Notes for Paul

1. There is now a new github repository : intervention bookdown2.

I was getting worried that the original one had got very messy, with so many changes of order and filename, and I knew from prior experience that deleting files from Github created havoc with the r studio link. In fact, I've now found that if you push deleted files from r studio (with little red square against them) that deletes them on Github, so I need not have worried. But anyhow, please only work with the new repository - which is rather better organised now that I understand bookdown better. For instance, all images are in Images folder.

2. V pleased to discover that with bookdown installed there is a command:

preview-chapter("01-index.rmd")

that can be used with each chapter as you go through - really helpful for checking.

3. In the end I put the Observational chapter back to the beginning but I made it much clearer that we're not covering analysis of this kind of study - it's more there to explain why it's not a good way of evaluating interventions because there's lots of biases we need to control for. I think we could still have distinct sections, but I've removed section markers for now as I think we can do that at the end, once we are agreed how best to do this.

4. I've done a work-around for custom blocks. I'd prefer something else but I didn't want to spend ages on this - the explanations in the bookdown manual were not straightforward and there seemed to be various things you needed to install to make it work. Accordingly, I've just created a thin blue line (In Images folder) that I put above and below the text, then there is a level 4 heading - I tried to work out how to centre this but failed, but it should be possible to specify at the outset that all h4 are centred. I then just specify a different font size for the block and use the <code> command so it appears against grey background. It's fiddly and I would prefer to replace with something like a block of text with a coloured background if we can work out how to do that, but for now it works to separate some of the more tech stuff from the rest. It may be possible to work out a better solution by just looking at other bookdown books and finding something to copy, but my impression was you had to get into latex etc to make things work.

So the code is:

```{r, fig.align="center", echo=FALSE}

knitr::include\_graphics("images/paleblueline.png")

```

#### title of block here{-}

<p style="font-family: Times;font-size: 14px"><code>Body of text here</code></p>

```{r, fig.align="center", echo=FALSE}

knitr::include\_graphics("images/paleblueline.png")

```

5. I'm using bib.text created from my Zotero for references, so I'll add any new ones there - just put the reference of anything new in the text and I can pull it in. Ideally I'd like to cite only sources that can be readily obtained online, though that's not always easy.

I would definitely recommend that you try Zotero reference manager - I am v impressed with it. The default for adding references is type in specific fields, but very often you can import them direct from pubmed or a journal website by a single click from an app linked to your browser (I use Firefox) - this not only populates all the reference fields, but it also will find and save the pdf if it can, with the reference, so saves a lot of time. The Firefox app sometimes fails to get the fields right but I'd say 80% of the time it works well and you can immediately see if it has worked. And then it's just a single click to export selected references to .bib format (and there are other options) - and you can choose the shortcut name for the records - I had chosen just author19xx format, but you could choose Author\_19xx or anything else

6. I think you already had this worked out, but :

to cite a chapter (where chapter name specified in {#} on first line

Chapter \@ref(chaptername)

To cite a figure of table - this only works if fig.caption or tab.caption is set in the 1st line of the block of code, and then figname or tabname is the name of the code chunk

Figure \@ref(fig:figname)

Table \@ref(tab:tabname)

However, this does not always work and I can't work out why it fails on occasion. But I've left that for now. I think it sometimes fixes itself if you build the whole book rather than just previewing the chapter.

Cross referencing of chapters is also sometimes wrong, and when I preview chapter, I get a weird error message that seems linked to that: "you have 23 Rmd input file(s) but only 20 first-level heading(s). Did you forget first-level headings in certain Rmd files?" - as far as I can see I do have first level headings for all of them. Again, I think this may get fixed on a build of whole book, but we need to check the crossreferencing carefully.

7.

If you want a figure or table that is \*not\* numbered in sequence, just omit caption in header.

If you want a heading that is not numbered, add {-} after the text (needed for custom blocks)

8. We'll need to agree on overall style - eg when to use bold or italic, etc. I have used double quotes as quotation marks, because they avoid the problems you can get if you have apostrophes within titles etc.. The formatting in the reference list is not optimal but I suspect we can fix that at the end.

9. I had to update to latest pandoc to avoid Error: pandoc document conversion failed with error 1

10. Re formatting: I'm thinking that maybe instead of CLASS EXERCISE header we could create a nice banner in powerpoint (rather like the pale blue line, but including some text) to separate this off and add a bit of visual interest. Though I guess that would mean the exercises would not appear in the sidebar or index.

11. Chapter on p-hacking.

I spent a lot of time grappling with the alternatives to Bonferroni, trying to explain them simply. I now understand the FDR procedures much better, but the more I considered them, the less suitable I think they are for the context of an intervention study with multiple outcomes. In part, it's just that people are unlikely to have more than a handful of outcomes, but when they do they will almost certainly be correlated. I have taken the FDR section, and permutations section out, and instead added a couple of tables based on simulated data that just show how correlated variables would affect adjusted alpha/false positive rate.

I also realised that instances of multiple measures in the context of behavioural interventions are very different from the contexts in which FDR tests were designed. You might typically have 6-12  outcome measures which are related and so moderately intercorrelated.  It’s not uncommon to then find a subset of the outcome measures reach p < .05. I realised that one question of interest can be posed v simply: how many of N measures would have to reach p < 05 for us to reject the null hypothesis? I did some simulations that confirm that the answer depends on the average correlation between measures as well as the N measures, but the number of ‘significant’ outcomes measures need not be large  to give confidence that a finding is non-null.

12. For chapters on Adaptive, Cluster and Crossover trials, I've been digging out some examples of these designs in speech-language therapy contexts - we don't need them all but I think for each type of intervention, it would be good to have an illustrative example that is relevant to the readers. These are currently just commented out in the rmd file near the beginning.

13. The biggest challenge is the chapter on single case designs. We have data and script from Susan Ebbels.

Meanwhile, I have found a v comprehensive account of analysis here: <https://journals.sagepub.com/doi/10.1177/0145445516664307>

This has R scripts including multilevel models - it's a bit overwhelming but am working through as best I can.

I have some reservations about the complexity of the analysis being thrown at pretty simple data!

STILL TO DO

ch 3; NEED A FIG SHOWING NORMAL DISTRIBUTION IN RELATION TO PERCENTILES ETC

ch 3: added a custom code section on types of numerical measurement, but not sure this is best location for it. Originally had it in chapter 12 when describing importance of checking assumptions - but that didn't seem quite the right place either.

ch 6 - box showing how examples of results look different if controls used. Could find egs from SLT though also have many medical egs - including a list from Rothwell paper.. Early lanuguag intervention is a good EG as is Dore.

ch 12 <!-- maybe add a figure showing egs of nonnormal distribution, ceiling effect, clumpy data-->

ch 12 ; use DeclareDesign to compare analytic approaches? ( probably overkill - have found a review o n approaches to RCTs that is sufficient I think for RCT chapter).

reminder to self: where I cross reference my blogposts I should deposit them on figshare so they have permanent DOI and update the link (or put in bibfile?)

This affects:

chapter 8: <http://deevybee.blogspot.com/2013/10/good-and-bad-news-on-phonics-screen.html>

(http://deevybee.blogspot.com/2017/11/anova-t-tests-and-regression-different.html) for more details.

References to look at

**https://educationendowmentfoundation.org.uk/tools/diy-guide/getting-started/**

Pico, D. L., Hessling, P. A., Biel, C. H., Peterson, A. K., Biel, E. J., Woods, C., & Contesse, V. A. (n.d.). Interventions Designed to Improve Narrative Language in School-Age Children: A Systematic Review With Meta-Analyses. *Language, Speech, and Hearing Services in Schools*. <https://doi.org/10.1044/2021_LSHSS-20-00160>

Lazic preprint

James Pustejovsky looks like our man as far as getting into stats on single cases is concerned: <https://github.com/jepusto> - we have followed each other on Twitter for ages and I'm sure he'll be responsive if we need to discuss anything

https://www.jepusto.com/tags/single-case-design/ on single cases