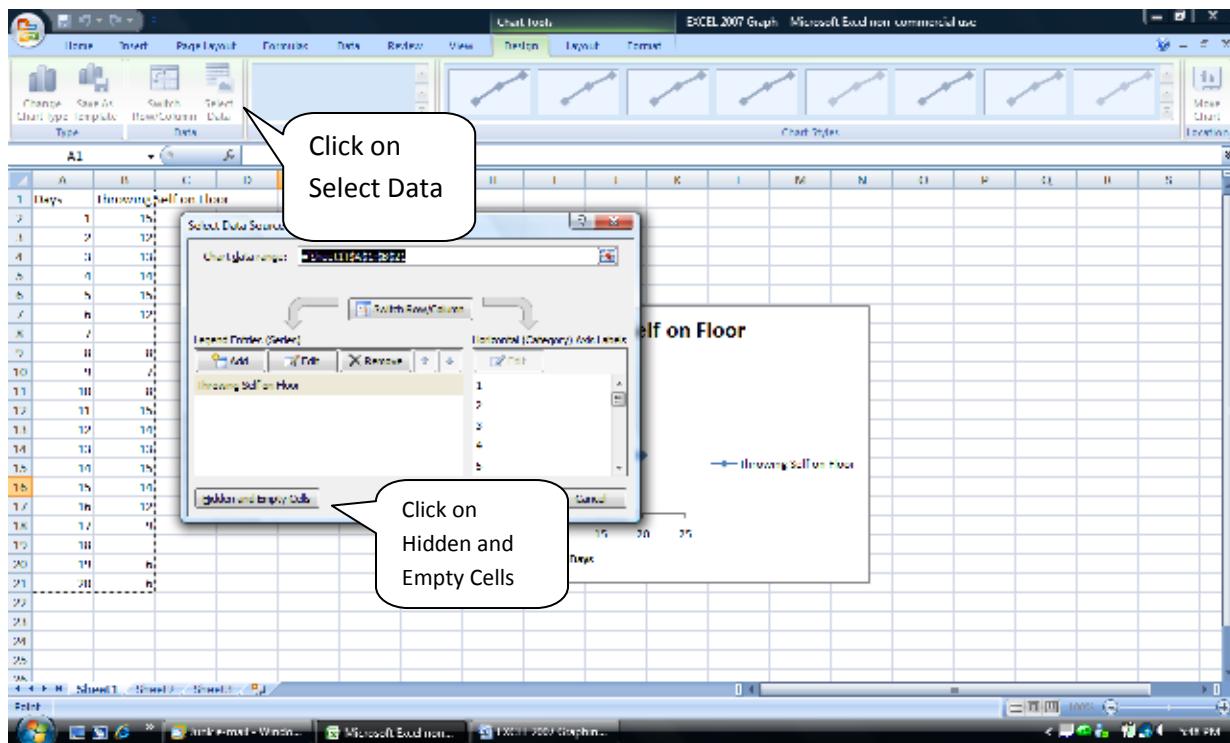


Figure 11

- Then click on Connect data points with line (See Figure 12)

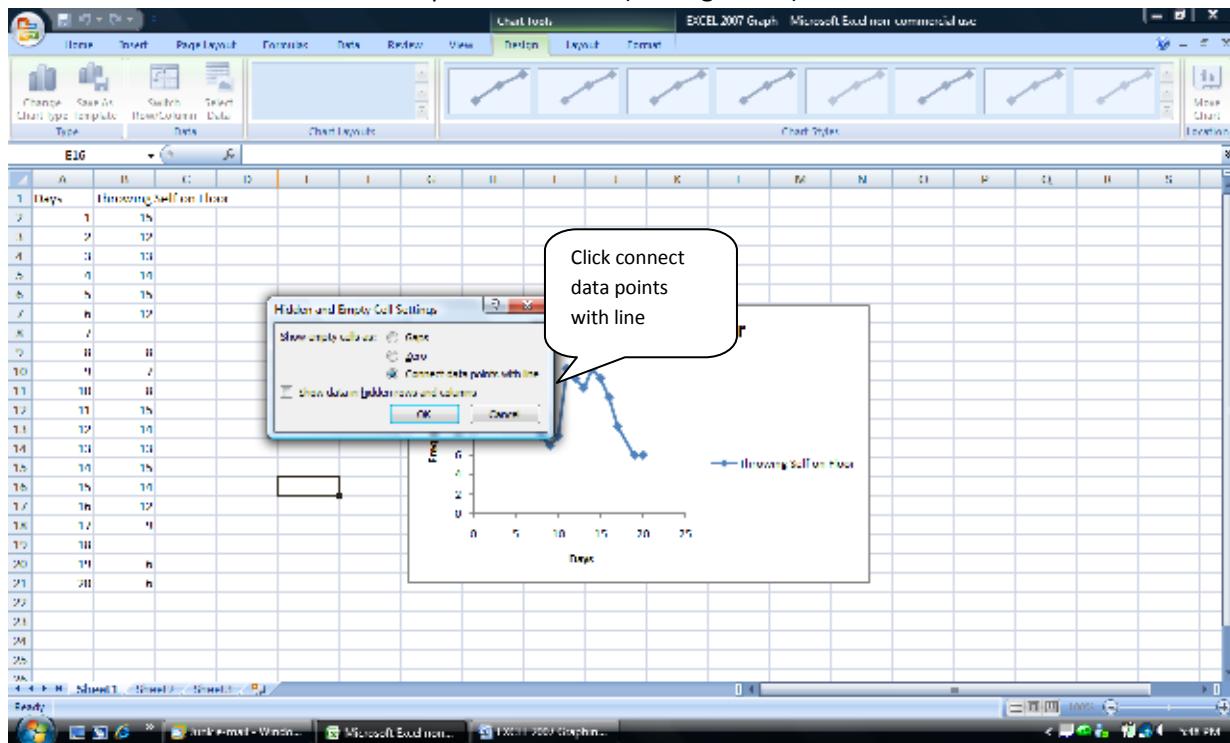


Figure 12

- Now all of the points on your graph should be connected (See Figure 13)



Figure 13

## 10. Customizing the graph: Format Axes

- To format an axis, you need to click horizontal axis and format selection
- Most of the time you will only need to change the axis options, as the other items will appear as you want them to be. However, if you wish to change any of those items, simply click on that tab and make the changes.
- In our example graph, we should change the X-axis scale so that numbers appear more frequently than every 5 numbers (Major Unit), and we need to shorten the range so that it ends with out last data point (day 20) as opposed to day 25 (Maximum).

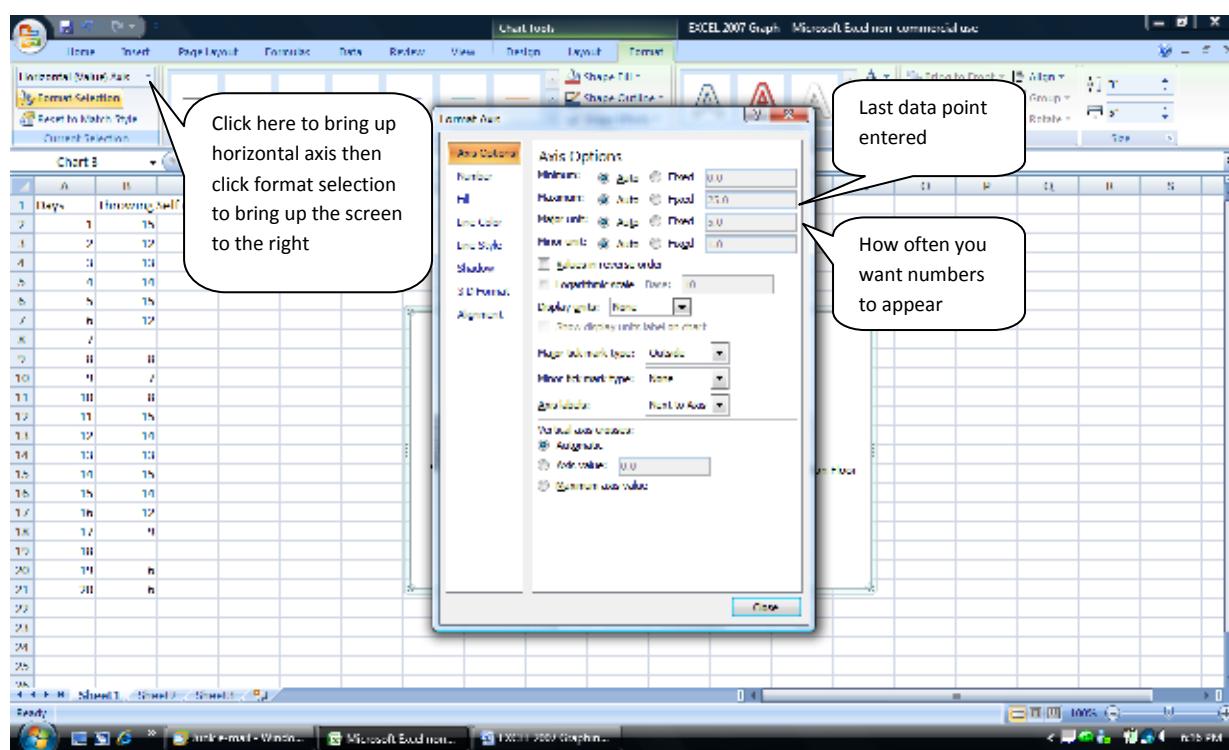


Figure 14

## 11. Customizing the graph: Format graph area

- To remove a gray background color and a border from the graph, click on the plot area itself then right click and select Format Plot Area (See Figure 15)
- To change the borders on the plot area (See Figure 16)

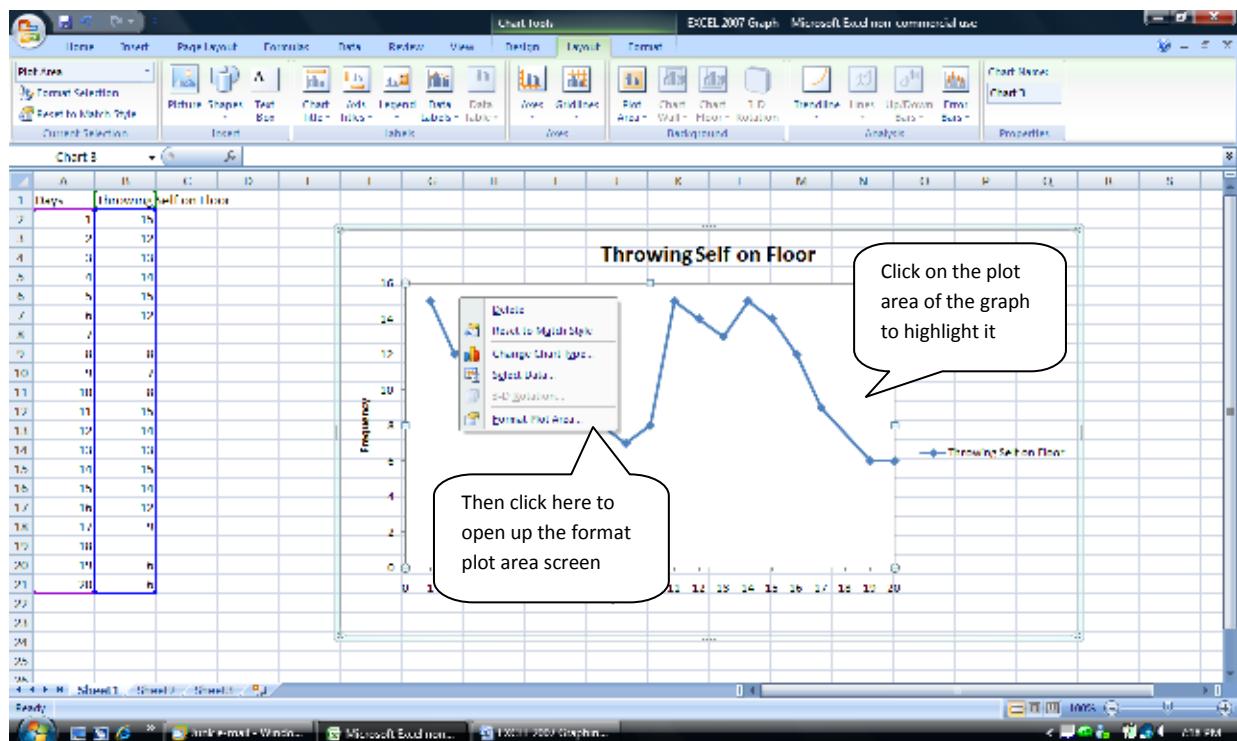


Figure 15

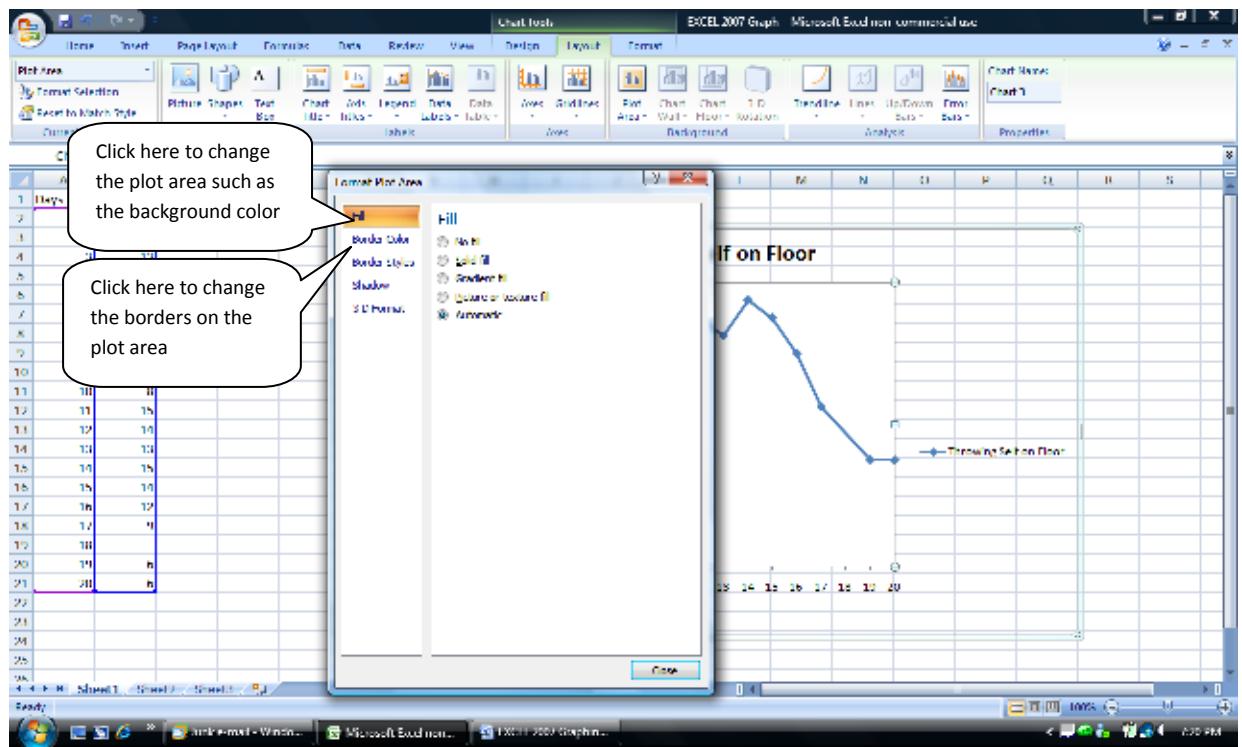


Figure 16

## 12. Customizing the graph: Format data series

- If you want to change the color or the marker of a data series, for instance, if the data series appears in yellow you might want to change it to a different color that will be more visible, under the Chart Tools and Layout Tab click on Series Throwin self on floor and then Format Selection (See Figure 17)
- To Change the color under Chart Tools select Design and change the color (See Figure 18)
- To change the shape of the plots See Figure 19

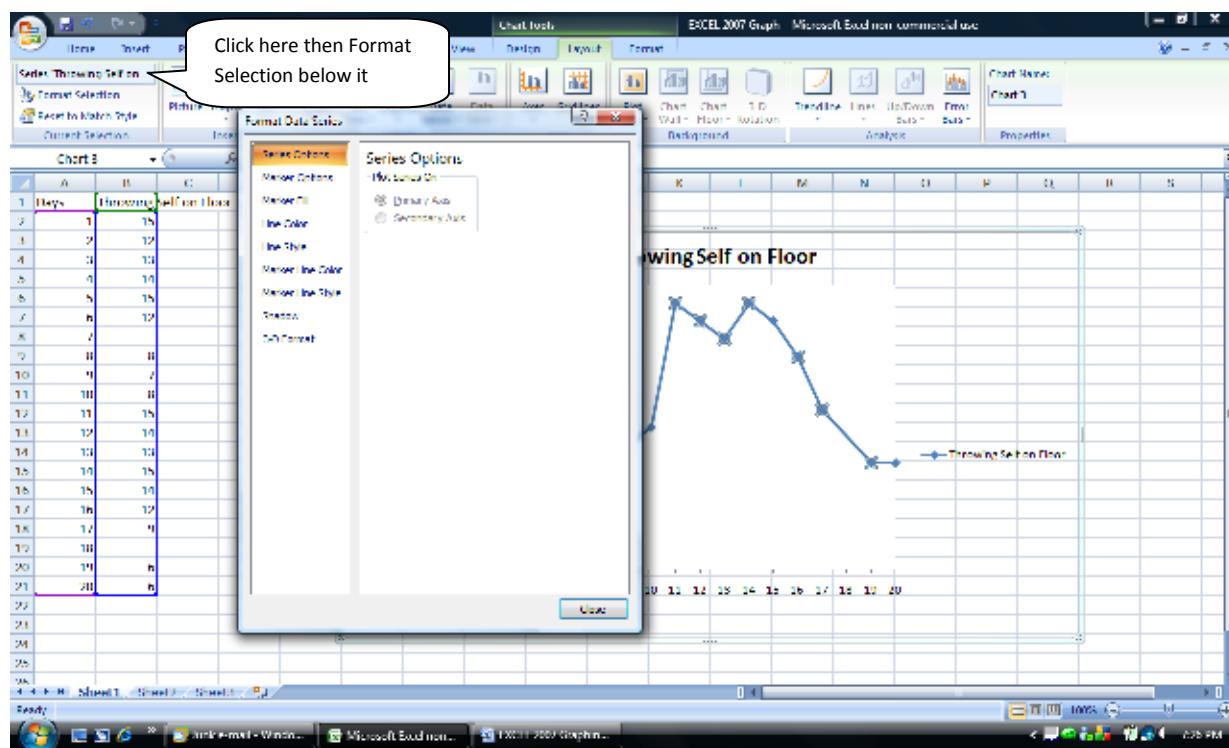


Figure 17

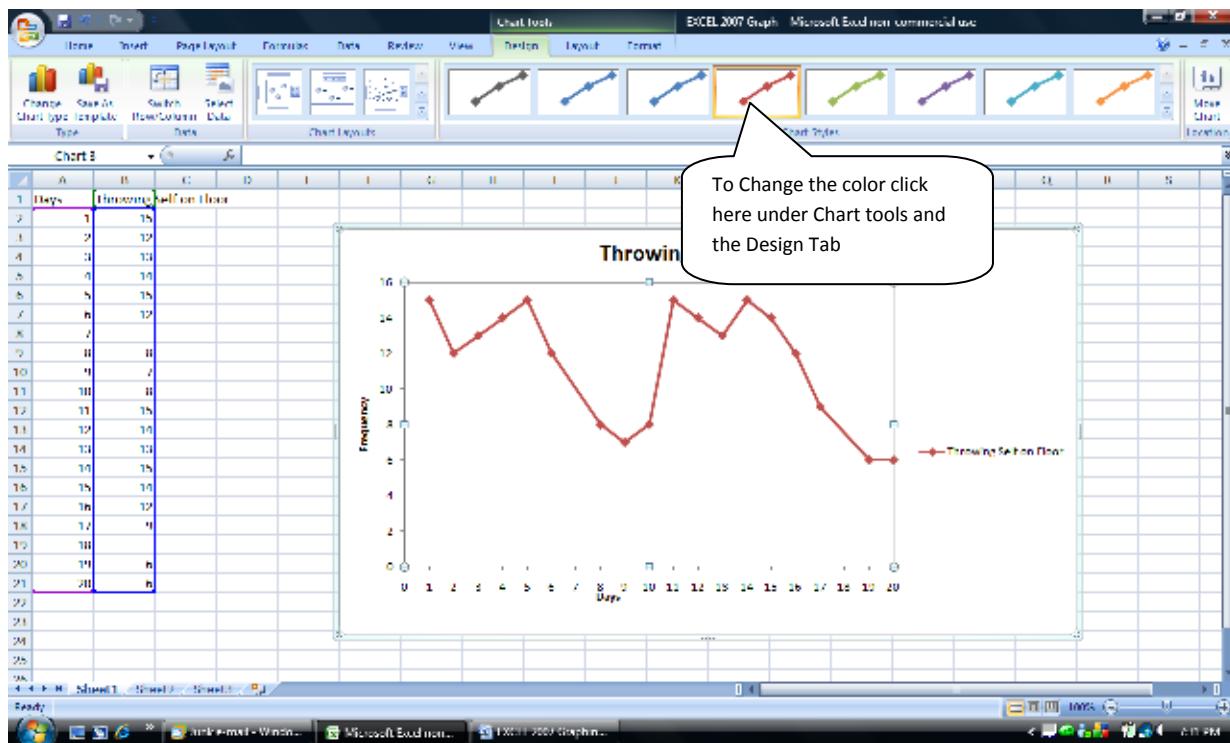


Figure 18

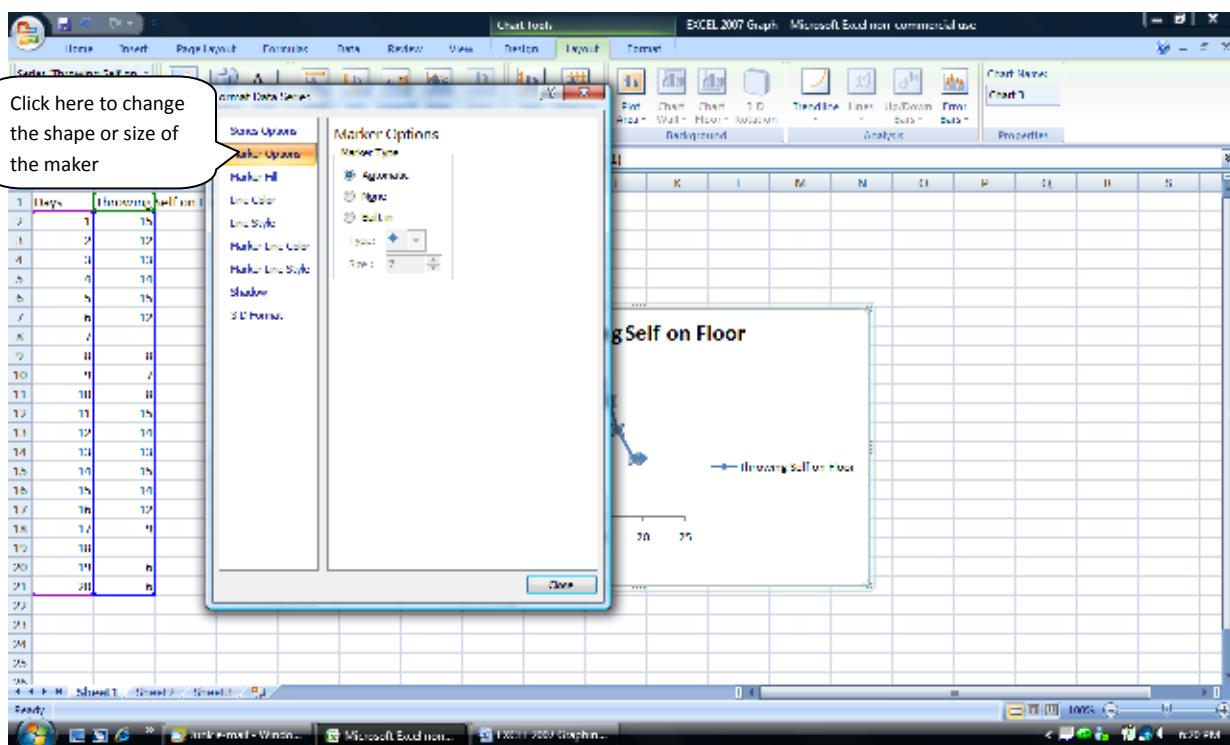


Figure 19

### 13. Customizing the graph: Un-connect data points

- In order to insert a condition line, you should first remove the data series line that connects the two data points from different conditions (e.g. baseline and intervention)
- To remove the line:
  - Click on the first data point of the intervention condition, then right click to bring up the menu and select Format Data Point (See Figure 20)

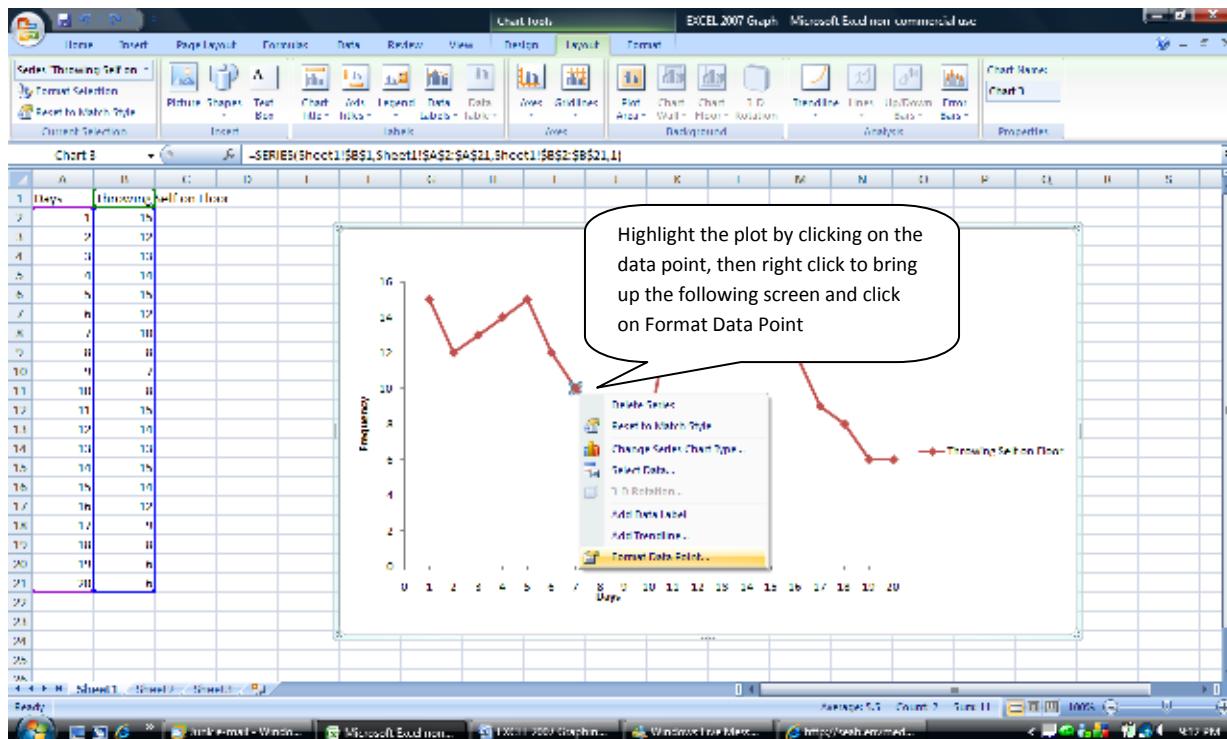


Figure 20

- Then click on Line Color and select No line (See Figure 21)
- Continue this for each condition change
- Don't worry about the change in the legend at this time

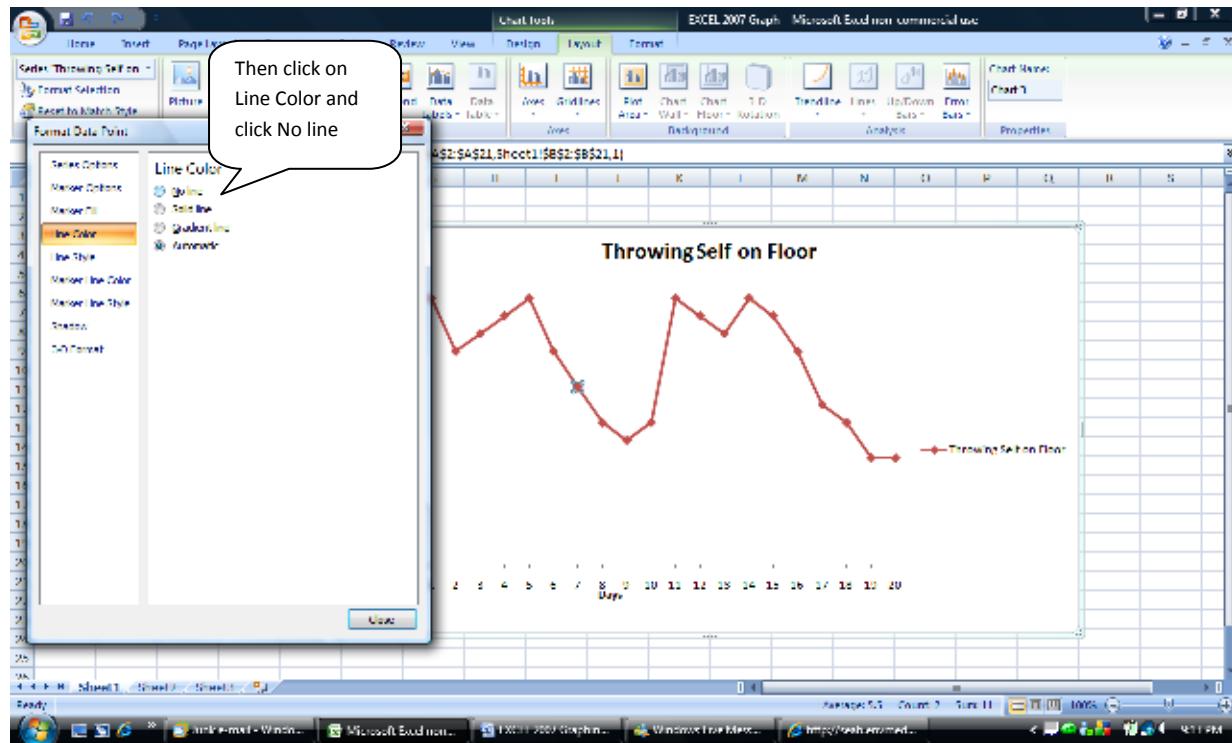


Figure 21

- To remove the legend, highlight the legend by left clicking on the legend then right click and from the menu select delete (See Figure 22)

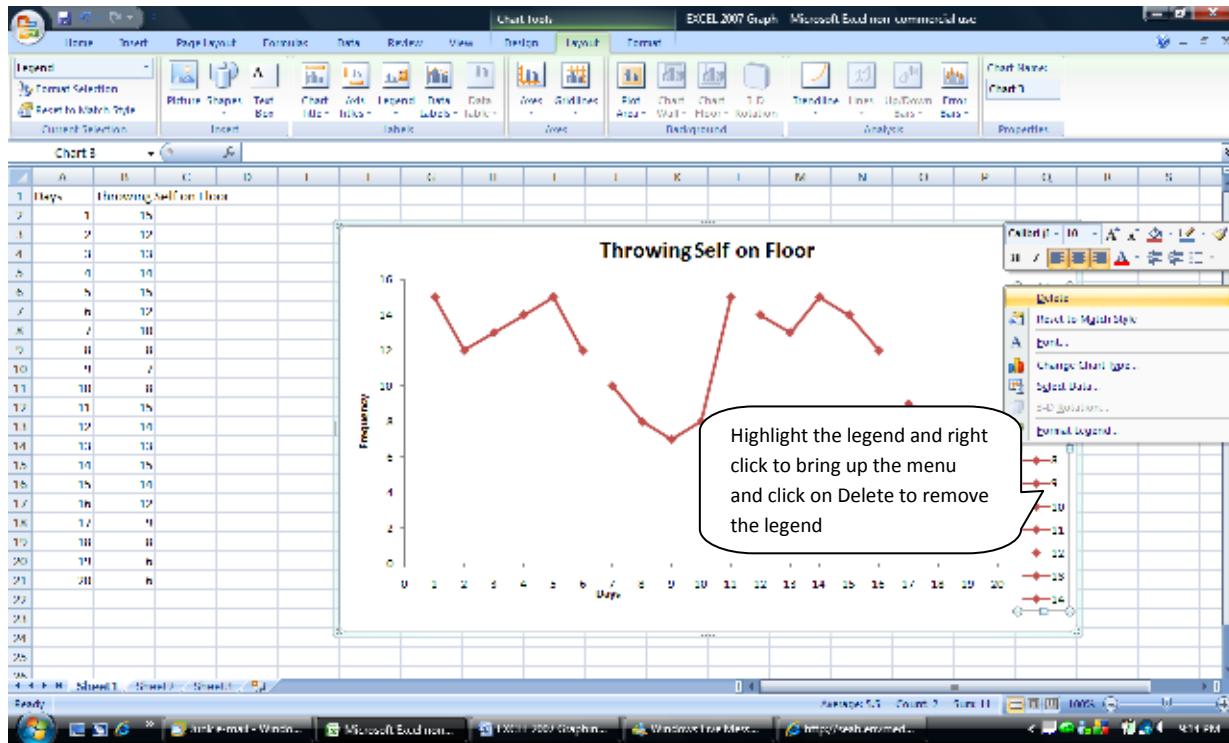


Figure 22

#### 14. Customizing the graph: Insert condition lines

- Under Chart Tools select Layout tab then click on shapes and click on the line
- Then click on the chart and draw your line between conditions (See Figure 23)

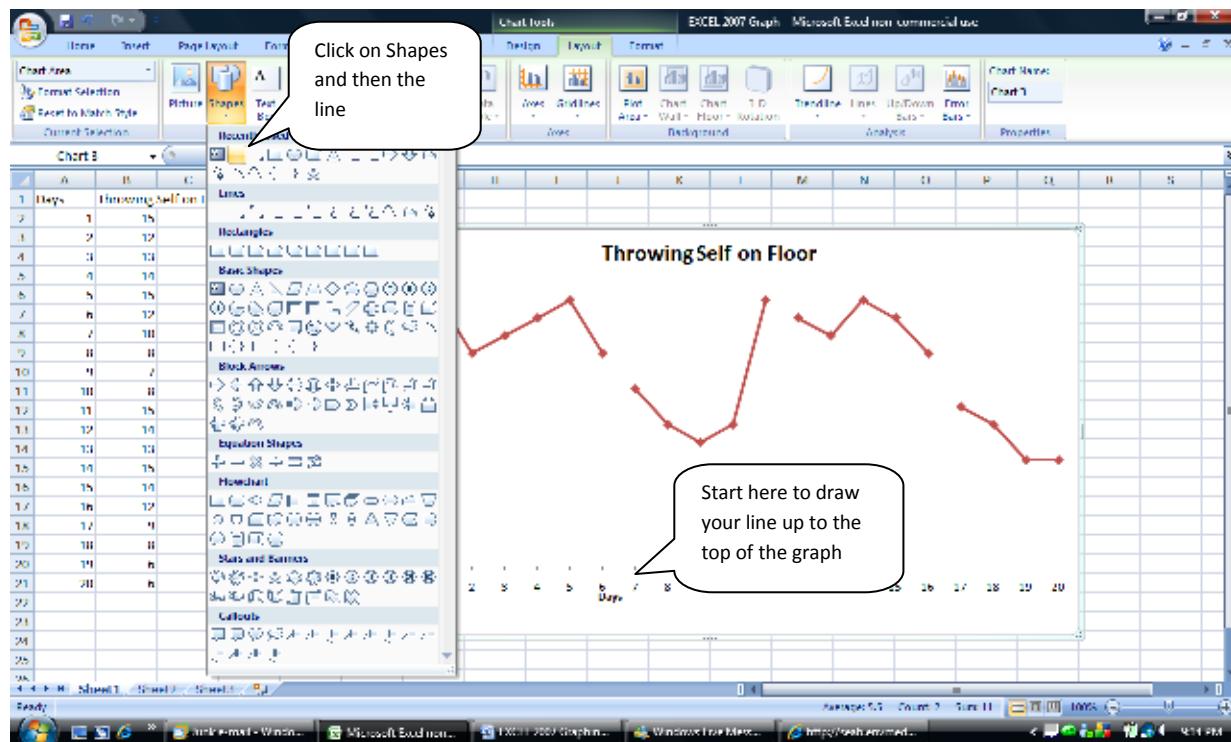


Figure 23

## 15. Customizing the graph: Insert condition labels

- To insert condition labels select Text Box and then click on the chart where you would like the condition label to be and then types in the condition label such as baseline or intervention (See Figure 24)

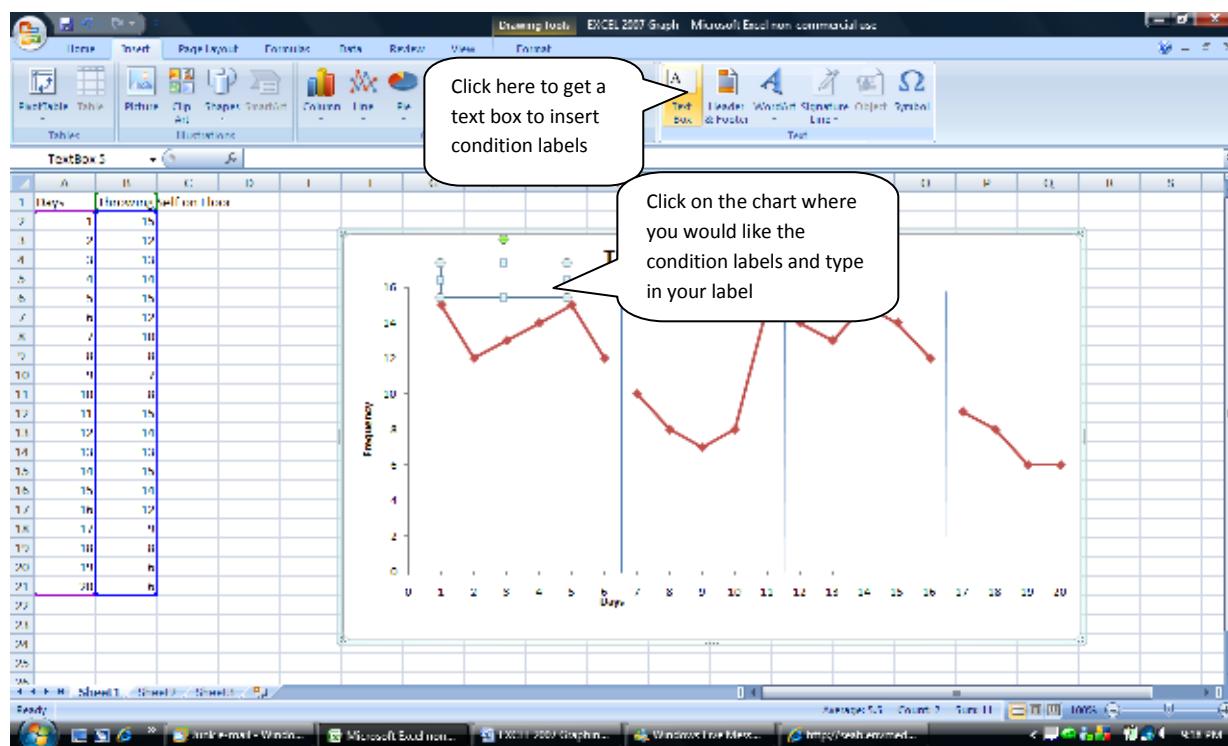


Figure 24

## 16. Completed reversal design graph

- The reversal graph is now complete and the graph should look similar to the one in Figure 25

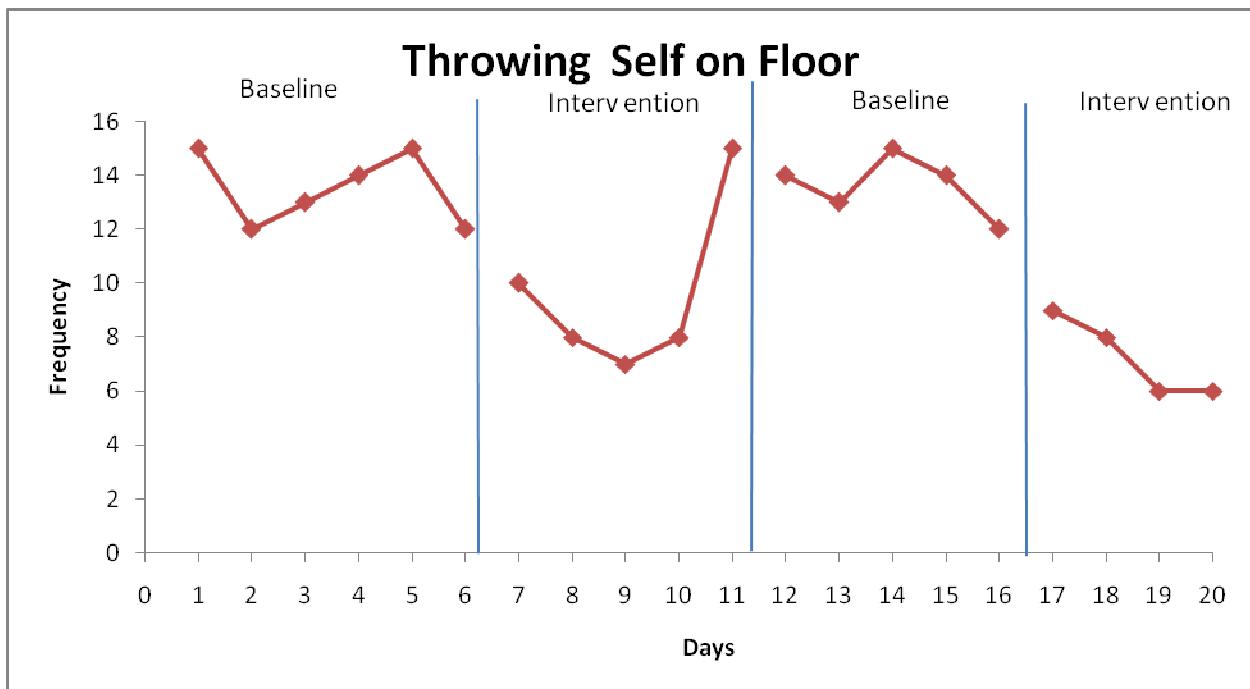


Figure 25

To paste your graph into another document such as Word or PowerPoint:

Highlight the graph then right click to pull up the menu and select copy, then go to your document such as Word, right click and in the menu select Paste

You can adjust the condition lines from here as needed if they go above or below the plot area