

LAB MANUAL FOR EMAC LAB

2018

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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 your 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

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).

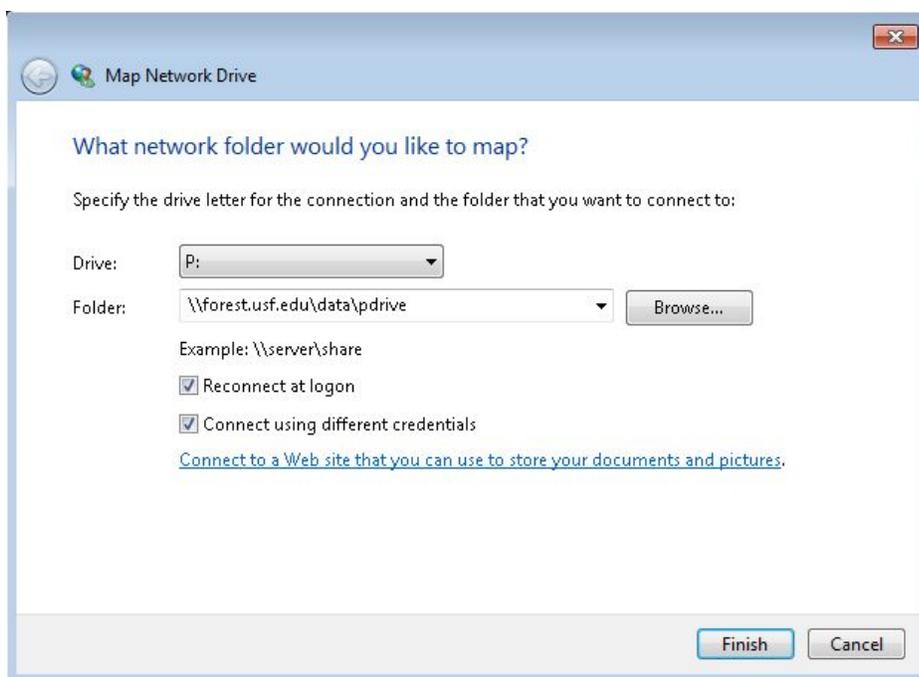
1.3.3.1 Mapping the p-drive on a USF computer (typically you can skip this)

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, open your computer file and go to "This PC"
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\\$](#)

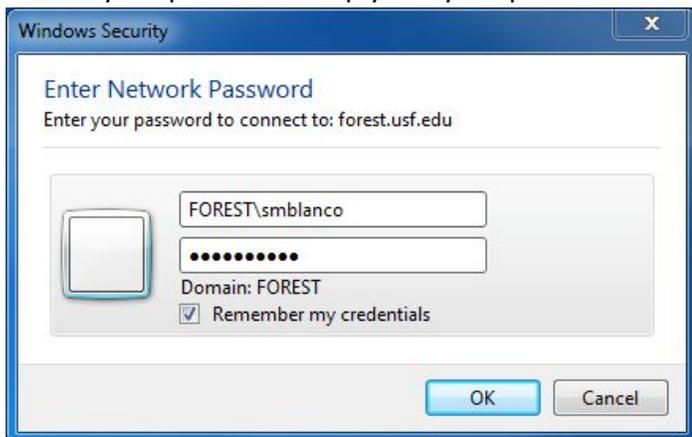


c.

| |
|---|
| Drive: P: |
| Folder: \\forest.usf.edu\data\pdrive |
| Check "Reconnect at logon" |
| Check "Connect using different credentials" |

d.

- 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.



User name:
FOREST*YourNetID*

Password:
NetID password

Click "Remember my credentials"

*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.

1.4 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 (this should be done automatically), 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, you will need to answer a few questions and upload a CV/resume

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.

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.

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](#)

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 emalab 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.

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](#).

3.3.4 Combining Surveys

See the [instructions](#).

3.3.5 Exporting Data from your Qualtrics Survey

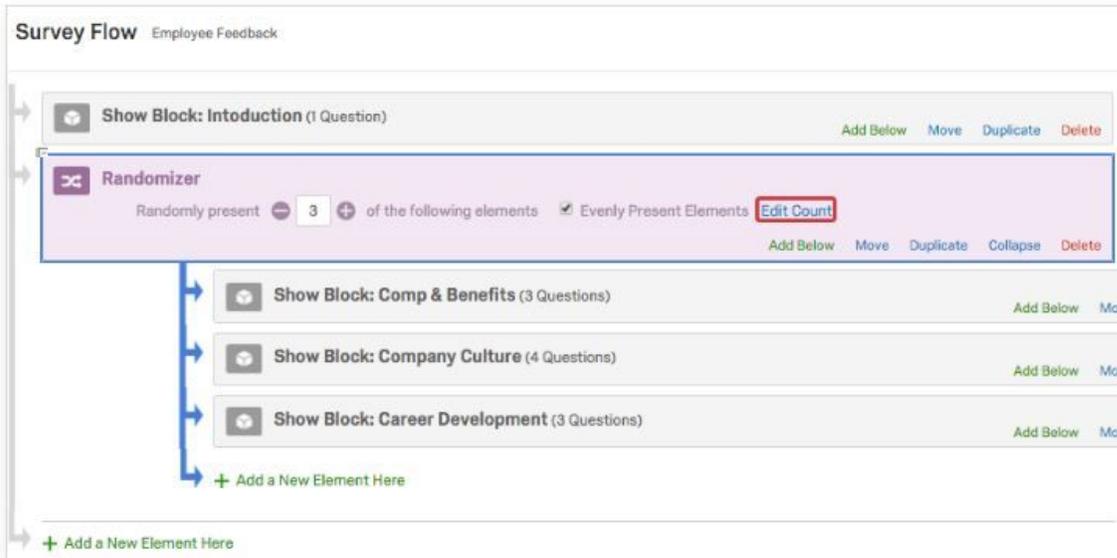
Once your participants have responded, you can go the Reports tab to view their answers on Qualtrics.

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 =TRANSPOSE 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

Editing Counts

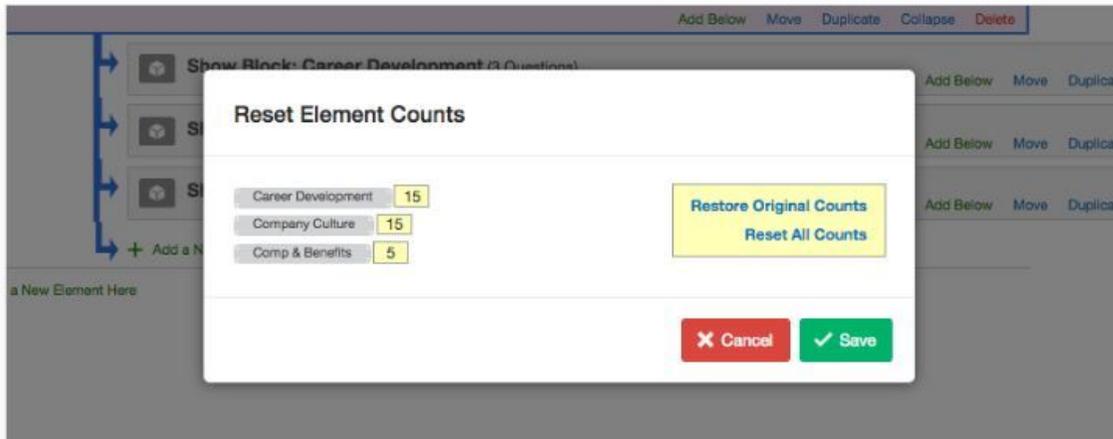
When Evenly Present Elements is selected, you can click **Edit Count** to view how many times each element has been displayed.



The screenshot displays the 'Survey Flow' interface for 'Employee Feedback'. It shows a sequence of blocks: 'Show Block: Introduction (1 Question)', a 'Randomizer' block, and three 'Show Block' items: 'Comp & Benefits (3 Questions)', 'Company Culture (4 Questions)', and 'Career Development (3 Questions)'. The 'Randomizer' block is highlighted in purple and contains the text 'Randomly present 3 of the following elements' and a checked 'Evenly Present Elements' option. An 'Edit Count' button is visible next to the 'Evenly Present Elements' option. The 'Edit Count' button is highlighted with a red box. Below the 'Randomizer' block, there are three 'Show Block' items, each with an 'Add Below' and 'Move' 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

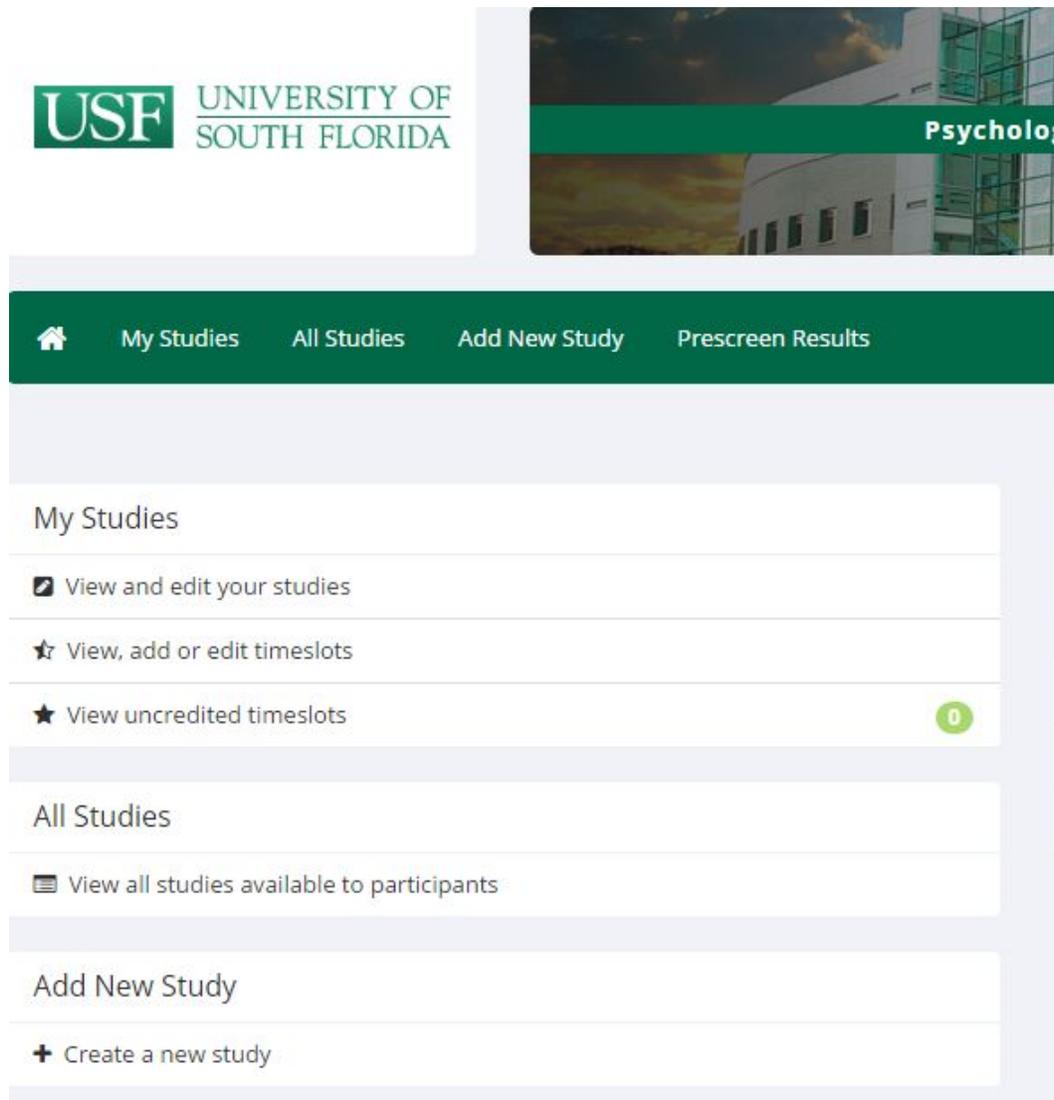
Researchers and subjects are treated differently with separate accounts; everyone running experiments will need a separate login. If you do not have any account, we will request one for you by emailing Tatyana. Once you get an email response with your account information please reset your password.

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.



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 Send a Request to change this |
| IRB Approval Expiration | February 28, 2018 Send a Request 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 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 EyeTrack

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.

3.6 Python

3.6.1 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](#).

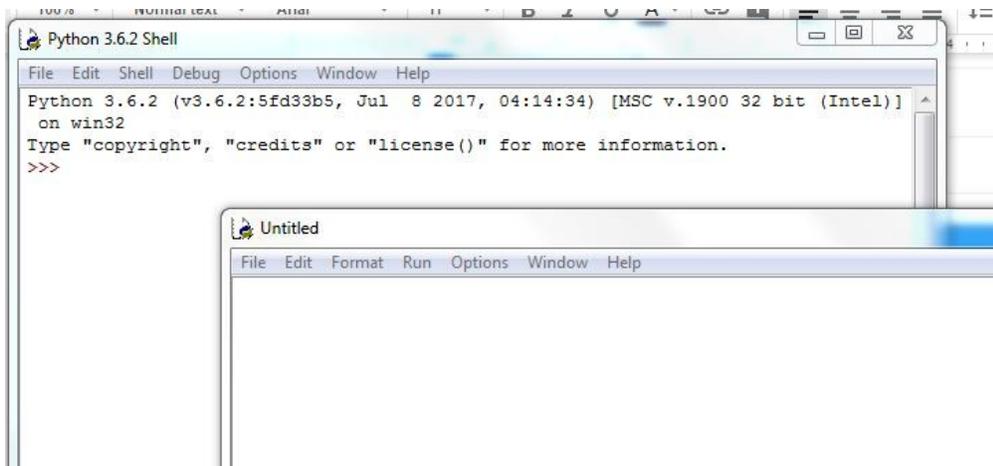
- In python, type help() at a prompt

3.6.2 Adding Python to PATH

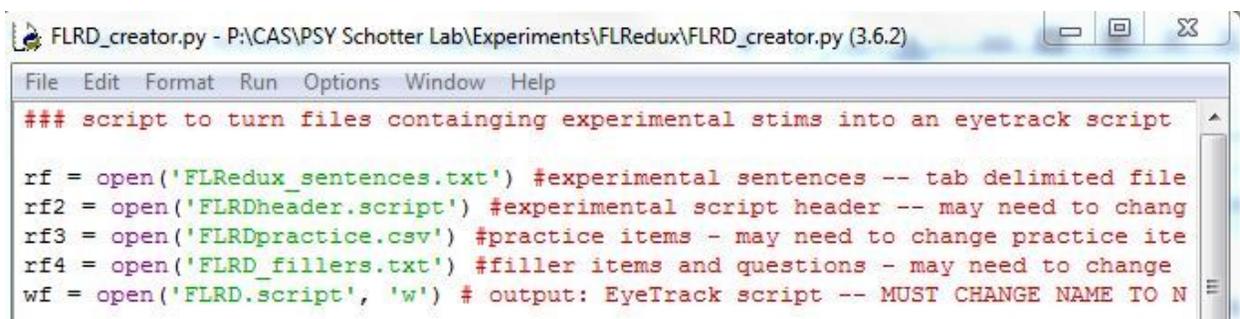
In order to run Python on the lab computers you need to add it to the PATH (i.e., where the computer looks for files and programs). You will only need to do this once, the first time you want to use python and then you can just run it like you normally would from then on. See the [instructions](#).

3.6.3 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.



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

3.6.3.1 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!)

3.6.3.2 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.

3.6.3.3 Comments

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

3.6.3.4 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.

3.6.3.5 Loops

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

3.6.4 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

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

4.1 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. Go to File->Open
6. Once you open your script there should be three sections to the window.
7. Select one of the Trials you want to view from the middle section of the window.
8. Click Change in the middle section underneath. It will open two new windows where you can preview the experiment display screen.
9. 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).
10. The squares surrounding each letter or word (depending on your choice) mark interest areas.
11. 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.
12. 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.
 13. Finally, on the main eye track window, click Experiment->Validate. The program will check for any glaring errors (such as missing data).

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 39.5 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 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](#).

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.”

6 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).

7 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.

8 Running Participants for in-lab eye tracking studies

8.1 Consent

When logging on to the lab computers, use your USF Net ID 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 [Consent Form](#) (located in Google drive). Make sure it is in the "preview" mode (to do this click the eyeball icon at the top).

8.2 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.

8.3 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](#).

8.4 Calibration and Validation

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

8.5 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 Data Processing/Analysis

9.1 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.

9.2 Data Viewer

[Data Viewer User Manual](#)

9.3 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.

9.4 Side-Eye

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

9.5 R Code

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

9.5.1 Downloading R

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

9.5.2 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.

[MyDrive>ScienceResources>Programming>R]

9.5.3 Getting Started

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

9.5.4 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](#).

9.5.5 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 dply (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
```

9.5.6 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,.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

```

9.5.7 dplyr

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

9.5.8 glmer

9.5.9 purrr

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

9.5.10 R-markdown

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

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

9.6 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.

9.7 JMP

9.7.1 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

9.7.2 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.

9.7.3 Using JMP

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

10 Audio Coding

10.1 How to Read a Spectrogram

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

10.2 Praat

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

11 Presenting Research

11.1 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 advanced notice to print and costs about \$56

11.2 Talks

11.3 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