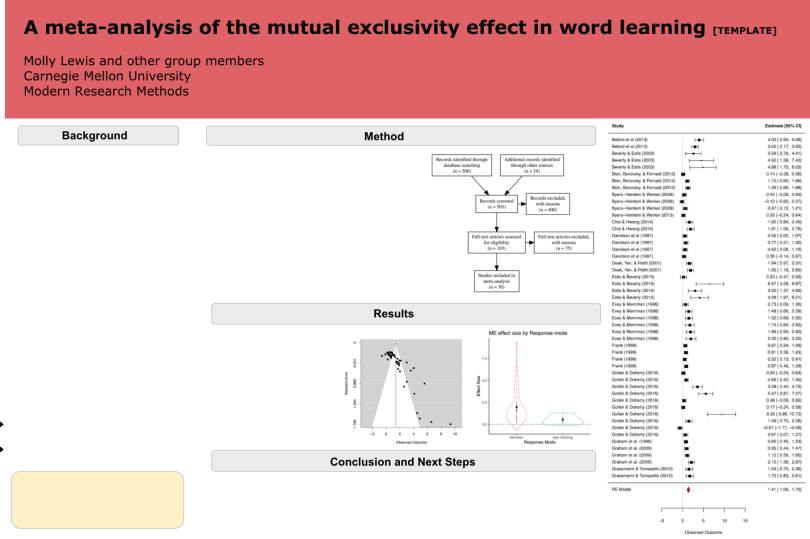
Designing your poster

22 April 2020

Modern Research Methods



Logistics

- Each group should now have a dataset they c ("MA data tidy with ES") tab
- Read this data into the "Final Project Analyses" Rstudio Cloud project either by downloading and uploading it as a csv, or reading it in directly using the googlesheets4 package.
- Poster draft due with only 4 key figures + R markdown of analyses due Thursday at noon
- 1 markdown and 1 poster per group (1 person from each group should turn in html of markdown on Canvas)

Summary of remaining deadlines

~~T, 4/21 (noon) – data cleaning due~~

Th, 4/24 (noon) – markdown of analyses and poster with four plots due

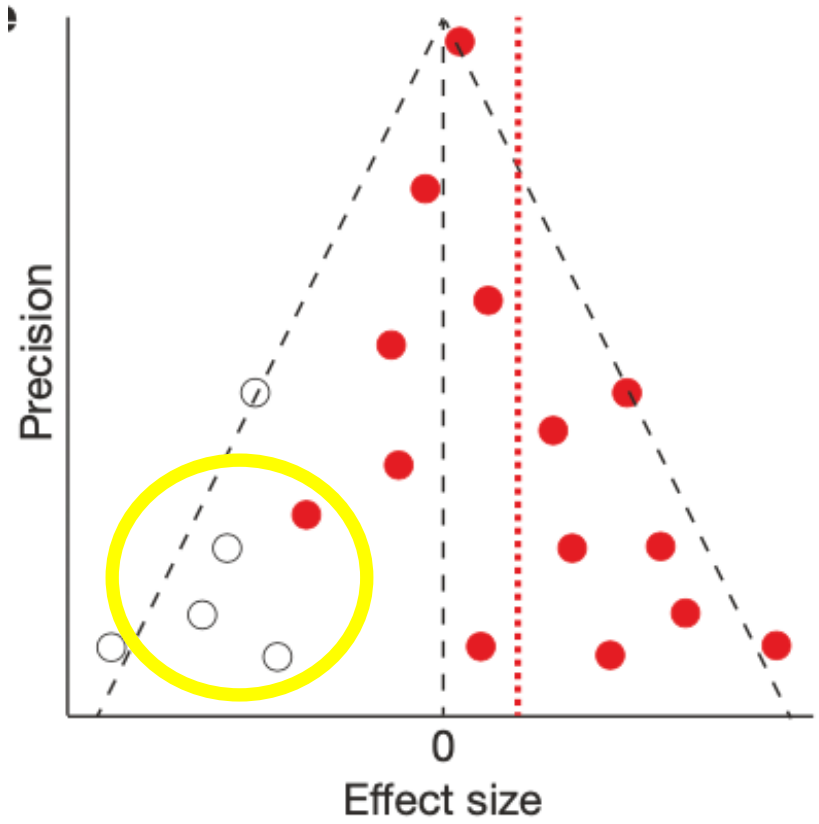
S, 4/27 (5pm) – full poster draft due (Jaeah will have office hours on Sunday)

W, 4/29 (10:30am) – 4 min recording due

Th, 4/40 (4:30-6pm) – live poster session

F, 5/8 (noon) – final writeup due

Last Time: Funnel plots



Scatter plot

Studies that are more precise (i.e. larger sample sizes) should have less variance around the true population effect size.

Asymmetric funnel suggests p-hacking/publication bias in literature

Poster Session Details

- In conjunction with two other research methods courses
- 4 minute recorded presentation over Zoom
  - Share screen showing full screen of poster
  - Each member of your group should present part of the poster.
- During the live poster session (4:30-6pm on Thursday), judges will ask questions
- There will 2 “tracks” of posters and 1 poster in each track will win an award
- Presentations evaluated for clarity, originality, and ability to answer questions

Principles of Data Visualization (from week 4)

- Visualization as **communication**
  - There is no list of rules for what makes a good visualization
  - Design depends on the message you want to communicate
  - And, who your audience is.

- Your goal is to make it as easy as possible for your audience to understand your message.
- Too much detail/information means your audience might not get the intended message.

Principles of ~~Data Visualization~~ Poster Presentations

- Presentation as **communication**
  - Design depends on the message you want to communicate
  - And, who your audience is.
- Your goal is to make it as easy as possible for your audience to understand your message.
- Too much detail/information means your audience might not get the intended message.
- You've done a lot of analyses

Poster presentation guidelines

- Who is your audience? Smart psychologists (mostly other faculty) that may or may not be familiar with your phenomenon or the basics of meta-analysis
- There are lots of details to your methods/results – your job is to glean it down to the most important ones
- The judges will likely have questions about things you didn't have time to talk about – that's great!
  - Be ready to answer questions about the details of your method/results!
- Many of the specific design guidelines we talked about in the context of data visualization, also apply here (e.g. avoid junk, too much info)

Poster Template

Template exists in each of your project google drive folders

You should adapt this template for your MA, keeping in mind the design principles we've talked about.

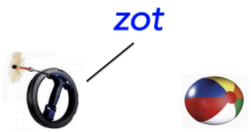
Your poster should not use smaller than 26 font for the main text.

A meta-analysis of the mutual exclusivity effect in word learning [TEMPLATE]

Molly Lewis and other group members
Carnegie Mellon University
Modern Research Methods

Background

- Mapping a word to its referent is an under-constrained learning problem.
- One of the mechanisms hypothesized to constrain the problem is a bias to map novel words to novel objects – termed the "Mutual exclusivity (ME) effect"



- Seminal Paper: Markman & Wachtel, 1988
- Conducted the ME paradigm with 3 and 4 year olds, and found that older but not younger children have shown the effect (+ additional methodological details)
- Since 1988, paper cited over 1000 times, and replicated with many methodological changes
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Research Goal: Evaluate the degree of publication bias in the ME literature, estimate the size of the effect, and examine potential moderators.

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- Inclusion criteria: child participants, no prior experience with objects, etc.
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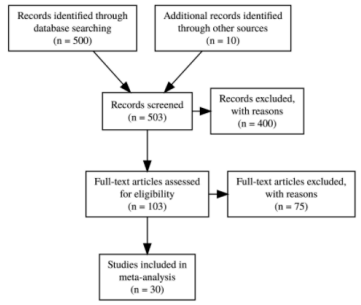
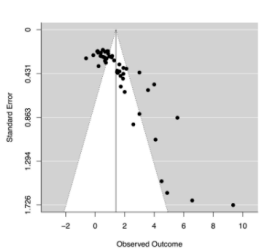
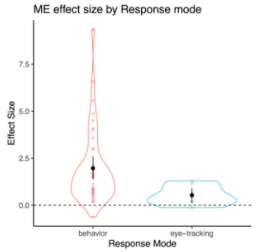


Results

- 50 effect sizes
- Some evidence for publication bias
- Overall effect size is 1.41 [1.06, 1.75]
- Effect is bigger in X than Y, and is larger when X is larger (moderator analyses)





Conclusion and Next Steps

- Mutual exclusivity is a robust effect with a large effect size.
- There is little evidence for publication bias
- Next steps: Explore additional moderators (which ones?), and code remaining papers (how many?).

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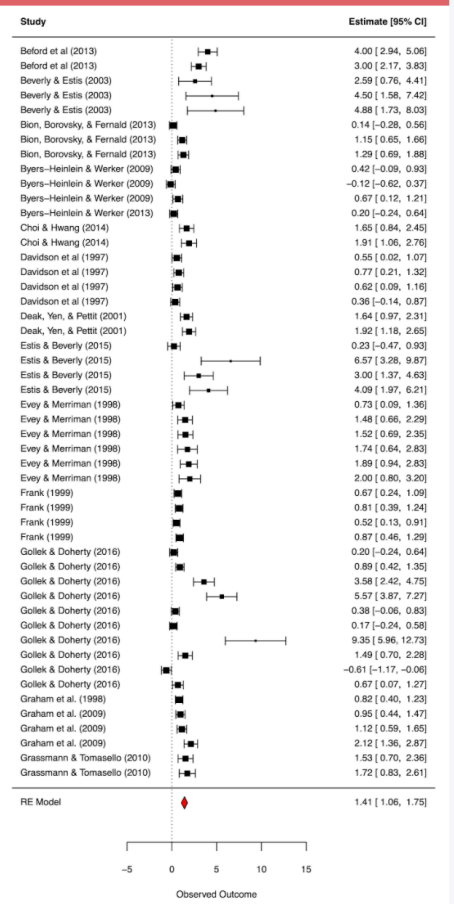

Poster structure

6 parts….

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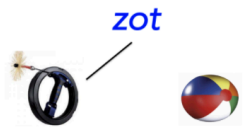

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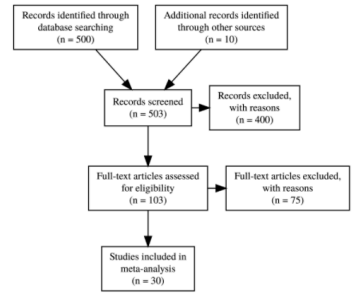

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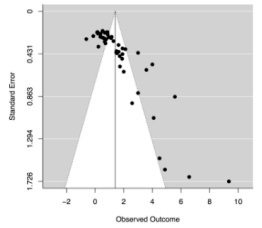

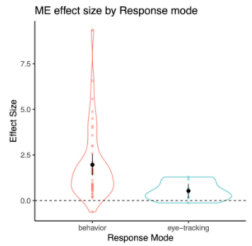

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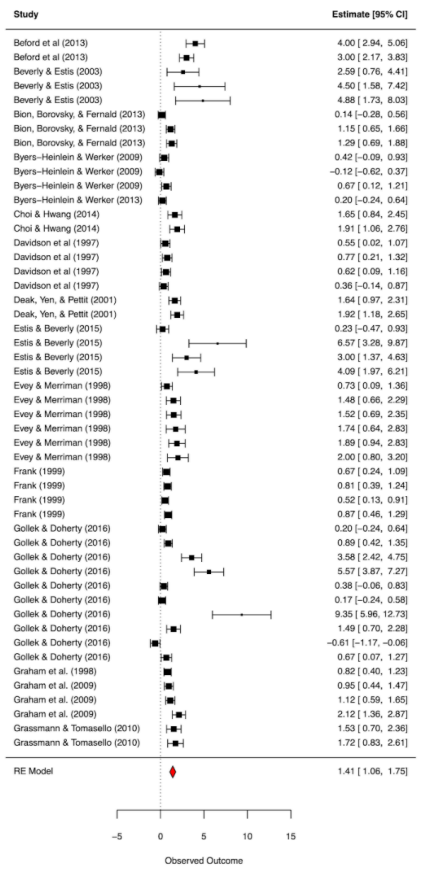
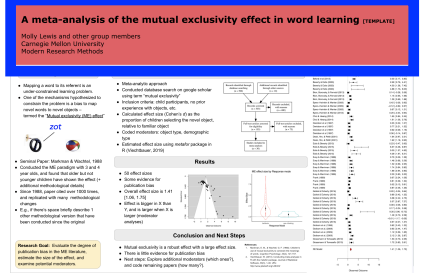


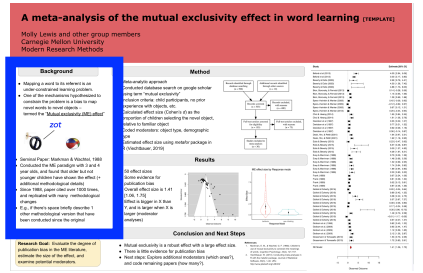


A meta-analysis of the mutual exclusivity effect in word learning [TEMPLATE]

Molly Lewis and other group members
Carnegie Mellon University
Modern Research Methods

- Informative title
- Title should contextualize the effect
  - "Meta-analysis of mutual exclusivity in word learning" is better than "Mutual exclusivity meta-analysis"
- Even better: Framing your title around a research question/finding
  - "Understanding the relationship between vocabulary and the mutual exclusivity effect through meta-analytic data"

The background section should explain the motivation for conducting the meta-analysis



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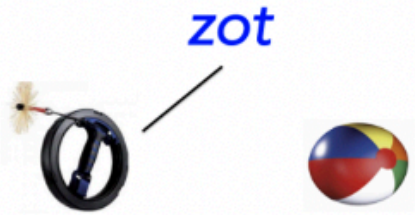

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- E.g., if there's space briefly describe 1 other methodological version that have been conducted since the original

Broad question

Narrower question, relates to theory

Introduces name of effect

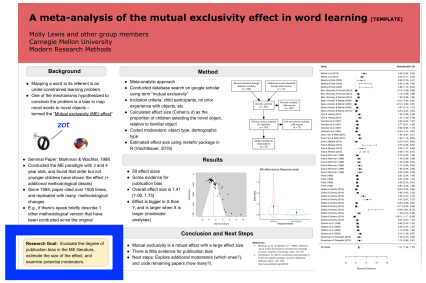
Schema of paradigm

Seminal paper

Brief description of seminal paper

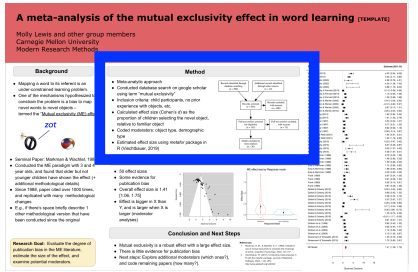
Brief summary of literature

Briefly describe 1 methodological variations just to give the audience a sense of the variability in the literature



- What are your research goals?
- This will likely be the same for all groups
- Similar to “hypothesis” section of experimental poster.

Research Goal: Evaluate the degree of publication bias in the ME literature, estimate the size of the effect, and examine potential moderators.



Method

Brief description of your search protocol

Description of effect size metric

What moderators did you code?

What software did you use? This will be the same for everyone.

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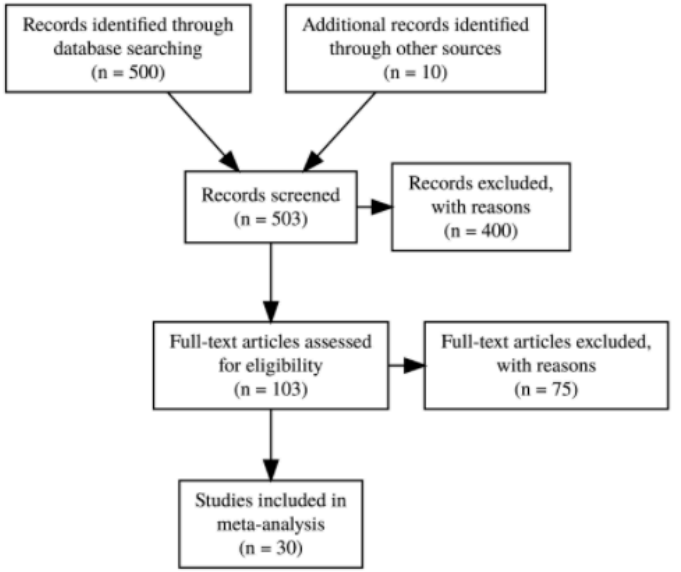
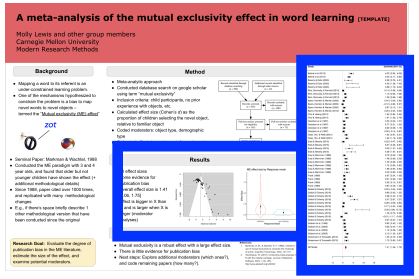


Prisma flow diagram



Total number of effect sizes actually used in your analyses (rows)

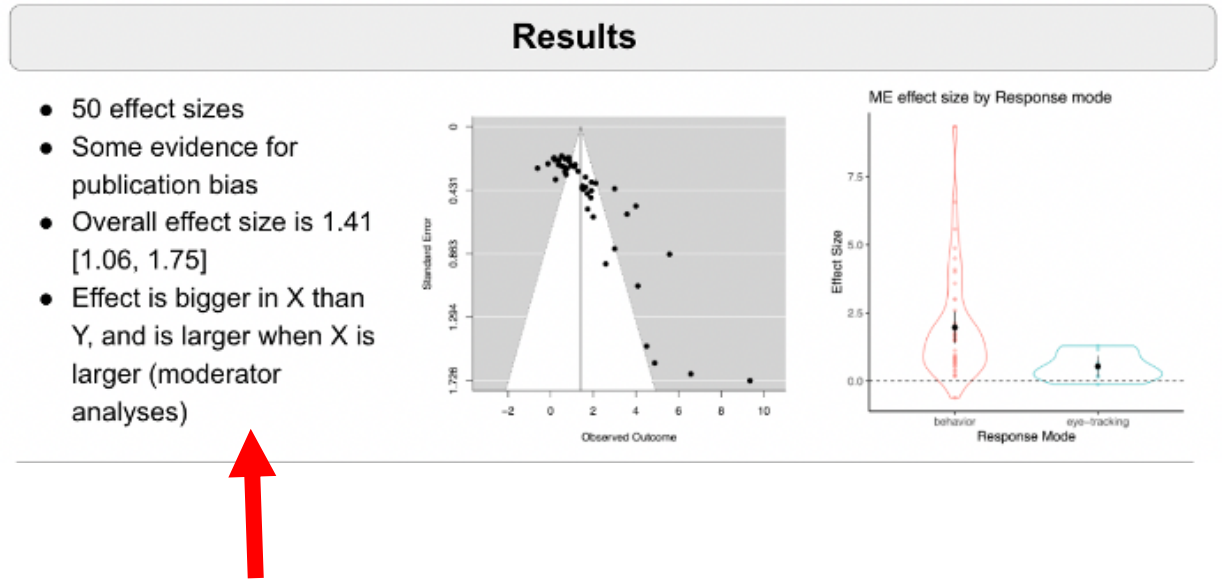
Does it look like there's evidence for publication bias based on looking at the funnel plot?

Overall effect size and confidence interval (this should match the values corresponding to the red diagram on the forest plot)

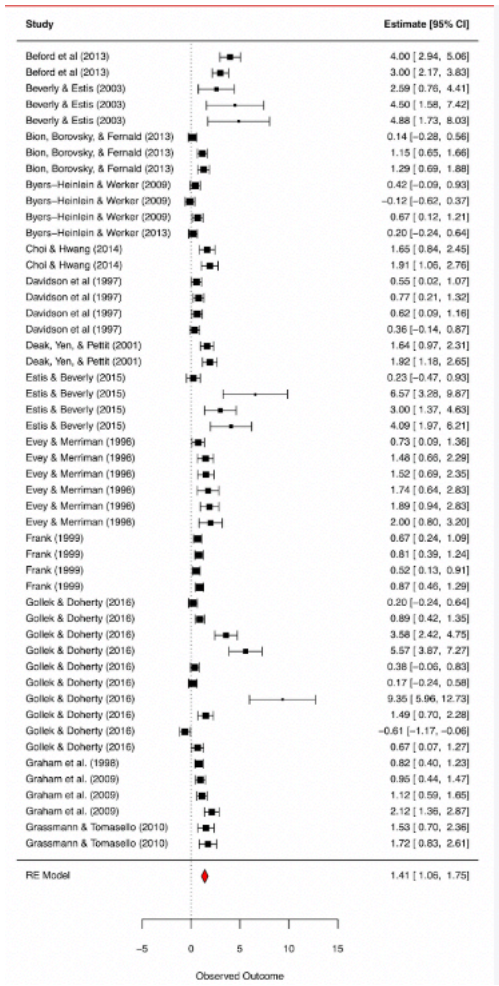
Funnel plot

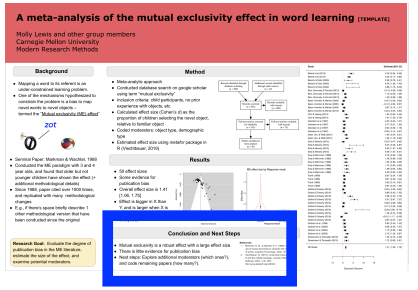
Moderator plot (continuous or categorical)

Forest plot



Description of your moderator analyses. There's only room to plot one, but you can describe more.





Summary of effect size (relate to Cohen's descriptions of "small", "medium" and "large" effect sizes, if using Cohen's d)

Summarize publication bias

Summarize moderator findings

Conclusion and Next Steps

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What would you do if you had infinite time?

References: Seminal paper, Metafor software, any other paper you reference

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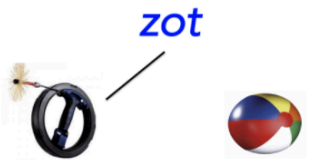

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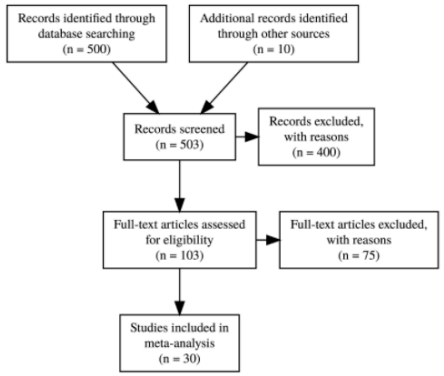

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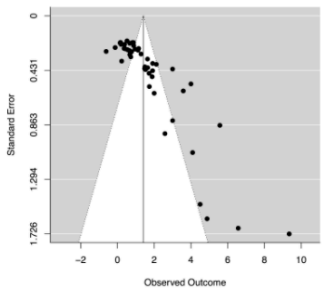

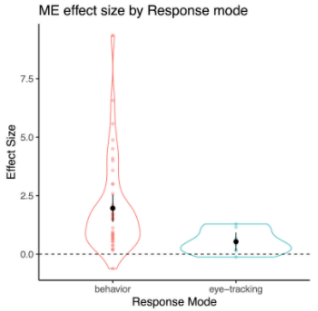

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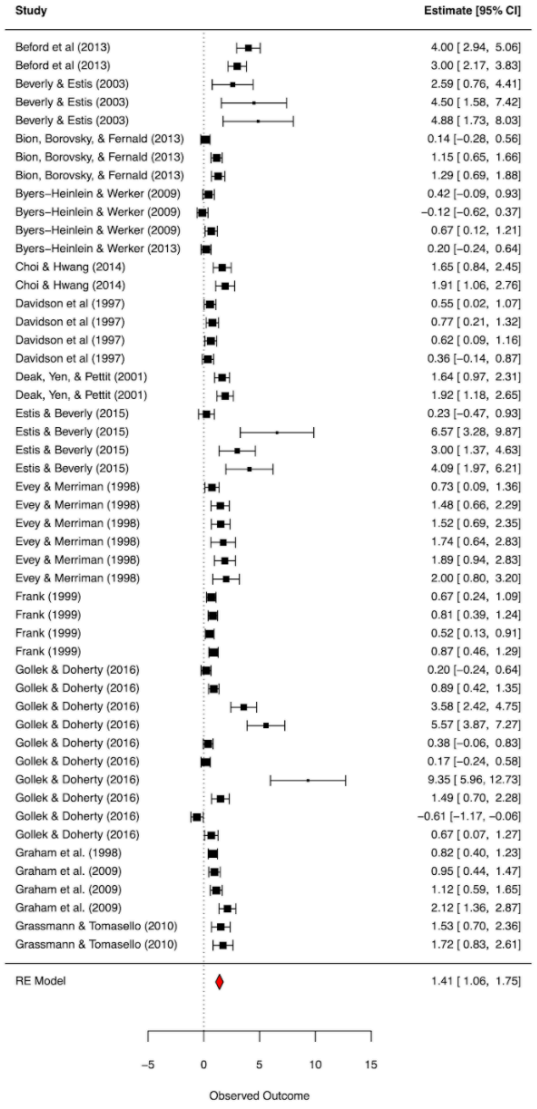


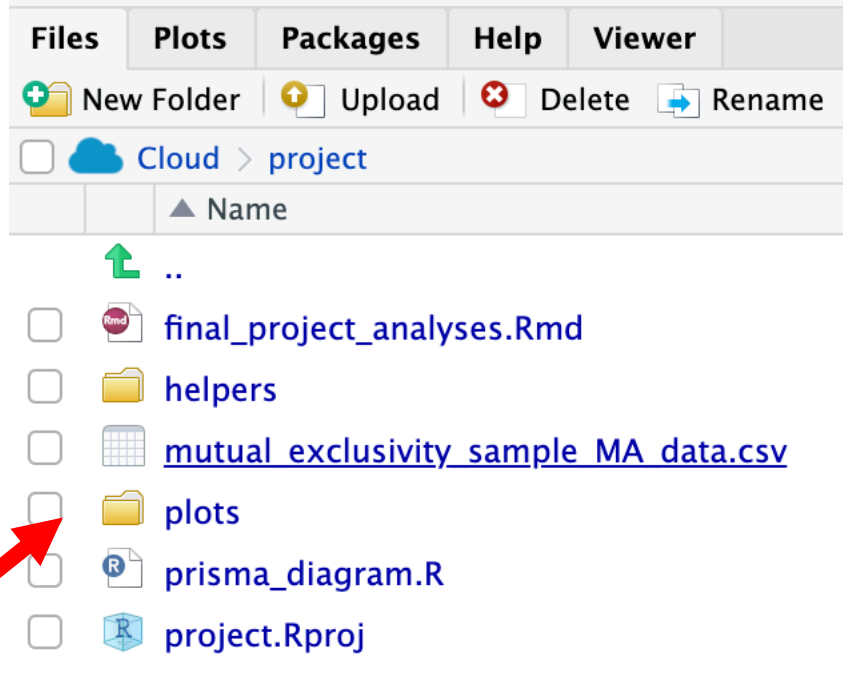
How to save plots from R Studio

* No screenshots!

R markdown chunk with a plot in it

[plot code]

```
```{r, fig.height = 10}
#pdf("plots/forest_plot.pdf", height = 12, width = 5.5)
forest(ma_model,
       header = T,
       slab = ma_data$short_cite,
       col = "red",
       cex = .7)
#dev.off()
```
```

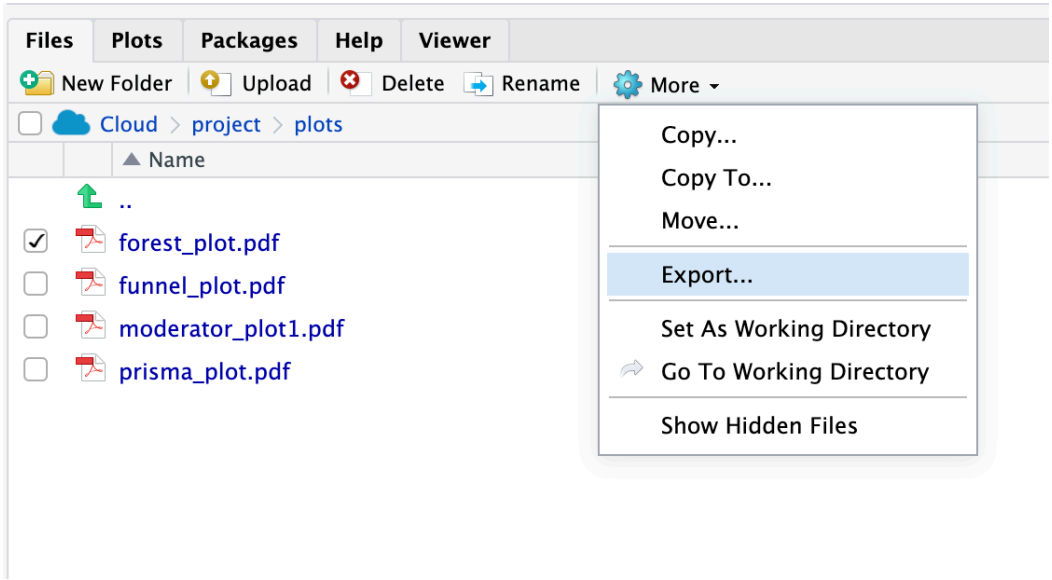


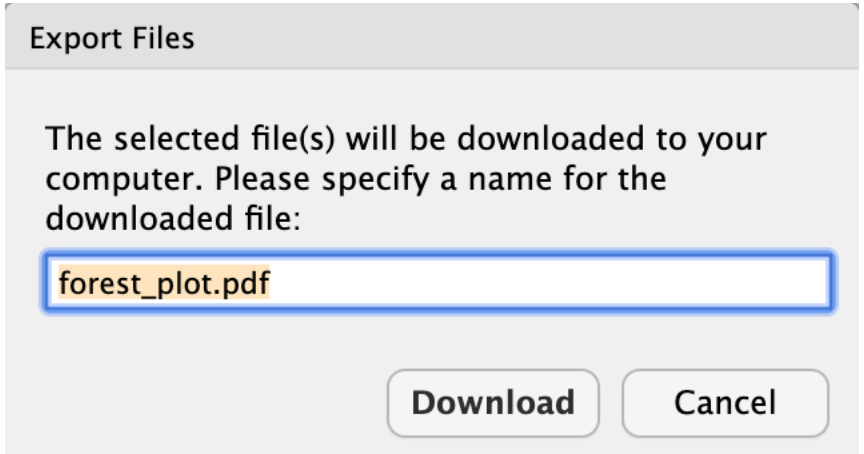
Uncomment green lines (i.e. remove "#" symbol), and run chunk.

Pdf of plot will be saved in "plots" directory as "forest_plot.pdf"

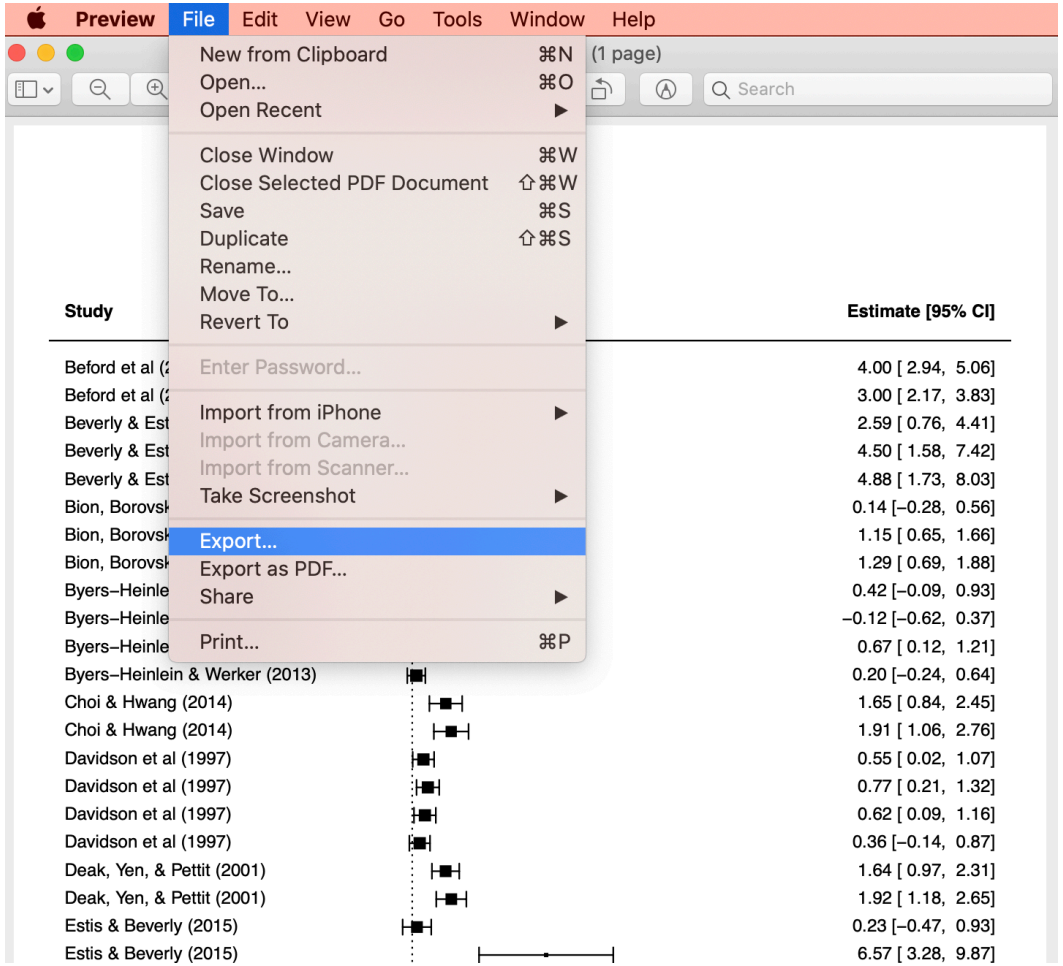
Once I have a pdf in R studio, how do I get it into my google slideshow?

- The best way to save a high quality plot in R is as a pdf
- But! You can't insert a pdf into a google slide show
- So, we need to convert the pdf into a png before adding it to our poster

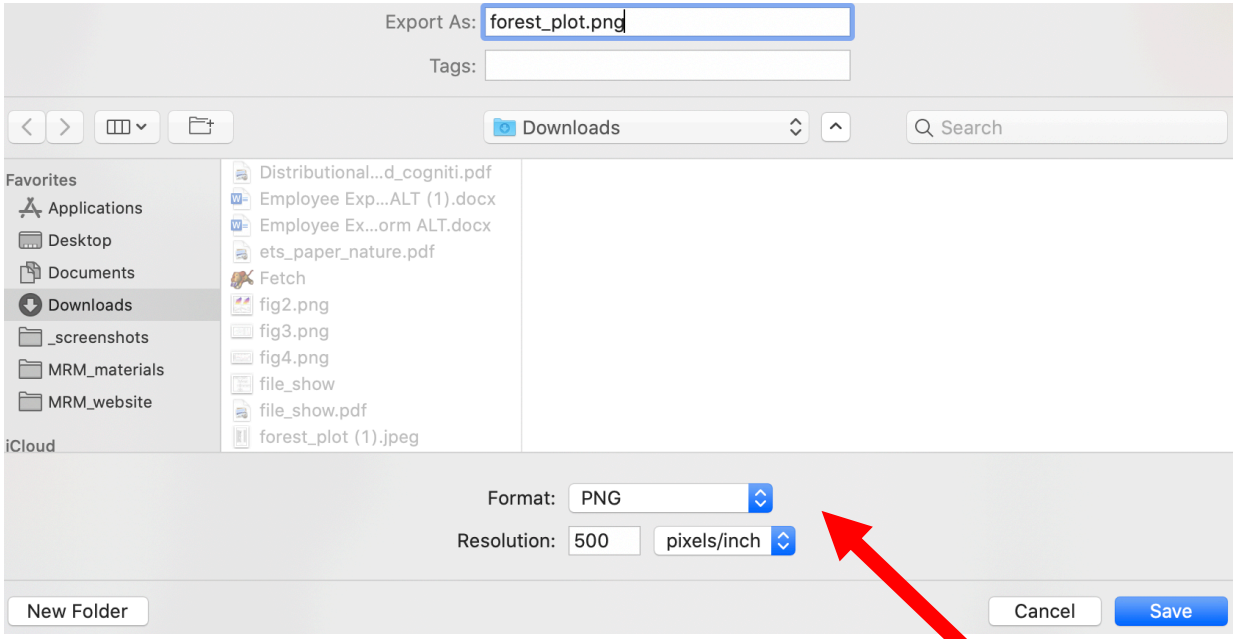




Open the file in preview (or some other pdf reader), then export



Export as png



Now you should be able to insert your plot into your poster!

Next Time

- Logistics of recording posters
- Poster draft with only 4 key figures due on Thursday

Office Hours:

Molly 4:30-6:30pm Today