

# SCED Analysis Guide

## Overlap Shiny Web App

	Analysis software	Link
<b>Visual</b>	Overlap shiny web app	<a href="https://manolov.shinyapps.io/Overlap/">https://manolov.shinyapps.io/Overlap/</a>
<b>Baseline trend</b>	Overlap shiny web app	<a href="https://manolov.shinyapps.io/Overlap/">https://manolov.shinyapps.io/Overlap/</a>
<b>Statistical</b>	Overlap shiny web app	<a href="https://manolov.shinyapps.io/Overlap/">https://manolov.shinyapps.io/Overlap/</a>

\*See Single-case\_software table for full overview of analysis techniques capable in each software.

### AB design

– Example case in LD setting (case description 2)

### Practical task resources

1. Example Excel dataset with idiographic and nomothetic measures ('AB\_datasets.xlsx')
2. x4 .txt files containing data for each idiographic measure in the format required for analysis using the Overlap shiny web app ('ID1\_seated/ID4\_control.txt')
3. Reference papers for the nomothetic measures to inform RCSI analysis.
4. Single-case-V8 Excel workbook and manual for nomothetic RCSI analysis.
5. Template PowerPoint with tables etc. to input findings to feedback.

### Step-by-step guide for analysing the data

1. Open the Excel workbook named 'AB\_datasets.xlsx' and inspect each tab to get an understanding of the case and data. The first tab contains an overview of the dataset including the design, phase lengths and summary of idiographic and nomothetic measures. Data for each idiographic measure is included in a separate tab. The final tab contains the nomothetic outcomes.
2. Open up the Overlap Shiny web app using the link <https://manolov.shinyapps.io/Overlap/>. Data is required to be in a .txt file with 2 columns labelled 'score' and 'phase'. The .txt files for the example data have been provided.

**Note:** See Box 1 on page 4 for tips on how to convert Excel data into the required .txt files for when you have your own data and troubleshooting upload issues.

3. Use the 'User input' panel on the left hand side to upload the data for the first idiographic measure (ID1\_seated). First, ensure the correct settings for 'Separator', 'Data to be analysed' and 'Aim of the intervention' have been

### User input

Use a .txt file with 'score' and 'phase' as column names

**Load data file**

No file chosen

**Separator**

☐ Comma

☒ Tab

☐ Space

**Data to be analyzed**

☒ An AB comparison

☐ Analysis of consistency

**One study: Specify the aim of the intervention**

☒ increase

☐ reduce

**Bands based on how many SDs below and above mean:**

☐ 1

☒ 2

☐ 3

**Percentage of median for trend stability**

0 20 100

**Times IQR for constructing intervals**

☒ 1.5

☐ 3

**Specify minimal possible value**

0

**Specify maximal possible value**

100

specified for the data to be uploaded (see screenshot). The remaining settings can be left on the default settings. Then click the ‘Choose file’ button and locate the ‘ID1\_seated.txt’ file on your computer and open it to load it into the app.

**NOTE:** different idiographic measures for the same case may have different directions of improvement so ensure the correct ‘Aim of the intervention’ setting is selected based on the direction of improvement of each measure – E.g. for the example LD case we want to increase the time Zoe is seated during free play so the aim of the intervention for ID1\_seated is increase. However, we want to reduce the number of times Zoe tugs other children so the aim of the intervention for ID3\_tugging will be reduce.

- When the data has been uploaded, the ‘Data Summary’ tab will provide an overview of the data. Record the Mean and SD for each phase. Tables have been provided in the template PowerPoint to help you feedback the results.
- Click the ‘WWC Visual: Two phases’ tab. Six different methods of visually plotting the data are provided. Click the ‘Save plot’ button to download a Pdf or take a screen shot. The downloaded version of the plot can cause the x axis to be condensed making it harder to interpret so the screenshot method may be preferable.

**Note:** For your SCED assignment it may be best to select and cut one of the plots to be included in the write up (e.g. the plot with best fit straight phase trend lines). See [Box 2](#) on page 4 for tips on how to customise the plots, such as adding the baseline median trend line or axis/phase labels). Alternatively see one of the other Analysis Guides for other methods of visually plotting data if you would prefer to use a different method in your assignment.

- Click the ‘Tau-U by K.Tarlow’ tab. Scroll down to the bottom of the output where there are summary tables of the results labelled ‘Tau-U Analysis’. First, establish whether there is a significant baseline trend using the trendA results (e.g.  $\text{Tau}^{\text{TrendA}}=0.4615$ ,  $p=0.0246$ ).
  - If trendA is significant ( $p<.05$ ), report the between-phase effect size that adjusts for the trend labelled **A vs B – trendA** (e.g.  $\text{Tau}^{\text{AvsB - trendA}}=0.5663$ ,  $p=0.0004$ ).
  - If trendA is not significant ( $p>.05$ ), indicating a stable baseline then report the between-phase effect size that has no adjustment labelled **A vs B** (e.g.  $\text{Tau}^{\text{AvsB}}=0.7571$ ,  $p=0.0000$ ).

Tau-U Analysis					
	A vs B	trendA	trendB	A vs B – trendA	A vs B + trendB
#pairs	490.0000	91.0000	595.0000	581.0000	1085.0000
#pos	426.0000	66.0000	355.0000	NA	NA
#neg	55.0000	24.0000	189.0000	NA	NA
S	371.0000	42.0000	166.0000	329.0000	537.0000
Tau	0.7571	0.4615	0.2790	0.5663	0.4949
SD(S)	89.9259	18.2392	69.5989	91.7569	113.9435
VAR(S)	8086.6670	332.6667	4844.0000	8419.3336	12983.1133
p	0.0000	0.0246	0.0178	0.0004	0.0000
A vs B + trendB – trendA					
#pairs	1176.0000				
#pos	NA				
#neg	NA				
S	495.0000				
Tau	0.4209				
SD(S)	115.3704				
VAR(S)	13310.3330				
p	0.0000				

7. Use the PND, NAP and PEM tabs to record the overlap statistics (reported in blue text below the plots). The PEM tab produces a useful plot of the data with the baseline median trend projected into the intervention phase.
8. Repeat steps 3-7 for the remaining ideographic measures (ID2\_rocking, ID3\_tugging and ID4\_control).
9. To assess the nomothetic outcomes open the Excel workbook named '*single-case-V8.xlsm*'. You may need to enable macros in a pop up box. There is an accompanying manual for detailed instructions ('*Manual-for-Leeds-RCI-CSC-calculators.pdf*').

On the '**Data**' tab, input the Pre-treatment and Post-treatment scores from the '**Nomothetic Outcomes**' tab in the example dataset where indicated. To calculate *reliable change*, input information about the measure including the **lowest** and **highest** possible scores, the **direction of clinical gain** and the **reliability** of the measure (internal consistency Cronbach's Alpha). You will also need to input the **SD for clinical norms** in cell C27. All this information will be available in the psychometric evaluation paper for the measure provided. The box in cell C11 will indicate whether the client has improved, deteriorated or shown no change. In the '**Results**' tab, cell C17 will provide the RCI value – the amount of change required to be deemed reliable.

If it makes conceptual sense that the measure could have a clinical threshold, you can also determine whether *clinical significant change* is present. If an established clinical cut-off has been determined in the psychometric evaluation of the measure, then use this threshold. If not, the **Means and SDs of clinical and comparison norms** can be inputted on the '**Data**' tab to produce a clinical cut-off value (CSC criteria – see the manual for more information of which criterion to use).

10. Prepare a brief overview of the findings to feedback to the group (e.g. a few PowerPoint slides – can use the template provided). Focus on an overview of the different stages of analysis (visual, statistical, descriptive & nomothetic) and demonstrating the types of output from the Shiny app (types of visual plots, overlap statistics etc.).

### Box 1: Tips for formatting Excel data as a .txt file

Copy columns from Excel containing the 'score' and 'phase' data for one idiographic measure and paste into a Word document. Select the pasted table and from the menu select Table > Convert > Table to text. In the pop up window for 'Separate text with' select the 'Tab' option. Finish by clicking 'OK'. Save the document and in the 'Save' pop up box change the 'File Format' to a Plain text (.txt) file. This file can then be uploaded to the Overlap Shiny app.

#### *Troubleshooting upload errors*

- If you get an error when uploading the .txt file, check there are no empty spaces/lines at the end of the .txt file. If there are, delete and then save and try again.
- You can also try changing the quotation marks around the data heading labels from 'score' to "score".

### Box 2: Tips for manually customising plots

Use Word 'Insert' and 'Formatting' functions to manually customise the plots.

- Use text boxes to add 'Baseline' and 'Intervention' labels to phases or a title for the plot (Insert > Text box).
- Can also insert text boxes over the axis labels to customize the label to your requirements or to add a legend explaining the trend lines etc..
- Insert a line to draw the baseline median across all phases in the plot (Insert > Illustrations > Shapes > Select line). If you press 'shift' when drawing the line it will make sure it is horizontal/vertical. Format the shape to change the colour of the line, increase the thickness or make it dashed etc.
- Hold down the 'shift' key and select all the added features (text boxes, lines etc.). Without clicking anywhere else (so the items all remain selected), right click and select Group > group to combine all the added features into one object so they remain in the right place when moving the plot.

See 'AB example results' document for an example of the ID1\_seated outcome.