Laboratory Linguistics/Testing theories in the lab

Michael Wagner

2024-01-08

Contents

Exeriments on agreement

- Everyone in this class will run an experiment. You can work in groups of up to 3 people, but you could also work in pairs or alone if you prefer
- Every time this class is taught, it has a broad topic, this time it's **agreement**. We'll look at some agreement puzzles in a moment
- The topic doesn't imply that all experiment have to be related to this topic, but the ones I will propose to choose from will revolve around semantic and syntactic agreement.
- We will use the prosodylab experimenter to run online studies (git)
- Here is an example experiment (no data will be saved!)

1

Syllabus

1.1 Basic Coordinates

- **Course website:** http://prosodylab.org/~chael/courses/LaboratoryLinguistics/2024-Ling-450-650/_book/
  (Login & password: See class webpage on mycourses or ask me!)
- **Time:** MW 10.05am-11.25pm
- **Location:** LEA 617
- **Instructor:** Michael Wagner chael@mcgill.ca
- **Office Hours:** W 11.30-12.30pm or by appointment, in my office at 1085 Penfield, Room 113

See the **Schedule** for links to readings, homeworks, etc.!

1.2 Course Description:

Students with a background in some core area(s) of linguistics will learn how to test linguistic theories in the (online) lab. The focus is on learning by doing: Students will design and carry out their own online experiments, and will learn some basic techniques to plot the results, and evaluate and present them.

1.3 Goals

The goal of this class is for you to design and run a small-scale study (reading, production or perception), and in the process learn something about designing experiments, about experimental methodology, and how to analyze data. Important to know: you will not learn how to do statistical analysis in this class—however, you will learn a bit about how to explore and visualize results an evaluate data, which is the first step toward a full analysis of the data.

1.4 Requirements

Apart from the prerequisites (Phonetics and Syntax), you have will have to use various types of software (R for programming your analysis and final project). You can learn all you need as you go along, but having some background on handling files (especially spreadsheets) and programming R would certainly help. You can look for the links in the R tutorial (see in the table of contents on the right) for some useful starting points if you want to familiarize yourself with R a bit. If you have programmed in the past (even it wasn't R), you will see that you can learn some basic R scripting very quickly (just download R and Rstudio and you can try it out a bit—see below for more information on how to install it).

1.5 Course Logistics

- **McGill Mycourses:** You will always find a link to this page on the McGill Mycourses site with the login information here. This is also were grades will be posted.
- **Class Webpage:** All lecture notes etc. will be posted on this webpage here
- Signing up for a topic: **You can sign up for a topic/group here**

Note that the sign-up sheet is publicly editable, so just use first names, and don't put your McGill ID (or email addresses) on this page. Only people with the link should be able to find it, but you never know…

- **Slack:**
  - Slack is a chat/project-management app. Here is an invitation link. Note that this is not he same as the McGill Linguistics workspace–it's a separate workspace just created for this class
  - Most **class announcements** will be made on Slack in the announcements channel, **and only there**. I will assume that everyone will see those messages.
  - **Public questions:** If you have questions about this class, you can post either post them publicly in the discussion channel
  - **Personal questions:** If you don't want your message to be public, or if it's a question that's not relevant to others, send me a direct message on Slack (send an email instead if it's about something very sensitive, since Slack is less secure)
  - Your class project will eventually have its own channel. This is how you will communicate about your project with your teammates, and also with me

  - You can install the Slack app on your computer or on your phone. This will make it much easier to keep track

This is a class with a lot of group work

- In this class, you can work your experiment in a group of ideally **no more than 4 people**
- The homeworks, however, have to be done individually, except the parts explicitly marked as group-work, which you can do with your group

How will you know whether you've done everything you needed to do for the class?

- Part of the point of the homeworks is that they function like a checklist on your progress.
- So as much as possible, I will list everything you need to do for the class in one of the homeworks, and as long as you finish the homework on time you should be up to speed with the class work.

- Readings will also be assigned as part of the homework, but I may assign one or two readings on top of the homeworks if necessary

Readings: We will not use a textbook in this class. There will some readings (to be announced), and they will all be posted on the class **Schedule**.

Software:

- You'll have to install the software we'll be using (see HW1) on your own computer. Everything we will use is free. You can install the software now, but you should have it installed when the first homework is due.

Software Installation: Obligatory

- We will use Dropbox to share files. I tried in the past to use McGill's Onedrive, but unfortunately it's not compatible with the experimental scripts that we will be using

- Your project folder will likely not be very big, if you have about 200MB of space in your Dropbox account, that should be enough (I think 2GB are free)

- It will be much easier for you to sync files with your team members and with me if you install the Dropbox app on your computer, and have your project folder sync with the version in the cloud

- If your project involves sound data, you will need the speech analysis program Praat](http://praat.org). Some basic scripts for annotation will be provided. However, you are expected to familiarize yourself with the program above and beyond what we will discuss in class, and figure out any problems you run into with the help function provided in the program, and online resources (such as the praat online forum) (available at praat.org)

- For data wrangling, figures, stats, and final paper: sollow the instructions in HW1 to intsall R and RStudio, and additional packages

```
install.packages(c("tidyverse","ggplot2","patchwork","lme4", "arm", "scales","texreg",'
dependencies = TRUE, repos = "http://cran.r-project.org")
```

1.6 Ethics certificate

- Everyone at McGill involved in research studies has to complete an Ethics training. Since we'll do (virtual!) experiments with real people, you'll have to take this training too.
- The upside that you only have to take this once, so if after this class you want to work on expeiments or in a lab, you'll already have taken it!
- To participate in this class, you will have to complete the TCPS 2 Core Tutorial. **Please use your McGill email address when you take the ethics class**—this way the Research Ethics Board at McGill can check online that you have done it. You will have to submit your ethics certificate as part of homework 2.
- Note that taking that training and getting the certificate will take a few of hours, so plan ahead. You start now! You can do this in several sitting, and you can start today if you want to get a head-start. Submitting the pdf with your ethics certificate will be part of homework 2, so you will have to finish it by Feb 7.

1.7 Evaluation

In-class participation (5%):

- All students are expected to engage class discussion, and contribute to the group's understanding of the material. It may be hard to participate for everyone in the class lectures, but later in the term we'll have recurring meetings between me and your group. It will be easier to speak up in these group meetings. Please participate actively at least there—and also make sure that you let others speak as well!

- Also, participation presumes that your present, so please attend the class and your group meetings regularly!

Homeworks (60%):

- There will be four homeworks, each worth 15%.
- The will involve some problems in which you have to demonstrate the skills you have acquired in class and will prepare you for the work on your project, or help with you steps related to your project
- The homeworks have to be done individually, except the parts that are explicitly marked as group-work, which you can do with your entire group

Project presentation (10%)

- Early on in the class you will present on your project idea and submit a project design describing the experiment
- Part of the projet submission spread-sheet with the experimental stimuli you want to use
- You will present the project to the class using a slide presentation–this is intended to be a 'pitch' of your study, and should be done in such a way that others can give you feedback on how to improve the experiment, for example by improving the stimuli or by tweaking the methodology, or by avoiding potential confounds
- You should work on this as a group

Final presentation (10%)

- The final presentation on your project will consist of a webpage generated by an Rmarkdown file. More on the format will be posted.
- It should have a clear narrative, and someone not familiar with the topic should be able to understand it, and get an idea about the data that you collected and conclusions that can be drawn from it.
- You should work on this as a group

Final project (15%):

- Instructions for the final paper for Ling 450 will be posted here.
- This will be a short final paper on your experiment, submitted in the form for a Rmarkdown webpage. We'll discuss how to use Rmarkdown to create such pages

If you are taking Ling 650:

- Course evaluation will be the same, except that you will have different expectations for the final project. Essentially, there will be greater emphasis on grounding your experiment in the theoretical literature. I will post a link with instructions for the final project for students in Ling 650 soon.

1.8 McGill Policy and Additional Statements

Course Work in French: In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

Integrity: McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see http://www.mcgill.ca/students/srr/honest/ for more information).

Copyright: Instructor generated course materials (e.g., handouts, notes, summaries, exam questions, etc.) are protected by law and may not be copied or distributed in any form or in any medium without explicit permission of the instructor. Note that infringements of copyright can be subject to follow up by the University under the Code of Student Conduct and Disciplinary Procedures.

Fair assessment: As the instructor of this course I endeavor to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me and the Office for Students with Disabilities, 514-398-6009.

Copyright: Instructor-generated course materials (e.g., handouts, notes, summaries, exam questions) are protected by law and may not be copied or distributed in any form or in any medium without explicit permission of the instructor. Note that infringements of copyright can be subject to follow up by the University under the Code of Student Conduct and Disciplinary Procedures.

Land Acknowledgement: McGill University is on land which has long served as a site of meeting and exchange amongst Indigenous peoples, including the Haudenosaunee and Anishinabeg nations. We acknowledge and thank the diverse Indigenous people whose footsteps have marked this territory on which peoples of the world now gather.

2

Tentative Schedule

- Jan 8/9: Introduction: Agreement puzzles and an example experiment
- Jan 15/17: Testing hypotheses experimentally (Homework 1 out)
- Jan 22/24: Experiment design; choosing a topic; finding a work group (**Homework 1 due Jan 22**; Homework 2 out)
- Jan 29/31: Choosing a topic/Thinking about your research question(s) them; Research ethics. Reading on research ethics for Jan 30 (National Truth and reconciliation day). This reading is about abusive research that happened in residential schools, and is disturbing: Daniel 2021 Research Ethics Slides
- Feb 5/7: Designing your experiment (**Feb 7: HW2 due**, HW3 out)
- Feb 12/14: Class presentations
- Feb 19/21: Class presentations
- Feb 26/28: Putting everything together; anticipating your plots **(Feb 28: HW3 due)**
- Mar 4/6: *Reading week*
- Mar 11/13: Testing your experiment (HW4 out)
- Mar 18/20: Running your experiment
- Mar 25/27: Exploratory data analysis
- Apr 1: Finalizing plots and analysis (for instructions, see HW4)
- April 8/Apr 10: Final presentations **(April 10: HW 4 due)**
- April 11: What we learned about agreement

Final paper (see final for instructions) due date: Thursday April 25 2024, end of the day