# Cognitive Experiments with Life-Logs (CELL) Instruction Manual

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## Contents

## 1  Installing and Running CELL

This manual describes the process of running the CELL software, and details the system requirements and procedures to extract sentence cues from a participant's email archive and generate questions for the autobiographical memory study. For best results, please follow the steps below:

1. A Linux/Mac machine is recommended. Also ensure that your system has Java Runtime Version 7 or above installed before you begin. Follow the steps on the Java Website to check whether you have the correct version.

2. Ensure that your Gmail settings are "on" for "less secure apps". Go to your Google Account Page and change this setting to "on" if it is not so already.

3. To install CELL on your machine, download the ZIP file available at GitHub Page.

4. After downloading the .zip file, move all its contents to your Home directory. If you are working on Mac, this would correspond to /Users/<username>/. If you are working on Windows, this would correspond to C:\Users \<username>. Also create a directory called "results" in the same home directory.

5. Open Terminal (Mac) or Command Prompt (Windows), and run the following command: java -Dencpw=ga406tes -DescapePassword=87127 -Dmuse.mode.server=1 -Xmx2g -Dnobrowsero1 -jar muse-standalone-may7.jar -p 8080

6. After the server has started (see messages in the command line, you should see something like "Testing for already running ePADD"), open up a Chrome browser window to Memory Study

7. On the login screen, select Imap server, enter imap.gmail.com as the server, and your full gmail address (xyz@gmail.com) and the password (see Figure 1). You might see a few exception messages in the window you started muse-standalone.jar from – that's expected.

Figure 1: Entering the IMAP address and login credentials

8. This process should start extracting sentence cues from your email and generate test questions for you in 5-10 minutes, depending on the volume of your email archive. You should see the following screens as the program build the test stimuli for you. Follow the steps in the tutorial to participate in the study.

## 2 Extracting Final Results

The results generated from this study can be obtained in 2 ways.

### Immediately after End of Test

First, at the end of every study, there is an option to export the data as a CSV file. Upon clicking this option, a comma-separated text file is generated, which, when copied into Microsoft Excel, can be stored as a CSV file. Note that this CSV file contains all the fields recorded by the program, including the sentence cues.

### Extracting results from Command Line

Second, the results folder created in the home directory stores all the data in a file called "results.final". Follow the steps below to access this file:

1. Change your terminal directory to Home/results/testuser.

2. Copy the muse.jar file from the zip folder into Home/results/testuser.

3. Run the following command: java -Dencpw=ga406tes -cp muse.jar edu.stanford.muse.util.CryptoUtils results.final > TestResults.csv

4. This should create a CSV file in the same directory titled TestResults.csv.

# 3 End of Study

To ensure privacy and confidentiality of email data, we highly recommend revoking access to MUSE by going to Revoke OAuth and going to "apps with account access". Additionally, delete all files and directories associated with the program from your computer, including the muse.jar and muse-standalone-may7.jar files.

# 4 Changing Study Parameters

## Retention Interval

Currently, the test extracts email sentence cues from a year-old email archive for the memory test. However, this can easily be modified, by changing the time period on the IMAP screen. Simply change the YYYYMMDD fields in the Dates box to extract older emails (see Figure 1).

## Number of Items

Currently, the test extracts no more than 36 total items from the participant's email archive. This can be changed to access a larger set of sentence cues, by changing the number in the Total Questions box.

# 5 Modifying the Interface

The source code for generating the sentence cues is available at: Memory Study Code. Below are descriptions of specific files on the page and some directions to specific parts of the code, such as assigning weights to features. Note that these directions are simply meant to provide a basic understanding of the code and any significant changes would require some programming background.

## README File

The *HOWTO* file gives a very short description of running the memory study and extracting results and user demographics from the files. These procedures have been explained in detail in Section 2.

## Screening File

*Screener.java* evaluates whether an e-mail archive passes the screening criteria of having atleast n number of messages for each retention interval to proceed.

## Cue Generation

*MemoryStudy.java* evaluates all possible two-sentence cues and scores the features in the clue to generate the final test items. The specific weights for the features can be changed on lines 534-551. The length of the cue, i.e., number of sentences can be changed on line 385. Other code to weigh exclamations, emoticons etc. is available at Clue Evaluator on lines 70-84. Additional code to record other variables from the archive are available at Clue Details.

## Variable Extraction

*MemoryQuestion.java* stores the user responses to each of the items and the responses in the error-validation phase.