

LAB MANUAL FOR EMAC LAB

2018

1 Getting Started in Lab	4
1.1 Introduction	4
1.2 Research Assistant Status	4
1.2.1 Directed Study (PSY 4913; 1-3 credits)	5
1.2.2 Advanced Undergraduate Research Experience (IDS 4914; 0 credits)	5
1.2.3 Volunteer	5
1.3 Access to Lab	5
1.3.1 Key	5
1.3.2 Google Drive	5
1.3.3 P-drive	6
1.3.3.1 Mapping the p-drive on a USF computer (typically you can skip this)	6
1.3.3.2 Remote Access to p-drive from home	6
1.3.4 Lab Computers	8
1.4 Contacts	8
1.4.1 Contact List	8
1.4.2 Listserv Email	8
1.4.3 Group Me	9
1.5 Accounts you need	9
1.5.1 SONA	9
1.5.2 Google	9
1.5.3 Evernote	9
1.5.4 Collaborative Institutional Training Initiative (CITI)	9
1.5.5 Academic Regulations Committee (ARC)	10
1.5.6 Qualtrics	11
2 Starting a new Experiment	11
2.1 Literature Search	11
2.2 IRB approval	12
2.3 Creating Stimuli (Sentences)	12
2.3.1 The English Lexicon Project (ELP)	12
2.3.2 Latent Semantic Analysis (LSA)	12
2.3.3 The Macroscope: A tool for examining the historical structure of language	13
2.4 Norming Stimuli	13
3 Programming an Experiment	13
3.1 Experiment Builder	13
3.1.1 Getting Help	13

3.1.2	Creating your new project in EB	13
3.1.3	Test Running the Experiment	14
3.1.4	Deploying the Final Experiment	14
3.2	Google Forms	14
3.3	Qualtrics	14
3.3.1	Getting Help	14
3.3.2	Creating a Qualtrics Survey & Helpful Hints	15
3.3.3	How to Import/Export Surveys to/from Qualtrics	15
3.3.4	Combining Qualtrics Surveys	15
3.3.5	Exporting Data from your Qualtrics Survey	15
3.3.6	Editing Count of Randomized Blocks in Qualtrics	16
3.4	Sona	17
3.4.1	Setting up a SONA Account	17
3.4.2	Using your SONA Account	17
3.4.3	Adding a Study to SONA	18
3.4.4	Changing IRB Status for SONA	19
3.4.5	Adding Timeslots on SONA & Google	19
3.4.6	Granting Credit on Sona	19
3.4.7	Special Circumstance (Granting/Assigning Credit Directly)	19
3.4.8	Linking SONA and Qualtrics	20
3.5	Amazon Mechanical Turk (mTURK)	20
3.6	R Shiny (Publishing Shinies.io)	21
3.7	EyeTrack (for Tracker A)	21
3.8	Python for programming an experiment	22
3.8.1	Getting Help	22
3.8.2	Adding Python to PATH	22
3.8.3	Creating a python script	22
3.8.3.1	Variables	23
3.8.3.2	Assignments	23
3.8.3.3	Comments	23
3.8.3.4	White Space or Code Blocks	23
3.8.3.5	Loops	23
3.8.4	Running python scripts from the command line	24
3.8.5	Running python scripts to check for errors and make edits from IDLE	24
4	Pilot Testing a Study	24
4.1	First time Tracker Training	24
4.2	Test running an experiment with EyeTrack on Tracker A	24
5	Getting Familiar with the Trackers & Assessments	25

5.1 Eyelink OS Screen Guide	25
5.2 Tracker A Specifications	26
5.3 Tracker C Specifications	26
5.4 Language Assessments	26
5.4.1 General Introduction for assessments	27
5.4.2 Digital Voice Recorder	27
6 Recruiting participants	27
7 Scheduling Participants for a study	30
8 Running Participants for online studies	30
9 Running Participants for in-lab eye tracking studies	30
9.1 Consent	30
9.2 Subject Logs	31
9.3 Procedure	31
9.4 Calibration and Validation	31
9.5 Mouse Simulation for Tracker A	31
9.6 Disable Tracker Beeping	32
10 Saving Data/Backing up the Tracker Computers	32
11 Data Processing/Analysis	32
11.1 Google Sheets Life Hacks	32
11.2 Data Viewer	33
11.3 Eye Dry	33
11.4 SideEye	33
11.5 R Code	33
11.5.1 Downloading R	33
11.5.2 Getting Help	33
11.5.3 Getting Started	34
11.5.4 Installing Packages	34
11.5.5 General Cheat Sheet to functions & commands	34
11.5.6 tidyverse	34
11.5.7 ggplot	35
11.5.8 dplyr	36
11.5.9 glmer	36
11.5.10 purrr	36
11.5.11 R-markdown	36
11.5.12 R scripts for processing data	36
11.6 Bayesian Statistics	36

11.7 From Qualtrics to Google Forms	36
11.8 Python scripts for processing data	36
11.9 JMP	37
11.9.1 Getting Help	37
11.9.2 Downloading JMP	37
11.9.3 Using JMP	37
12 Audio Coding	37
12.1 How to Read a Spectrogram	37
12.2 Praat	37
13 Presenting Research	38
13.1 Posters	38
13.2 Talks	38
13.3 Conferences	38

1 Getting Started in Lab

1.1 Introduction

- Read lab [policies](#) to familiarize yourself with the expectations and commitments to lab.
- Read the appropriate semester syllabus for a full list of readings and lab meetings scheduled.
- Check the evernote notebook entitled “Procedures for new RAs” for additional help and information.
- For an overview of ongoing lab studies and their associated personnel click [here](#).
- Check the EMaC lab [website](#).

1.2 Research Assistant Status

It is preferable that you officially sign up to be a research assistant in the lab. There are many ways to do so (see below) and if none of these options work for you, talk to Dr. Schotter to arrange a mutually beneficial alternative. Directed Study generates a course evaluation at the end of the semester. Please fill this out -- evals are the **ONLY** metric that the university uses to evaluate Dr. Schotter's teaching performance, which influences whether the university continues to employ her. You will also have the opportunity to make comments - people do read them. If you are not enrolled in Directed Study but would still like to provide an evaluation, you can fill out an Instructor Comment Form.pdf and submit it to the CNS Area Director (Dr. Joe Vandello).

1.2.1 Directed Study (PSY 4913; 1-3 credits)

Undergraduate students can sign up for course credit through Directed Study. You must go to the Psychology Advising office to get a permit for this and they will check with Dr. Schotter for approval (give her a heads up before you go to the advising office so she knows to expect an email from them).

1.2.2 Advanced Undergraduate Research Experience (IDS 4914; 0 credits)

Under some circumstances, taking additional credits can be complicated for transcript or financial reasons. In this case, you can enroll in a 0-credit option through independent study. Additionally, students doing an honors thesis through the Honors College may sign up for this option. Make sure to discuss this option with Dr. Schotter and to ensure that you have enough time to dedicate to the lab.

1.2.3 Volunteer

Under very special circumstances, students may work in the lab with no official transcript record of such work (e.g., recent graduates). Make sure to discuss your commitment to the lab with Dr. Schotter.

1.3 Access to Lab

1.3.1 Key

You will need to be given access to the physical lab (i.e., a key), the building for after-hours and weekend use (i.e., card swipe authorization), and the lab's network drive (i.e., the "P drive"). Dr. Schotter will [request access](#) for you. You will need to tell her you USF netID & USF email address. (If you are a USF employee, you will also need to provide your USF employee ID).

1.3.2 Google Drive

Most of the lab is organized through the lab's account in the Google universe (gmail, gcal, gdrive, etc.), ask Dr. Schotter for the password in person— memorize it and DO NOT save it on public computers. This account is also what is used for lab accounts in other services (e.g., Evernote, SR Research support forum, etc.).

The account will have a separate calendar for each lab member— fill in the times that you are consistently unavailable to facilitate finding meeting times throughout the semester/summer.

Username: emac.usf (emac.usf@gmail.com)

1.3.3 P-drive

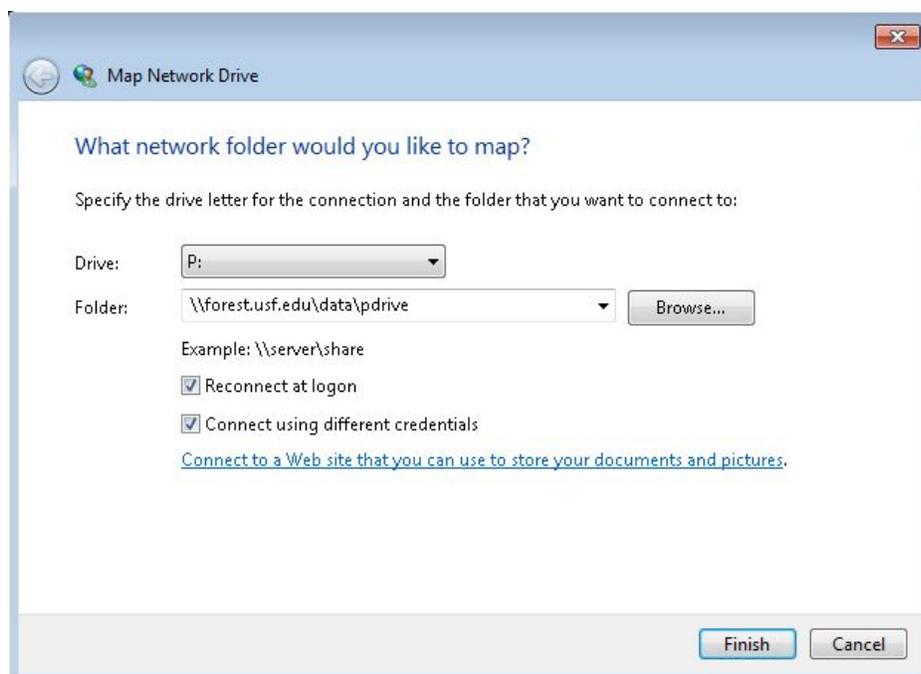
You should all be able to connect to the lab's P-drive (i.e., cloud storage for data and other sensitive files) from any workstation at USF (including the lab) as well as your own computers. On a USF desktop the pdrive should be listed in your file explorer under Computer (e.g. where you would locate a flash-drive).

1.3.3.1 Mapping the p-drive on a USF computer (typically you can skip this)

1. Right-click on Computer from Start Menu
2. Select Map Network Drive
3. In the Drive box, select an available letter (like P:)
4. In the Folder box, type in the path "\\forest.usf.edu\data\pdrive"
5. Make sure the Reconnect at Logon box is checked
6. Click Finish

1.3.3.2 Remote Access to p-drive from home

1. Download the [VPN](#) aka Junos Pulse Secure. (See VPN help for [Windows](#) or [Mac](#)).
2. Once the VPN has been downloaded, connect.
3. Then, for windows: open your computer file and go to "This PC"
 - a. For Mac: see alternate [instructions here](#).
4. Click on the tab at the top titled "computer"
5. Click "map network drive"
6. Insert the correct pathway for your computer.
 - a. Windows Path: \\forest.usf.edu\data\pdrive
 - b. Mac path: SMB://[usffs.forest.usf.edu/pdrive\\$](#)



c.

Drive:
P:

Folder:
\\forest.usf.edu\data\pdrive

Check "Reconnect at logon"

Check "Connect using different credentials"

d.

7. You will then log in with your credentials. In order to do so, type in; FOREST\your netID and for your password simply use your password associated with your USF netID login.



<p>User name: FOREST\<i>YourNetID</i></p> <p>Password: NetID password</p> <p>Click "Remember my credentials"</p>
--

*Note: Connecting to the VPN means your internet connection is treated as if you were on campus; you can temporarily disconnect at any time; but when connected behave accordingly.

1.3.4 Lab Computers

All of the computers in lab should have the following programs installed:

- Google Chrome
- Firefox (where the consent form is bookmarked)
- Experiment Builder
- Data Viewer
- Praat
- R (& R Studio)
- Python (& IDLE)
- Side-eye

(*if you cannot find or access these when you log-in to a lab computer let us know)

1.4 Contacts

1.4.1 Contact List

Please add your contact information to the [document](#), and refer to it if you ever need to directly message a lab member.

1.4.2 Listserv Email

Your email will be added to our ListServ account so that you receive emails sent by members of the lab. Dr. Schotter will add you— tell her which email you prefer to use. If you want to send emails to the list use emaclab@listserv.usf.edu and note that if you reply to a message it replies to the ENTIRE LIST.

1.4.3 Group Me

Group me is the most used group chat for this lab. For a quick response, message anyone on there. To initially get added, ask anyone in lab.

1.5 Accounts you need

Every lab member will need the following accounts (more information about these specific sites may be provided in other sections of the manual- e.g. for extensive sona information see the sona section of the manual)

1.5.1 SONA

<https://usf.sona-systems.com/>

You will need a separate sona researcher account from your participant account. We can request one for you. Once you receive an email to activate the account, follow the link to create your NEW researcher account. You may be required to use separate emails and login information to differentiate between the two accounts. [See Sona Account Section](#)

1.5.2 Google

You will need your own gmail as well as access to the lab gmail: emac.usf@gmail.com

1.5.3 Evernote

<https://www.evernote.com/Login.action>

Use the password for emac.usf@gmail.com

1.5.4 Collaborative Institutional Training Initiative (CITI)

Training in the ethical conduct of research with human subjects. Follow the link below to create an account and take the course (1.5-2 hours, does not have to be in one sitting-- you can pause your progress and return). Once complete, send the certificates to Dr. Schotter, if you have already completed this before, send your original certificate (good for three years).

[CITI Program Certification](#)

1. when you go to the website, click on "register"
2. fill in "University of South Florida"
3. create a username and password
4. select the **social/behavioral investigator and key personnel** (stage: basic course).
5. **the course is free--if you are being asked to pay, you've done something wrong.

1.5.5 Academic Regulations Committee (ARC)

[ARC is the account for the IRB](#) at USF. You will need to be listed on the IRB protocol as a key personnel. You will need to register for an account, fill in your information, confirm completion of CITI training, and upload your current CV/resume. Once registered, let Dr. Schotter know and she will send you an invitation to participate— you must agree to participate and an amendment must be approved before you can start collecting data.

[ARC Account Registration](#)

1. Click on “register here”
2. Fill in your information (your role will be “study staff”)
3. Once it has been approved by the ARC staff you will get an email confirmation
4. Let Dr. Schotter know when this happens— she will make an amendment to add you to the study staff
5. You will receive an email from ARC (after Dr. Schotter starts the amendment) to agree to participate in the study. In the email follow the link with the Project number, click it. Log in to ARC. You will see an Amendment, click it. On the left side of the screen you will then see an “Agree to Participate” Button. Once you click that you will be prompted to answer a few questions and upload a CV/resume.

If you ever need to update your certification and other personal information, view your IRB profile. Which you can see on the main screen:

The screenshot displays the USF University of South Florida ARC system interface. At the top, the USF logo and 'UNIVERSITY OF SOUTH FLORIDA' are visible, along with the 'arc' logo. A navigation bar includes links for Home, IRB, IACUC, COI, Biosafety, and ARC Updates. Below this, the user's name 'Page for Emily Johnson' is shown. The main content area is titled 'Page for Emily Johnson' and contains a welcome message: 'Welcome to your Personal Page, the starting point for all interactions with this site. Note the following:' followed by three bullet points: 'Inbox - Items appearing here require immediate action by you to move your submission to the next stage.', 'Monitor - Check the progress of your submissions using the other tabs. Items under this tab are pending your action.', and 'ARC Updates - View changes that are made to the ARC system that may affect your application.' Below the text is a tabbed interface with tabs for 'Inbox', 'IRB', 'IACUC', 'Approved Studies', 'Profile' (highlighted in yellow), and 'COI'. A message below the tabs states: 'Displays all items which require action by the study team. Click on links for more information.' At the bottom, there is a search filter section with a 'Filter by' dropdown set to 'ID', a search input field, and buttons for 'Go', 'Clear', and 'Advanced'.

Your profile contains information about you, your resume/CV, your training records, and when your certifications are set to expire.

To edit your CV/Biosketch or training/certification records follow the instructions below. Please upload these documents as Word or PDF files to ensure they can be reviewed by the IACUC & IRB Staff:

Uploading CV/Biosketch/Resume:

1. Click on your **Profile Link** above.
2. Click on **Edit Researcher Profile** on your *Profile* page.
3. On the second page, *Basic Profile Information*, click **Add** or **Upload Revision** to upload your current CV/Biosketch/Resume to question 2.4. Click on **OK**.
4. Make sure to click **Save** or **Continue** before exiting the page.

(For IRB Researchers: You will also be prompted to upload a CV when you *Agree to Participate* for a new study if one is not already attached.)

Uploading IACUC Training Records:

1. Click on your **Profile Link** above.
2. Click on **Edit Researcher Profile** on your *Profile* page.
3. Make sure you select **IACUC** on the first page. Continue through until you reach the *Animal Researcher Training & Experience* page.
4. Upload relevant Animal Experience and upload the appropriate IACUC required documents.
5. Make sure to click **Save** or **Continue** before exiting the page.

Uploading IRB Education Certificate:

Please note, the *IRB Certification Renewal Deadline* will not be updated until the IRB staff validates the dates of the certificate. The IRB is automatically notified when an education document is uploaded.

1. Click on your **Profile Link** above.
2. Click on the **Upload IRB Education Certificate** activity and complete the form.

OR

1. From a study's workspace, select **Upload Team Member Education Certification** under *My Activities*.
2. Select your name from the *Person* drop down, and select **Add** to upload your education.
3. Upload Education Certificate, and click **OK**.
4. The activity will be recorded in the study's *History* and the IRB education certificate will be displayed on your *Profile* tab.

1.5.6 Qualtrics

Login to [Qualtrics](#) through USF with your credentials. For more information on Qualtrics see [this section](#) of the manual.

2 Starting a new Experiment

2.1 Literature Search

The USF library [website](#) is a great tool. Login with your USF credentials for full access to this resource. Use the PsychInfo database or google scholar. Once you find relevant articles, download the pdf. Then, navigate to the google drive-> Background Literature folder. Please

save all of your files to the appropriate folder for your topic (if one does not exist, feel free to create a new folder with an informative title). Please name all articles you save in the following format: Author et al. 2018 Condensed Title (with the first author and date published). This will make it easier to find later.

2.2 IRB approval

The USF Institutional Review Board accessible from the [arc site](#).

[Here](#) is a sample of some of the options you may choose when submitting a study to the IRB. Note: this is a sample with answers relevant to a specific experiment, you may need to select different options depending on the nature of your study.

Some [helpful hints](#) for dealing with the IRB.

2.3 Creating Stimuli (Sentences)

Start by creating a google sheet in your experiment's folder on the drive. Use the following websites to generate/assess properties of target words you may want to use. (You can also check with other RAs who may have stimuli similar to the ones you require.) Be sure to make a column in your sheet to record each important property of the stimuli that are relevant (i.e. target word length, cloze probability, etc.)

Usually you will want to start with a list of words that meet your criteria; then, start another sheet to write possible sentences with those words.

2.3.1 The English Lexicon Project (ELP)

The ELP is a database published in 2007 that lists words with certain lexical properties; it can be used to [compute lists of words](#) with desired properties or it can [tell you the properties](#) of the words you input. The [website](#) is temperamental.

Citation for ELP:

Balota, D.A., Yap, M.J., Cortese, M.J., Hutchison, K.A., Kessler, B., Loftis, B., Neely, J.H., Nelson, D.L., Simpson, G.B., & Treiman, R. (2007). The English Lexicon Project. *Behavior Research Methods*, 39, 445-459.

2.3.2 Latent Semantic Analysis (LSA)

The [LSA](#) is a database that allows for comparisons of words for similarity. You can compare one (target) word to many other words [here](#) by selecting One-To-Many Comparison. Be sure to add a blank line between each word you wish to compare.

Citation for LSA:

Landauer, T. K., Foltz, P. W., & Laham, D. (1998). Introduction to Latent Semantic Analysis. *Discourse Processes*, 25, 259-284.

To code your resulting data from an experiment that uses LSA , see this [section](#).

2.3.3 The Macroscope: A tool for examining the historical structure of language

The [Macroscope](#) is a tool to interpret historical structure of language; it was designed to provide comprehensive analyses of historical meaning and requires little to no knowledge of linguistics. You can download the raw data of any figure as well.

Citation for the Macroscope:

Li, Y., Engelthaler, T., Siew, C. S., & Hills, T. T. (2019). The Macroscope: A tool for examining the historical structure of language. *Behavior Research Methods*, 1-14.

2.4 Norming Stimuli

Once you have sentences that you think will work for your eye tracking experiment, it is important to norm them with participants in your target population. The easiest way to do this is to get at least ten responses from people on Sona. Either make a google forms or a Qualtrics survey.

See the sections in the manual regarding [SONA](#), [Qualtrics](#), & [Google Forms](#), respectively.

3 Programming an Experiment

3.1 Experiment Builder

[Experiment Builder User Manual](#)

[Steps for downloading Experiment Builder on a new computer](#)

3.1.1 Getting Help

The Help in the Experiment Builder Program is searchable for key words and can be very helpful to check first, just press F1 in the program. There is an excellent support website for SR Research, which has forums where you can see what other peoples' problems and solutions were, post your own questions to get answers, etc. [SR-Research Support forum](#) (username is [emaclab](#) password is the same as the google account).

3.1.2 Creating your new project in EB

Follow the [step-by-step how-to](#) create an experiment with helpful hints.

[Link to a bunch of pre-made Experiments](#) on the SR Support Site with packages you can download (ready to use or edit).

3.1.3 Test Running the Experiment

1. Save the experiment
2. Go to “Preferences” -> “Eyelink” and select “Dummy Mode”
3. Go to “Experiment” -> “Test Run” and say yes to the message
4. Once it runs a test it will give you feedback in the form of errors or warning messages. Errors are crucial and will halt the test run meaning that you cannot tell what happens beyond the point of error. You must fix errors! On the other hand, *some* warning messages can be ignored.
5. Hint: if you don’t know what a message is trying to convey, check the help menu.

3.1.4 Deploying the Final Experiment

Once you have completed coding your experiment and all Test Runs come back good, it’s time to Deploy. Go to “Experiment” -> “Deploy” and save the file.

- Hint: Go to “Preferences” to double check that you have unclicked “Dummy Mode”. You cannot deploy and run the experiment if it saved as “Dummy Mode.”
- Hint: If you are editing the EB on a lab computer but not the tracker computer (which is where you really want to Deploy it) you should “Package” it, save it to a lab dongle. Transfer the file to the appropriate computer (the subject PC) and Deploy it there. Be sure to save the file to the desktop, do not run experiments off of the dongle!

Once you deploy the EB, it will create a new folder which will have a different icon for the EB. When you go to run an experiment that's the icon you will use. Also note that within your new deployed folder is where the results files will save.

3.2 Google Forms

See the [document](#) for a few quick hints.

3.3 Qualtrics

Login to [Qualtrics](#) with your USF credentials.

3.3.1 Getting Help

A lot of times you can google your specific problem, but [here](#) are some good resources.

3.3.2 Creating a Qualtrics Survey & Helpful Hints

See the instructions and hints [document](#).

3.3.3 How to Import/Export Surveys to/from Qualtrics

See the [instructions](#). If you format a [simple .TXT file](#) as described you can append the trials to an existing survey or create a new one (codes for preparing the file [here](#)). You can also use .QSF files to share survey formats without sending response data.

3.3.4 Combining Qualtrics Surveys

See the [instructions](#).

3.3.5 Exporting Data from your Qualtrics Survey

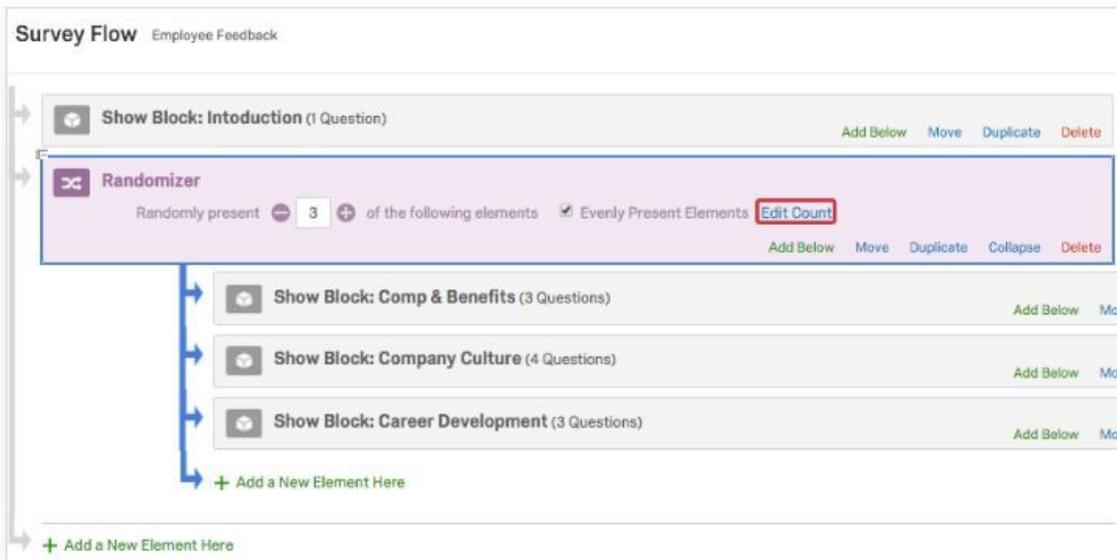
Once your participants have responded, you can go the Reports tab to view their answers on Qualtrics.

If you need to export their responses for analysis, go to “Data & Analysis” and select Export as CSV. This will save the information as a zip file. Locate the zip on your computer, unzip it and upload the unzipped version to your folder in the google drive. Open it with google sheets. Then, you can add a sheet, and “Transpose” the data. On your new sheet, type =TRANSPPOSE and go back to the original sheet and highlight everything. This will reorganize the horizontal responses into vertical format (which is visually easier and works for analysis like in R). [The function transpose does not exist in excel that’s why you do it in docs]. Then download it again to excel or CSV so that R can read it.

3.3.6 Editing Count of Randomized Blocks in Qualtrics

Editing Counts

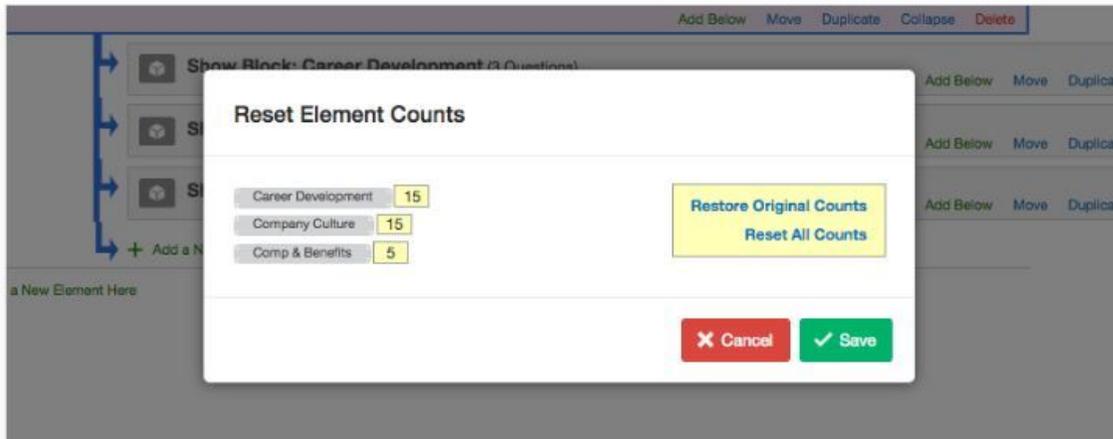
When Evenly Present Elements is selected, you can click **Edit Count** to view how many times each element has been displayed.



The screenshot displays the Qualtrics Survey Flow editor for an "Employee Feedback" survey. The flow starts with a "Show Block: Introduction (1 Question)" block. Below it is a "Randomizer" block, which is currently set to "Randomly present 3 of the following elements" and has the "Evenly Present Elements" checkbox checked. The "Edit Count" button is highlighted with a red box. Below the Randomizer block are three "Show Block" elements: "Show Block: Comp & Benefits (3 Questions)", "Show Block: Company Culture (4 Questions)", and "Show Block: Career Development (3 Questions)". Each of these blocks has an "Add Below" button. At the bottom of the flow, there is a "+ Add a New Element Here" button.

These numbers should be roughly the same, but you can override the counts if you need to temporarily give preference to a specific element. For example, if you set one question block to "5" and the others are set at "15", this first question block will be displayed 10 times in a row to "catch up" with the other blocks and ensure even presentation.

These numbers should be roughly the same, but you can override the counts if you need to temporarily give preference to a specific element. For example, if you set one question block to “5” and the others are set at “15”, this first question block will be displayed 10 times in a row to “catch up” with the other blocks and ensure even presentation.



You also have the option to reset all counts back to zero or to restore all counts to what they were before you changed them.

& see the Qualtrics [help page](#).

3.4 Sona

<https://usf.sona-systems.com/>

3.4.1 Setting up a SONA Account

Researchers and subjects are treated differently with separate accounts; everyone running experiments will need a separate login. If you do not have any account, we will request one for you by emailing the SONA staff. Once you get an email response with your account information please reset your password.

If you use the same email and password for both your participant & researcher accounts then it will allow you to switch between the two after the login screen.

3.4.2 Using your SONA Account

Once you have an account and have logged in, you will be brought to the main page of SONA which has the following tabs:

- My Studies: This will list all of the experiments on which you are specified as a researcher. This is where you will go to add timeslots and administer credit.
- All Studies: All studies that are listed to participants, in alphabetical order.
- Add New Study: Access the form to request the addition of an experiment to the system.

The screenshot shows the SONA system interface. At the top left is the USF University of South Florida logo. To the right is a banner image of a building with the word "Psychology" overlaid in white text on a green background. Below the banner is a dark green navigation bar with white icons and text for "Home", "My Studies", "All Studies", "Add New Study", and "Prescreen Results". The main content area is divided into three sections: "My Studies" with three options: "View and edit your studies", "View, add or edit timeslots", and "View uncredited timeslots" (with a green circle containing the number 0); "All Studies" with one option: "View all studies available to participants"; and "Add New Study" with one option: "Create a new study".

3.4.3 Adding a Study to SONA

Follow the [instructions](#).

3.4.4 Changing IRB Status for SONA

As IRBs only approve studies for a year at a time, you will need to renew to keep collecting data (on the arc website) and let SONA staff know when your studies renewal is approved.

1. Go to your SONA study.
2. Then click Study Menu -> Change Study Information.
3. Where it says IRB Approval Expiration, send a request to change this.
4. Upload the file with the new expiration date. (This is the “Continuing Approval” letter which you can find directly on the IRB website or in the IRB folder of the pdrive).
5. Hint: the Approval Code remains the same for continuing reviews. Only change the date.

IRB Approval Code	Pro 00029154  to change this
IRB Approval Expiration	February 28, 2018  to change this

3.4.5 Adding Timeslots on SONA & Google

See [instructions](#).

3.4.6 Granting Credit on Sona

Granting credit to participants on sona means editing that participant’s timeslot. See the [instructions](#).

3.4.7 Special Circumstance (Granting/Assigning Credit Directly)

If you wish to grant credit to a participant who, for whatever reason, did not sign up for a timeslot but participated in your study, you can assign them a slot yourself.

1. Add a timeslot to sona as you usually would (perhaps for an obscure time so no real participant signs up for it while you’re doing this).
2. Click “Modify” on the timeslot

All Sign-Ups Uncredited Sign-Ups

Listed below are all the participants who have signed up for this timeslot. If you would like to grant or revoke credit, simply choose the desired option next to each participant. If for some reason you need to cancel a sign-up, you can click the Cancel link next to the sign-up you would like to cancel. A sign-up must be in "No Action Taken" status before it can be cancelled. Comments will be visible to participants.

You may grant Points ranging from 0 to 2 Points. The standard value in Points for this study is 1 Points

No participants have signed up for this timeslot.

Manual Sign-Up ★ Batch Credit Grant

You may sign up a specific participant for this timeslot, using the feature below. You may also sign up and immediately credit participants in bulk for this timeslot, using Batch Credit Grant.

Username Manual Sign-Up: Last Name Manual Sign-Up:

3. Search for the participant you wish to grant credit to and sign them up yourself.
4. Then “Modify” the updated timeslot to grant credit as you typically would.

3.4.8 Linking SONA and Qualtrics

Sona allows for linking to an external webpage to run an experiment online. Sophisticated survey-type studies can be created through qualtrics and you can set it up so that Sona automatically assigns credit if the subject completes the survey. See the [instructions](#). To test if the automatic credit granting works, follow these [instructions](#).

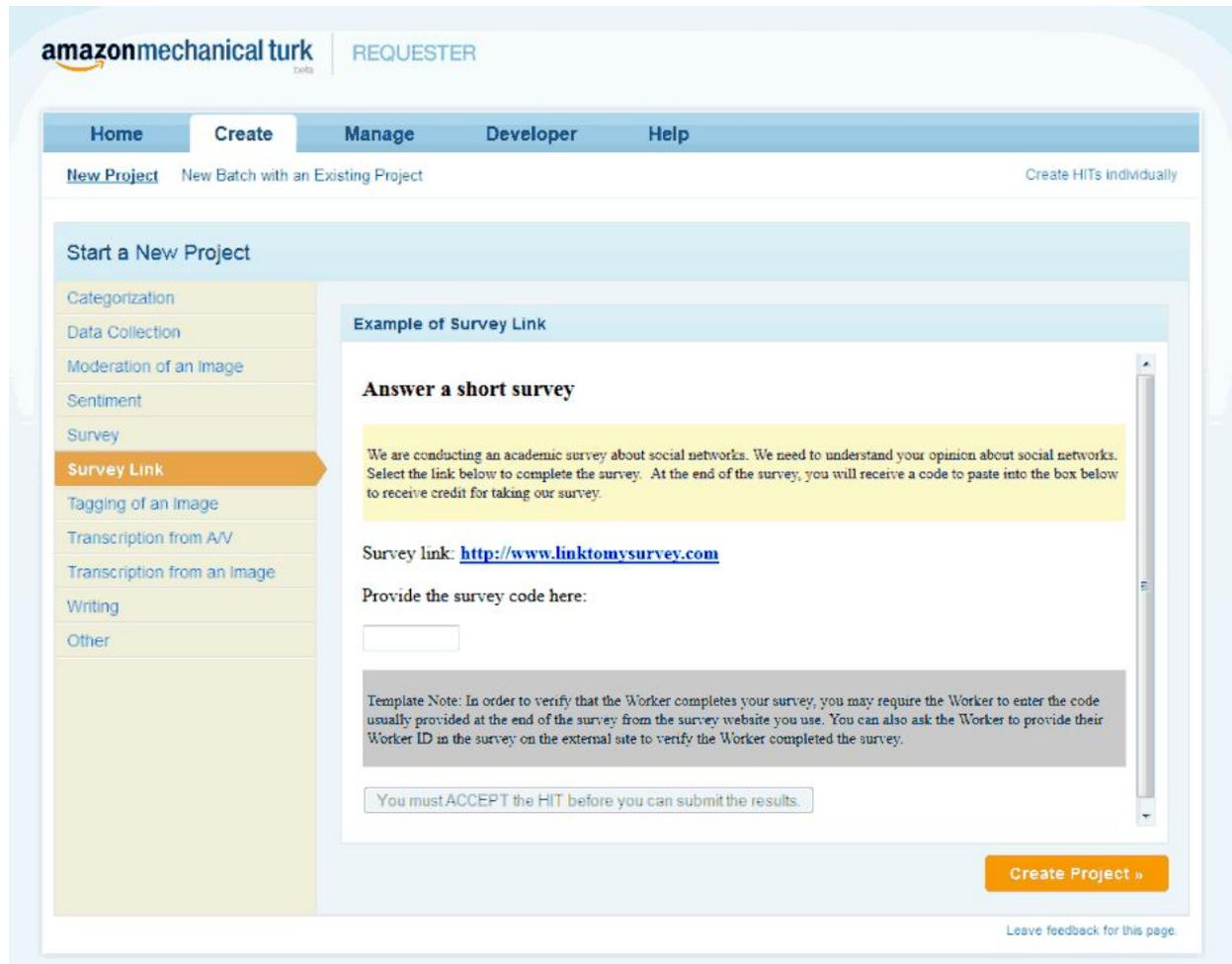
3.5 Amazon Mechanical Turk (mTURK)

For sentence norming and other repetitive off-line tasks, we can use mTURK an online program hosted by Amazon where workers/participants complete “hits” in exchange for \$1 an hour. For an [overview of mTURK see here](#). For [information on pricing/fees](#).

Use the EMaC lab’s Amazon account.

You can [write html code](#) to structure your hit or,

You can link mTURKers to your Qualtrics survey by adding just two lines on your hit: a survey link and an input box for them to respond with a custom survey code generated by Qualtrics. Follow these [instructions](#). See below:



3.6 R Shiny (Publishing Shinyes.io)

[Cheat sheet](#) for working with R shinies

[How to publish your completed shiny on shinyapps.io](#)

3.7 EyeTrack (for Tracker A)

The Eyetrack program reads a .script file that is a text file with specific formatting. The most efficient way to create this file is to turn a stimulus file into a formatted file with a Python script.

UMass [EyeTrack Manual located here](#).

3.8 Python for programming an experiment

3.8.1 Getting Help

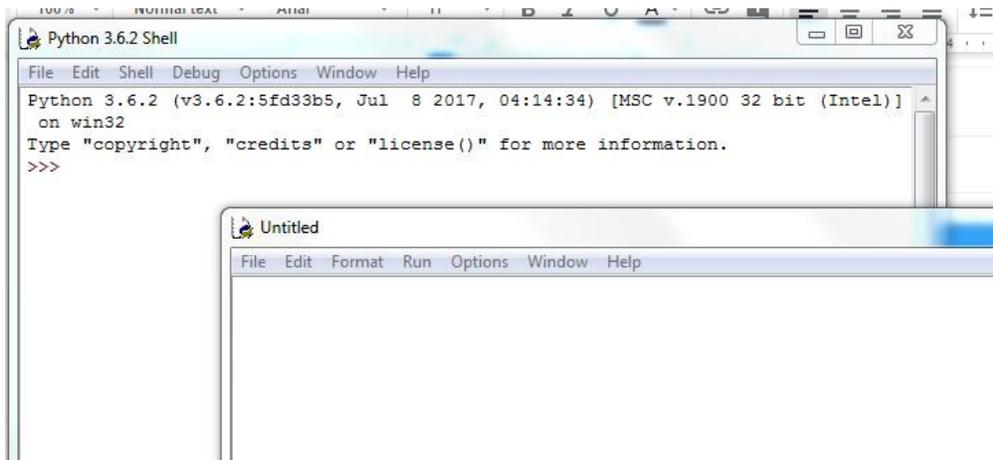
- <http://pythontutor.com/> allows you to edit code and chat with other users. Anyone you allow in your chat room can edit with you. It's like the google docs of coding!
- In lab we have Donaldson's *Visual Quickstart Guide to Python (Second Edition)*
 - Part of his third edition is available as a pdf [here](#) & on the google drive.
- Google offers class in python [here](#).
- You can check the forums & FAQ page [here](#).
- In python, type help() at a prompt

3.8.2 Adding Python to PATH

In order to run Python on the lab computers you need to add it to the PATH (i.e., where the computer looks for files and programs). You will only need to do this once, the first time you want to use python and then you can just run it like you normally would from then on. See the [instructions](#).

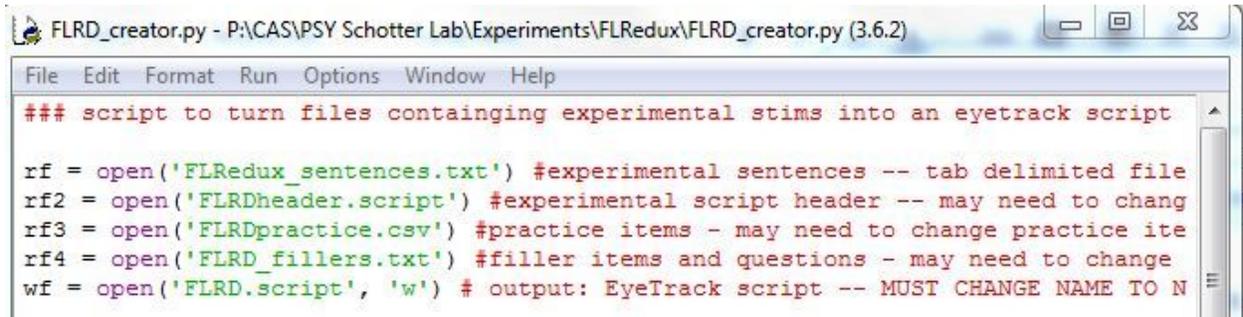
3.8.3 Creating a python script

1. Launch IDLE
2. File-> New File



3. This fresh window is where you can type and edit code.
4. Remember to save and name it.
 - a. Hint: It should now be a .py file. This contains your "source code" so it's known as your "source file".

5. Start your script by pointing it to which files to read. Create a variable (in the below picture we create rf1), assign it with the equal sign, tell it to “open” the appropriate file name.
6. Hint: the name you tell python must be the exact name of the file in your computer, rename it if you must.



```

FLRD_creator.py - P:\CAS\PSY Schotter Lab\Experiments\FLRedux\FLRD_creator.py (3.6.2)
File Edit Format Run Options Window Help
### script to turn files containing experimental stims into an eyetrack script

rf = open('FLRedux_sentences.txt') #experimental sentences -- tab delimited file
rf2 = open('FLRDheader.script') #experimental script header -- may need to chang
rf3 = open('FLRDpractice.csv') #practice items - may need to change practice ite
rf4 = open('FLRD_fillers.txt') #filler items and questions - may need to change
wf = open('FLRD.script', 'w') # output: EyeTrack script -- MUST CHANGE NAME TO N

```

7. & tell Python to write your output to a file using the w function.

3.8.3.1 Variables

- Variable names must only be composed of numbers, letters, or underscores (no spaces or special characters allowed) but the first character can't be a number
- Case sensitive
- Don't use Python's keywords/function words in your variable names (you'll confuse python!)

3.8.3.2 Assignments

Similar to R code, you must create variables and define them. i.e. `x = 5` or `var_1 = cat`
 This takes whatever is on the left side of the equal sign (e.g. `x`) and creates a variable with this name; it also takes what is on the right side of the equals and makes that the value of your new variable. Thus, in this example you create the variable `x` and assign it the value of five.

3.8.3.3 Comments

Use a hashtag `#` or several to include comments to yourself that Python will ignore.

3.8.3.4 White Space or Code Blocks

In Python, the white space and indentations are informative to the program. Anything indented under another line will run within that “block”. Everything in a block must be indented by the same amount (commonly four spaces). This is not just an aesthetic choice.

3.8.3.5 Loops

To repeatedly execute a block of code, use a loop.

3.8.4 Running python scripts from the command line

1. Go to the start menu and click on the folder **Accessories**
2. Click on **Command Prompt**
3. Navigate to the folder with your python script and files
 - a. To go to a different drive (e.g., P drive, C drive) type the letter and colon (e.g., **P:**) and then hit **Enter**
 - b. To change folders within a drive type **cd** and then your file path (e.g., **cd CAS\PSY Schotter Lab\Experiments\EyeTrack Programming**)
 - i. You can find the exact path to copy and paste if you right click on a file in the windows explorer and click **Properties**. The path will be in the **Location** field
4. Type **python** and the name of your python script (e.g., **python EXP_creator.py**) and hit **Enter**
5. If there are any errors they will show up in the command prompt window

3.8.5 Running python scripts to check for errors and make edits from IDLE

1. Make sure all of your files are together in the same folder.
2. Right click on your Python file in the file explorer window. Edit with IDLE (if there are multiple Python's downloaded to your computer, i.e. version 2.7 & 3.6, choose the appropriate one).
3. It will open a new window which shows you the code.
4. Press F5 on the keyboard to run it and see any errors
5. Once you run the Python file it will output a .Script file. That .script file can be used by EyeTrack to run experiments on Tracker A.

4 Pilot Testing a Study

A lot of stimulus creation, cloze tasks, norming, and other Qualtrics surveys bring you pilot data.

4.1 First time Tracker Training

If you're new to lab, you should complete this [check-list of training/practicing](#) before you're ready to run participants on your own.

4.2 Test running an experiment with EyeTrack on Tracker A

1. Prepare your Python Script

2. Save it on a dongle
3. On the Subject PC Desktop, open the Liz folder->EMaC folder. Within that, create a new folder entitled your experiment.
4. Move your .script file from the dongle to this folder.
5. Double click the EyeTrack.exe application on the Desktop.
6. Go to File->Open
7. Once you open your script there should be three sections to the window.
8. Select one of the Trials you want to view from the middle section of the window.
9. Click Change in the middle section underneath. It will open two new windows where you can preview the experiment display screen.
10. Hint: For any study with a gaze box to initiate the trial, you will see a green square on the left of the screen (this is the black gaze box you are used to).
11. The squares surrounding each letter or word (depending on your choice) mark interest areas.
12. For studies with display changes, you will see a green vertical line running across the screen at the point where the gaze will trigger the screen change. Hint: check that for each display change trial, the line should be at the end of the pretarget word (before the space before the target word).
 - a. If any of the lines are in the wrong place, go back to your data source and check that you calculated the number of characters from the beginning of the sentence to the end of the pretarget word correctly. Make necessary changes to the sentence or calculation; re-run the Python script, add the new script to the Subject PC. Check again.
 - b. Hint: you can flip back and forth between the two sentence versions by navigating from the second window.
13. Check that the preview screen clearly shows the gaze box, interest areas, and that all information from the stimulus fits on one line without running off the screen.
14. Finally, on the main eye track window, click Experiment->Validate. The program will check for any glaring errors (such as missing data).
 - a. When it's done a new window will declare "Experiment Validated Successfully"

5 Getting Familiar with the Trackers & Assessments

5.1 Eyelink OS Screen Guide

See the [guide](#).

5.2 Tracker A Specifications

The computer screen used for Tracker A is approximately 40.5 cm wide by 30.5 cm tall. It has a screen resolution of 1024 x 768 pixels.

To write a materials/apparatus section of a paper use the following format: Eye movements were recorded with an SR Research Ltd. Eyelink 1000 eye tracker (sampling rate of 1000 Hz) in a tower setup that restrained head movements with forehead and chin rests. Viewing was binocular, but only the eye movements of the right eye were recorded. Subjects were seated approximately 60 cm away from an HP p1230 CRT monitor with a screen resolution of 1024 x 768 pixels and a refresh rate of 150 Hz. Text was displayed in black, 14-point, fixed-width Courier New font on a white background. Sentences were always displayed in the vertical center of the screen in one line of text, and 3.8 characters subtended 1° of visual angle. Display changes were completed, on average, within 4 ms of the tracker detecting a saccade crossing the invisible boundary, which was located at the beginning of the space preceding the target word.

5.3 Tracker C Specifications

The computer screen used for Tracker C is approximately 40 cm wide by 30.5 cm tall. It has a screen resolution of 1024 x 768 pixels.

To write a materials/apparatus section of a paper use the following format: Eye movements were recorded with an SR Research Ltd. Eyelink 1000plus eye tracker (sampling rate of 500 Hz) in remote setup. Head movements were not restrained but rather measured via a sticker placed on the participant's forehead that measured and corrected for them. Viewing was binocular, but only the eye movements of the right eye were recorded. Subjects were seated approximately 60 cm away from an HP p1230 CRT monitor with a screen resolution of 1024 x 768 pixels and a refresh rate of 150 Hz.

5.4 Language Assessments

See the [scoring and instructions document](#).

For additional help, reference [this powerpoint](#).

Print a packet of the assessments you will need for each participant (these are available on the pdrive, P:\CAS\PSY Schotter Lab\Experiments\Assessments\All Assessment Docs).

5.4.1 General Introduction for assessments

“This part of the experiment will consist of a series of exercises to assess your vocabulary, creativity, spelling, comprehension, and other language related abilities.

These assessments are meant to capture a wide range of variability in performance so some items might be very difficult. This is necessary to produce some errors even among highly intelligent, college-educated individuals, so please try your best but don't be surprised if there are some words or answers that you do not know.

Also, for many of these assessments there is no single correct answer so just give the best response you can think of. And of course, we will not share the results of your individual performance with anyone, so try your best but do not worry about how you feel you did.

Any questions? Okay, let's begin.”

5.4.2 Digital Voice Recorder

The equipment we use to record sessions of language assessments has more information available online

<https://www.olympusamericaprodictation.com/product-category/portable-dictation/>

6 Recruiting participants

If you are recruiting participants outside of the SONA system, you should contact them via the lab email (emac.usf@gmail.com) & all of your recruitment fliers should indicate this. If you're running a study with very specific inclusion criteria it's also good to tell people to use a certain subject line in their email (e.g. “music study” for exsightsing) so that they are directed to the right research assistant.

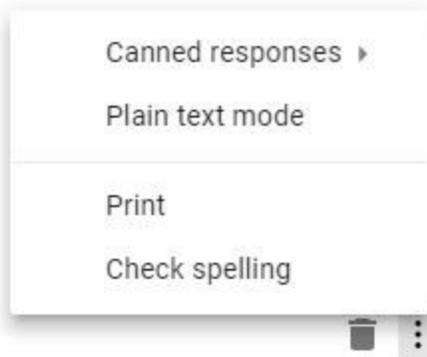
More generally, all reading studies in this lab have the same inclusion criteria (i.e. normal vision, native english speakers, etc.). To screen potential participants in a uniform fashion, ask anyone who emails the lab to respond to a brief series of demographic questions. These include:

1. What is your name?
2. How old are you?
3. Are you a native English speaker?
4. What other languages do you speak/read?
5. Have you ever been diagnosed with a reading, speech, or learning disorder?
6. Do you have normal or corrected-to-normal vision? (can you read a computer screen comfortably)
7. Do you wear glasses or contacts (hard or soft)? (Please list all)
8. Are you able to come to the lab (PCD 3122 on the USF Tampa Campus)?
9. When is the best time for you to come to the lab in the next week or two?

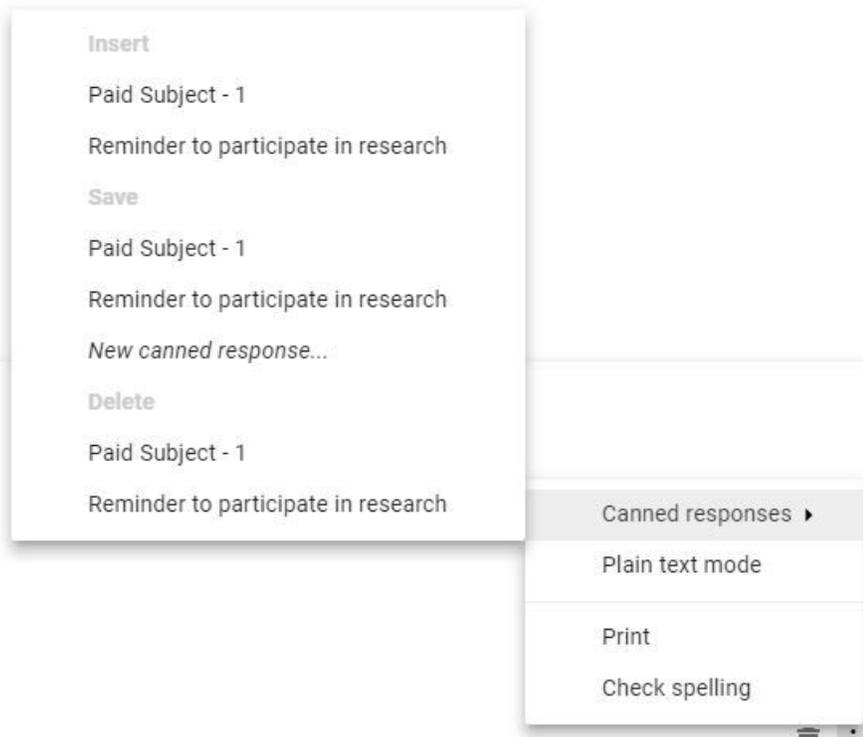
10. What is the best phone number to contact you?
11. What is the best email address to contact you, SONA email address if applicable?
12. Are you a USF employee?

In the emac gmail account, we have a saved response format that you can easily send to anyone. To do so,

1. Login to emac.usf@gmail.com
2. Select an email to respond to & click reply
3. In the bottom right corner of the template, open the menu as shown below



4. click "canned responses"
5. And under the "Insert" tab, select "Paid Subject"



6. It will automatically insert the appropriate questions

Hello,
 Thank you for contacting the EMaC Lab to participate in one of our experiments. First, we need to determine your eligibility and then we can schedule a time for you to come in. We have several studies, so not all of these questions are disqualifying for a given experiment. If you have a USF SONA account, please provide information consistent with your account information.
 Please let us know if you have any other questions.
 Best,
 EMaC Lab

1. What is your name?
2. How old are you?
3. Are you a native English speaker?
4. What other languages do you speak/read?
5. Have you ever been diagnosed with a reading, speech, or learning disorder?
6. Do you have normal or corrected-to-normal vision? (can you read a computer screen comfortably)
7. Do you wear glasses or contacts (hard or soft)? (Please list all)
8. Are you able to come to the lab (PCD 3122 on the USF Tampa Campus)?
9. When is the best time for you to come to the lab in the next week or two?
10. What is the best phone number to contact you?
11. What is the best email address to contact you, SONA email address if applicable?
12. Are you a USF employee?

Sans Serif | Bold | Italic | Underline | Text Color | Background Color | Bulleted List | Numbered List | Indent | Decrease Indent | Undo | Redo

Send

7. And you can modify it as you see fit before sending

Subjects recruited outside of sona must be compensated for their participation via cash. Make sure to fill out the payment log and recount the cash reserves after you finish running participants with the door locked.

If the paid participant is a USF employee, you will need them to fill out an [Employee Payment Form](#) as well which can be found in the third drawer of the filing cabinet; this will go towards their federal income tax. The PI (Liz) is the requestor, you need only fill out the middle section, with as much Employee Information as possible, they can login to GEMs on the lab computer if they can't remember their GEMs ID (note that this is a code of numbers, it is not their netID).

7 Scheduling Participants for a study

1. For in-lab studies, always check the lab google calendar for availability.
2. Open timeslots on SONA. See how [here](#).
 - a. Hint: For online studies you will not need to specify a location and you can run multiple people for the same "time".
3. For in-lab studies, be sure to reserve the time on the google calendar (specifically under the Tracker A or C room).
4. For online studies, open as many timeslots as you expect you will need (you can always add additional ones later).

8 Running Participants for online studies

Once you open the appropriate number of timeslots on SONA, check back in occasionally to see progress and ensure participants are getting credit. Also check the Reports on Qualtrics to make sure information is being gathered correctly. These are all things you should work out in a pilot test but be thorough.

9 Running Participants for in-lab eye tracking studies

9.1 Consent

In EMaC lab, we have different consent forms which specify different parameters, IRB numbers, and compensation rates. Always be sure you are giving participants the appropriate consent form for your study. A complete list of approved consent forms is located [here](#). It is also linked on our website at <https://emac-usf.com/resources/> for your convenience.

We suggest you bookmark the consent form you plan to use the most often on the computers for quick/easy access when subjects arrive. To do so, log on to the lab computers, use your USF NetID and password. Add FireFox to the Pinned programs bar at the bottom of the desktop (you will only need to do this once—the first time). Set-up Firefox home screen to be the you will use most often (e.g. the EMaC in-lab Sona participation [Consent Form](#)). Make sure it is in the "preview" mode (to do this click the eyeball icon at the top).

9.2 Subject Logs

In lab there is a binder on the bookshelf labeled "Running Log." Experiments are alphabetically ordered.

Locate the coversheet of the appropriate experiment and its associated log/debriefing form. You can remove those items from the binder and bring them into the eye track room with you but leave the binder out for other RAs to access. On the log you will be prompted to list the coded number specific to the participant, which RA is running the experiment, etc.

Make sure you base naming and condition on the coding scheme found on the cover-sheet. Be sure to take note of anything odd that happens during the experiment and record participants' responses to the debriefing questions at the end.

If you need to print a new log, there is a template in the Google Drive Admin folder. Download it, edit it for your study and save the edited form to your experimental specific folder on the drive.

9.3 Procedure

1. Check the person's name to ensure that they are here for the correct study.
2. Have them read over the consent form on the computer.
3. Record information in the subject log.
4. See the specific instructions in the [how-to guide](#). Additional instructions available in [evernote](#).

9.4 Calibration and Validation

See the [hints/instructions](#) for calibrating. See [troubleshooting](#) Q&A. Or check Evernote.

9.5 Mouse Simulation for Tracker A

If you ever need to end an experiment early without completing all trials, you can use the mouse simulation to exit the experiment. See the [instructions](#).

9.6 Disable Tracker Beeping

Occasionally, Tracker A (after an update or hard-drive change) will have an annoying beep, to rectify the issue try these steps.

10 Saving Data/Backing up the Tracker Computers

We have external hard-drives to backup information from the display computers. See the [company's manual](#) for info on backups for Windows 7 & newer. The display computer has to be logged-in and not asleep in order to execute the backup.

For Windows XP you may need to manually backup data, see [here](#). In the event that you need to schedule a task that you can write the commands, see [how](#) to use the command prompt. And [xcopy](#) links

- 1 Open the Backup Utility on your computer by pressing the "Start" button, clicking on "All Programs," selecting "Accessories," clicking "System Tools" and clicking "Backup."
- 2 Click the "Next" button and then select what type of backup you want to make. If you wish to back up all of the files on the computer (the recommended operation), select "All information on this computer" and then click the "Next" button.
- 3 Click the "Browse" button and then select your external hard drive. Click the "OK" button and then click the "Next" button.
- 4 Click on the "Finish" button to initiate the backup process.

For Programs that require the computer to be awake in order to run, you can use the Task Scheduler to tell the computer to wake up at certain times following these [instructions](#) for Windows 7 or [these for Windows XP](#).

11 Data Processing/Analysis

11.1 Google Sheets Life Hacks

See the [list](#) of life hacks and formula breakdowns. Feel free to add your own knowledge to the list. Or google the problem.

11.2 Data Viewer

[Data Viewer User Manual](#)

Follow these general [guidelines](#) for creating reports of your eye tracking (edf files from Tracker C) in data viewer.

11.3 Eye Dry

To get data from Tracker A from an ASC to a da1 to an IXS to a readable file follow these [instructions](#). But first drag and drop your EDF files (that come straight off the trackers) over the edf2asc.exe application to convert edf to asc. You can find this application on the pdrive in the software and data processing folders. Hint: You don't need to actually open it, just drag the file over the application and release it.

11.4 SideEye

A new program in development to potentially shrink the process with eye dry down to one step executable on python.

Check github “side-eye” by bdiffon

For a how-to guide see [here](#). Or [here](#).

[Here](#) is how to get asc to da1 which can be processed in SideEye.

11.5 R Code

<https://www.r-project.org/>

11.5.1 Downloading R

<https://cran.r-project.org/bin/windows/base/>

11.5.2 Getting Help

The book [R for Data Science by Hadley Wickam](#) provides excellent interactive, online tutorial with examples for tidying and visualizing data that you can follow along with.

[Lynda.com](#) has videos regarding data wrangling in tidyverse.

To log in to Lynda with USF credentials follow the [instructions](#), also available [here](#).

The book [Learning statistics with R: A tutorial for psychology students and other beginners by Daniel Navarro](#) is an online stats textbook with examples; also available [here](#). It covers more theoretical and statistical stuff than the Wickam book.

The emacs google drive also has a [folder](#) of R information.

11.5.3 Getting Started

See [this brief run down](#) to get yourself acquainted with R studio. See this [chart](#) of key codes.

Note that there are certain style conventions that allow for the easy sharing of code between coders; for a full guide of coding etiquette, see [Wickham’s post](#).

11.5.4 Installing Packages

Before you can use R successfully, you will need to install packages of functions to use. You can do this many ways.

- Type: `install.packages("")` with the name of the package in quotes, i.e. `install.packages("tidyverse")` then run this line by pressing `cntrl enter`.
- Or in the bottom right portion of R studio click "Packages" -> "Install", type the names of the packages in a list, & click "Install"
- Or at the top menu click "Tools" -> "Install Packages" and type the names of the desired packages

Once you download a package on a given computer you will need to call it in to the code by typing: `library()` with the package name, i.e. `library(tidyverse)`. You only need to install the package once but you need to call it via the library function at the start of any code you use it in.

Some common packages we use in this lab are "plyr" "tidyverse" & "lme4" (always load the plyr function before tidyverse to ensure that dplyr (within tidyverse) works properly. If it's your first time trying to install tidyverse and it's causing errors, first install "stringr").

11.5.5 General Cheat Sheet to functions & commands

See this general cheat [sheet](#) regarding a number of r functions. To download additional cheat sheets, see the rstudio [website](#).

11.5.6 tidyverse

R can now operate in tidyverse which makes data viewing much cleaner and the code simpler. Before starting your main R code, be sure to run the tidyverse Library by telling R: `library(tidyverse)`.

Hint: If you are using `ddply` (an automatic part of tidyverse) and `plyr`, you will actually need to load `library(plyr)` before `library(tidyverse)`.

Once you load your libraries, set your working directory:

```
setwd('P:/CAS/PSY Schotter Lab/Experiments/YOUR_EXPERIMENT_FOLDER')
```

Hint: macs and windows have slightly different paths

Hint: comments in R Script are written by putting hashtags in front of the text like this: `#comment` or `##comment`. In R studio they will turn green and R will know not to run this line as code.

Then set the path to the exact folder where your data files are stored. In this example, I have a folder of “ResultsFiles” within my experiment folder.

```
data_path <- "ResultsFiles"
```

Now pull in the data from that specific folder:

```
files <- dir(data_path, pattern = "*.txt")      # get file names
data <- data_frame(filename = files) %>%      # create a data frame
mutate(file_contents = map(filename,         # read files into
  ~ read_tsv(file.path(data_path, .)))      # a new data column
)
data <- unnest(data)                          #put the data back together
```

Hint: You can tell R to treat “Missing Data” as actually negligible by making it “NA”:

```
data[data=="MISSING_DATA"]<-NA
```

11.5.7 ggplot

See the [cheat-sheet](#) to ggplot2. It is used to make graphs.

Hint: As your plots get longer and more complicated, you can clean the code visually by separating each component with a + and then skipping to the next line.

```
117
118 ##### plot accuracy data for each person
119 (p.accuracy.bysubject<-ggplot(data.summary, aes(x = altprof, y = accuracy, colour = visual_field, shape= hearing_status)) +
120   geom_point(data= subset(data.summary, hearing_status=="H"), shape= 21) +
121   scale_colour_manual(values = c("green4","gold2"), labels = c("Left","Right")) +
122   stat_smooth(data = subset(data.summary, hearing_status=="H"), method = "lm", aes(group = visual_field, fill = visual_field)) +
123   scale_fill_manual(values = c("green4","gold2"), guide = FALSE) +
124   scale_x_continuous (limits = c(0.35,1.1), breaks = seq(0,1,1), labels=c(seq(0,1,.1), "Deaf")) +
125   scale_y_continuous (limits = c(0.3,1), breaks = seq(0,1,.1)) +
126   theme_bw() +
127   facet_grid(.~eccentricity) +
128   scale_shape_manual(values=c(17,21), labels = c("Deaf","Hearing")) +
129   stat_summary(data= subset(data.summary, hearing_status=="D"), fun.data="mean_se", shape= 17, show.legend = FALSE) +
130   labs(x = "Proficiency", y = "Accuracy", shape = "Hearing\nStatus", colour = "Visual\nField")
131 )
132
```

11.5.8 dplyr

See the [cheat-sheet](#) for dplyr. It is used for data transformation.

11.5.9 glmer

11.5.10 purrr

See the cheat [sheet](#) for purrr. It is used to apply functions.

11.5.11 R-markdown

R-Markdown allows you to run R-code and “knit” it together into a document(i.e. .pdf or .html) that can be easily referenced and shared. The knitted document is comprised of lines of actual R-code, the associated output of those lines when run, and any comments you choose to include.

As a reminder, follow Wickham’s [style conventions](#) to facilitate sharing with other coders.

See the quick [how-to](#).

See the cheat [sheet](#) graphics in the google drive.

11.5.12 R scripts for processing data

As a lab we have developed some R scripts to run certain analyses.

- IXS: processing IXS files, modify and use the “EXPProcessingIXS.R” script
- Survival analyses: modify and use the “SurvivalStuff.R” script

11.6 Bayesian Statistics

Unlike frequentist stats, you can use Bayes to find evidence to support the null hypothesis. For a brief introduction to Bayes Factors see [here](#).

For running Bayes in R, see [here](#) & [here](#).

11.7 From Qualtrics to Google Forms

For norming and cloze data you can export responses from Qualtrics to excel and upload them to google sheets to transpose pages and visualize data in pivot tables.

11.8 Python scripts for processing data

As a lab we have developed some python scripts to run certain analyses.

- LSA: to process LSA values from participant responses, follow the [instructions](#), use the LSATool.py script located in the Software folder of the pdrive.

- CNT: To create a CNT file that indicates the length of your regions of interest, follow the [instructions](#), and use the CreateCNT.py script located in the Software folder of the pdrive. It will prompt you to upload your stimulus set. (Hint: CNT files are needed to run Eyedry & Timdrop.)

11.9 JMP

11.9.1 Getting Help

Check the book *JMP Essentials: An Illustrated Guide for New Users (Second Edition)* by Curt Hinrichs and Chuck Boiler. There is a physical copy available in lab on the shelf.

ISBN: 978-1-61290-785-7

11.9.2 Downloading JMP

JMP has already been downloaded on the two lab computers but if you need to download it somewhere else check USF's [website](#).

The first time you go to use JMP on a lab computer you will need to provide it a license code. Find the JMP software and open it. When it prompts you for a license, go to the p drive -> software -> JMP -> Windows and select the file with a long name. Do not enter anything in the Administrator name fields. Just press OK. Now you should be able to open JMP.

11.9.3 Using JMP

See the [how-to document](#).

12 Audio Coding

12.1 How to Read a Spectrogram

See the [website](#) for spectrogram diagrams.

12.2 Praat

[Download Praat](#). For usage, see the [how-to document](#).

13 Presenting Research

13.1 Posters

Printing at the USF print shop can take 2-4 days. Email them at: to submit a poster or talk to them in their office on the first floor of the MSC.

Pro-copy on Fowler needs 24 hours advance notice to print and costs about \$56

13.2 Talks

13.3 Conferences

USF holds research expos every year including

- The PsychExpo (by the Psych Department/Vickey Phares)
- The OUR Research & Arts Colloquium (by the [Office of Undergraduate Research](#))
- Annual Florida Psycholinguistic Conference