## Cognitive Battery - Overview

Author: Michael Gravina  
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# Purpose

This protocol contains procedures for setting up and using the overarching features of the Cognitive Battery. Instructions for the component tasks are handled in their own protocols.

# Terminology

* The Cognitive Battery (or CogBat) is a set of computerized tasks for the Android operating system, running on the [SMILE experiment-writing library for Python](http://smile-docs.readthedocs.io/en/latest/). Currently, the CogBat contains the following tasks:
  + [**Flanker**](https://osf.io/ghcfm/wiki/home/)
  + [**Moving Dot**](https://osf.io/zj37w/wiki/home/)
  + [**Continuous Recognition**](https://osf.io/z9vnh/wiki/home/)

# Assignment of responsibilities

A principal operator should be assigned for each block of experiments in order to set up the app, administer the tasks, and retrieve the data.

Operator(s):

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Init\_\_\_\_\_\_ Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Init\_\_\_\_\_\_

# Required credentials/training

No special qualifications required.

# Required equipment and supplies

* Android phone or tablet
* USB transfer cable appropriate to the tablet
* Cognitive Battery .apk installer file:
  + [For general use](https://osf.io/3zh7s/)
  + [For Cognitive Crew](https://osf.io/g7e3x/)
* [Continuous Recognition image set](https://osf.io/4tzxn/)

# Methods and procedures

## Installation

Download the .apk installer file and the CogBat image set to your computer. Unzip the image set. Using the USB transfer cable to connect the Android device to your computer, and transfer the .apk file and the "smile\_images" folder from the image set to the device.

Operator\_\_\_\_\_\_\_\_\_ Date\_\_\_\_ /\_\_\_\_ /\_\_\_\_\_\_\_\_\_\_

On the Android device, open the File Manager app and find the .apk file. Run it to install the CogBat. You may have to create a shortcut to display the CogBat icon on the device's home screen.

Operator\_\_\_\_\_\_\_\_\_ Date\_\_\_\_ /\_\_\_\_ /\_\_\_\_\_\_\_\_\_\_

Put the smile\_images folder into the same folder where the SMILE folder is located (this should be the highest-level folder on the device, often called "Internal storage").

Operator\_\_\_\_\_\_\_\_\_ Date\_\_\_\_ /\_\_\_\_ /\_\_\_\_\_\_\_\_\_\_

## Running the CogBat

Press the CogBat icon. A splash screen showing a brain will appear for a few seconds while the CogBat loads. Depending on the version, this may take a long time, so be patient!

Depending on the version, you may be presented with a subject-entry screen. A field titled "Subject" will allow you to enter the subject ID. There will also be a "Settings" button which allows for finer control, including the ability to lock the subject ID so that it will automatically appear every time the CogBat is run.

Depending on the version, the tasks may begin immediately, or you may be presented with a screen allowing you to choose a task to begin.

Administrator\_\_\_\_\_\_\_\_\_ Date\_\_\_\_ /\_\_\_\_ /\_\_\_\_\_\_\_\_\_\_ Time\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Data retrieval

Use the USB transfer cable to connect the Android device to your computer. Open the folder on the device named *SMILE/data/Cognitive Battery/data/*. Within this folder you will see data folders by subject. (If no subject ID was specified when the CogBat was run, the folder will be named "test000".) Within the subject folders, data will be stored in subfolders, one for each time the CogBat was run.

**Important:** When retrieving data, be aware that folder names are only guaranteed to be unique *within* a given device. If you are collecting data from multiple devices, there may be naming conflicts. You should take care to sort them into unique folders on the destination computer, and from there, curate them to ensure that no folders are inadvertently combined or overwritten.

Operator\_\_\_\_\_\_\_\_\_ Date\_\_\_\_ /\_\_\_\_ /\_\_\_\_\_\_\_\_\_\_

# Plan for electronic archiving

Data should be stored on a secure, password-protected computer with periodic backups. Data should be grouped by subject folder, and within subject folders session folders should be aggregated across all functionally identical devices and curated as necessary to ensure that no sessions are lost and each session is identifiable by date and time.

# Revisions

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| --- | --- | --- |
| **SOP Revision #** | **Date** | **Description of change(s)** |
| 170918 | 09/18/2017 | First version |
| 171003 | 10/03/2017 | Added links to other CogBat protocols |