Syllabus

Course description

This course will provide students with the skills and know-how needed to create reproducible reports and presentations of eye-tracking reading data. A brief introduction will be given into common measures in eye-tracking reading and the importance of developing a reproducible workflow, followed by hands-on exercises in RStudio with the R programming language. The main skills developed include data wrangling (with the tidyverse package), data visualisation (with the ggplot2 package), and running and communicating descriptive and inferential statistics. By the end of the course, students will be able to apply what they learned to a variety of data types in both academic and professional settings. This course is aimed at students who have some practical experience with R and RStudio, although this is not a strict requirement. Students who cannot bring their own laptop to class should contact the instructor as early as possible, so an alternative laptop can be organised. The language of instruction is English.

Skills and know-how

At the end of the course, you will:

- have an understanding of common eye-tracking reading measures
- be able to visualise reading times
- be able to run linear mixed models on reading times
- be able to set-up and maintain a reproducible workflow in RStudio

Course credits

- to earn credits for this course, you need to hand in:
  - 2 in-class quizzes (15 minutes each)
  - mid-course analysis report (due May 31st)
  - final analysis report (Due August 15th)
- for the first report, we will do some work in-class
  - e.g., data wrangling and tidying
  - independent work: turning it into a *reproducible report*
- for the second report, you will get new data
  - you will need to do the wrangling and analyses independently
  - and turn it into a *reproducible report*

Important dates

- May 31st: first report due
  - reproducible analysis report
  - pre-registration of next dataset
- August 15th: second report due
  - reporiducible analysis report
  - summary of confirmatory and exploratory analyses

Schedule overview

	Date	Topic(s)
1	Wed. April 12, 2023 10:15 - 11:45	**Reproducible workflow with RStudio** *Reading*: Kathawalla et al. (2021) |
2	Wed. April 12, 2023 12:15 - 1:45	**Eye-tracking during reading** *Reading*: Vasishth et al. (2013); Clifton et al. (2007)
3	Wed. April 12, 2023 2:15 - 3:45	**Working with a dataset**: loading and inspecting the data
4	Thurs. April 13, 2023	**Data Wrangling and summary statistics**
5	Thurs. April 13, 2023	**Data Visualisation**
6	Thurs. April 13, 2023	**Communicating your results**
7	Fri. April 14, 2023	**Linear regression** *Reading*: Winter (2013) (p.1-11); Winter (2019) (Ch. 4 and 6) |
8	Fri. April 14, 2023	**Multiple regression** *Reading*: (from pg.11); Winter (2019) (Ch. 5 and | 6)
9	Fri. April 14, 2023	**Linear mixed models** *Reading*: Winter (2014), Winter (2019) (Ch. 14)
	April 15-June 29	***Individual work***
10	Fri. June 30, 2023	**Generalised linear mixed models** *Reading*: Winter (2019) (Ch. 12)
11	Fri. June 30, 2023	**Generalised linear mixed models** *Reading*: Winter (2019) (Ch. 13)
12	Sat. July 1, 2023	**(Generalised) linear mixed models continued** *Reading*: Winter (2019) (Ch. 13)
13	Sat. July 1, 2023	**Placeholder session** Reserved for Q&A or extra time for a previous topic
14	Sat. July 1, 2023	**Choose your own adventure** TBD by class vote held at the end of Day 3

Reading list

Clifton, C., Staub, A., & Rayner, K. (2007). Eye movements in reading words and sentences. *Eye Movements*, 341–371. https://doi.org/10.1016/B978-008044980-7/50017-3

Kathawalla, U.-K., Silverstein, P., & Syed, M. (2021). Easing Into Open Science: A Guide for Graduate Students and Their Advisors. *Collabra: Psychology*, *7*(1), 18684. https://doi.org/10.1525/collabra.18684

Vasishth, S., von der Malsburg, T., & Engelmann, F. (2013). What eye movements can tell us about sentence comprehension. *Wiley Interdisciplinary Reviews: Cognitive Science*, *4*(2), 125–134. https://doi.org/10.1002/wcs.1209

Winter, B. (2013). *Linear models and linear mixed effects models in R: Tutorial 1.* https://bodowinter.com/tutorial/bw_LME_tutorial1.pdf

Winter, B. (2014). *A very basic tutorial for performing linear mixed effects analyses (Tutorial 2).* https://bodowinter.com/tutorial/bw_LME_tutorial2.pdf

Winter, B. (2019). *Statistics for Linguists: An Introduction Using R.* Routledge. https://doi.org/10.4324/9781315165547