Eye Tracking for Linguistics  
LSA Linguistic Institute – 2017  
M/Th 11:00 - 12:50 in JSB 213

Instructors

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Course Description and Goals

This course is an introduction to eye tracking as a tool for understanding how language works. The instructor’s background is in phonetics and speech perception so there will necessarily be an emphasis on visual-world eye-tracking research in spoken word recognition. However, attention (pun intended) will also be given to sentence processing and reading research using eye tracking.

Students completing this course will have the background needed to read, understand, and evaluate eye tracking literature. You will also have the foundation needed to design, implement, and analyze your own original eye tracking research. We will read and discuss foundational literature applying eye tracking to linguistic questions as well as a range of more recent papers covering both methodological and theoretical concerns.

Finally, we will implement, collect data for, and analyze data for a visual world eye tracking experiment. The class will be most accessible if you have taken an introduction to psycholinguistics, had some exposure to phonetics, and have at least some familiarity using R for statistical data analysis (e.g. having completed the equivalent of this free tutorial: http://www.cyclismo.org/tutorial/R/).

Requirements

1. Attendance & Participation  
   80%
   This is not just attendance in the sense of occupying a chair. Reading will be minimal for this course so active participation is everything. Come, listen attentively, participate fearlessly, and ask questions.

2. Experimental Proposal  
   20%
   By July 31st please submit an experimental proposal (2 to 5 pages) describing an eye tracking experiment you are interested in pursuing. What is the problem? How has it been discussed in the literature? What is your hypothesis? How will you test it with
eye tracking? Be sure to describe the task in as much detail as possible. What is/are your dependent variable(s) and how will you analyze them?

Our required readings will be on our course’s canvas site, they are listed on the course schedule below and should be attended to prior to the date listed on the syllabus.

Course Schedule

July 6\textsuperscript{th}: Introduction

Reading: Eberhard 1995 (optional and short Tanenhaus 1996)

We will introduce eye tracking terminology, how the technology of commercially-available eye trackers works, and discuss some of the earliest linguistic work with eye tracking from Eberhard 1995. We will also introduce a possible topic for our eye tracking experiment to be developed next week.

July 10\textsuperscript{th}: Visual World Paradigm

Readings: Tanenhaus et al. 2000

We will discuss the Tanenhaus linking hypothesis article and the work it surveys. Then we will turn our attention to a particular question and design an experiment to investigate it.

July 13\textsuperscript{th}: The time course of speech perception

Readings: Dahan et al. 2008 (optional, Beddor et al. 2013 and McQueen & Viebahn 2007)

We will discuss the Dahan article (paying particular attention to the methodology and results) and similar studies. We will also continue to develop our own visual world experiment and look at some software tools available for building eye tracking experiments.

July 17\textsuperscript{th}: Eye tracking and language processing

Readings: Huettig et al. 2011

We will shift our focus (see what I did there?) to language processing and comprehension while still developing our own task.
July 20th: Data collection begins!

Readings: OpenSesame Intermediate Tutorial

If you have a computer please bring it to class! You will implement our experiment in the OpenSesame open source experiment builder software. Meanwhile, we will conduct data collection in class. Our emphasis will be on practical considerations in data collection such as calibration, lighting, etc. Hopefully we’ll run into lots of instructive problems.

July 24th: Data collection continues.

Reading: TBD

We will continue to collect data and work on the OpenSesame implementation of our experiment.

July 27th: Visualizing eye tracking data

Readings: Barr 2008 (optional: Mirman et al. 2008)

Finally, we turn our attention to the analysis of eye tracking data. The reading focuses primarily on statistical analysis, but much of our time in class will involve data visualization as well.

July 31st: Statistical analysis

Readings: Winter & Wieling (2016)

Much of the strength, as you now know, of eye tracking is the ability to investigate the time course of linguistic processing. Today we will discuss Growth Curve Analysis as a technique for understanding change over time.

Students with Disabilities

If you have a disability that affects how you will need to learn in this course, please discuss this with us, ideally with Kevin on day 1, but you should feel free to approach either of us.
Academic misconduct

Please see the (LSA’s Ethics statement) and (Sexual Harassment statement). For this course, study groups are encouraged, but you are **not** allowed to write up your homework together. If you work with a study group, please make a note on the top of your homework stating who you studied with.

Conduct in class

We are all here to learn. Please turn cell phones to silent when in class. Please do not use electronic devices in class other than for class-related purposes or emergencies. Everyone is required to treat others in class with respect. Disruptive behavior is prohibited.