Tutorial on Designing, Implementing, and Analyzing a Degraded Image Paradigm:

A Facial Expression-Decoding Task Example

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PsychoPy Instructions

Degraded image stimulus movie files can be presented using PsychoPy3 (https://www.PsychoPy.org), a freely available, open-source software tool for controlling stimulus presentation and recording responses (Peirce et al., 2019). We provide access to already programmed experimental PsychoPy files that present degraded image stimulus movie files and record behavioral responses. To download the PsychoPy software, go to https://www.psychopy.org/installation.html and download the appropriate version. PsychoPy version 3.0 or greater should be used for this experiment.

Run the Experiment

1. Once PsychoPy3 is downloaded, download and open the "*psychopy_experiment*" folder.

2. In the the "*psychopy_experiment*" folder, open the file "*face_task.psyexp.*"

3. A blank python console will open.

4. After a short delay, the PsychoPy graphic user interface (GUI) will open.

5. To run the experiment, you can either click on the green running man icon, or press Ctrl+R.

6. An information box will open, where you can enter in the participant number.

7. You can press Esc to abort. Do not do this during actual data collection, if you do, no data will be logged.

8. Once the experiment is completed, a PsychoPy output window will open. You can close this window and close out of the PsychoPy program completely.

Access the Data

1. The data will be stored in the "*data*" folder in the "*psychopy_experiment*" folder.

2. A single participant's data will be labeled with the participant number, followed by the task name and date (e.g., "*01_face_task_2019_Feb_13_0933.csv*"). Three files are created for each participant: (*.csv, .txt, .psydat*).

3. In the *.csv* file, the pertinent variables stored include:

   o *participant*: This is the participant number.

   o *vid*: This is the filename of the degraded image stimulus movie file the participant viewed.

   o *corr*: This is the correct answer associated with each trial.

   o *movie_key.rt*: This is the participant's response time for each trial.

   o *text_key.keys*: This is the participant's response for each trial.

   o *text_key.corr*: This is the participant's accuracy (i.e., incorrect = 0; correct = 1).

4. To load the data file (*.csv*) into R for analysis, set your working directory to the folder containing the data, and run the following code:

```
setwd("C:/put/directory/here/psychopy_experiment/data")

#load data file

data <- read.csv('psychopy_data.csv')

#first three rows are related to instructions and can be deleted

data <- data[-c(1:3), ]
```

Edit the Experiment

1. Copy the "*psychopy_experiment*" folder.

2. To replace degraded image stimulus movie files:

   o Open the copied "*psychopy_experiment*" folder.

   o In the copied "*psychopy_experiment*" folder, open the "*stims*" folder.

- o In the "*stims*" folder, replace the original degraded image stimulus movie files with new degraded image stimulus movie files in *.avi* format.

3. To link the experiment to the new degraded image stimulus movie files that you put in the "*stims*" folder:

    - o In the copied "*psychopy_experiment*" folder, open the file "*stim_list.csv*."

    - o A excel file will open.

    - o In the "*vid*" column, replace the old filenames with the new degraded image stimulus movie filenames.

    - o Specify the correct answer in the "*corr*" column.

    - o Save the changes.

4. To edit the answer options that the participants will see:

    - o In the "*psychopy_experiment*" folder, open the file "*face_task.psyexp*."

    - o A blank python console will open.

    - o After a short delay, the PsychoPy graphic user interface (GUI) will open.

    - o Click the "*expression*" bubble in the "*flow*" window.

    - o Double click on "*TT*" icon in the main window and a "*text Properties*" box will appear, where you can edit the answer options.

    - o Save the changes.

5. To edit the instructions that participants will see:

    - o Click on "*instructions,*" "*instruct2,*" "*instruct3,*" "*trials,*" "*expression*" or "*end*" in the "*flow*" window.

    - o Double click on "*TT*" icon in the main window and a "*text Properties*" box will appear, where you can edit the answer options.

  o Save the changes.

6. To collect additional startup information (i.e., other than participant number and session

  number, the default in PsychoPy):

   o Click on "*Experiment Settings*" icon in the toolbar and an "*Experiment Settings*"

    box will appear.

   o Click on the "*basic*" tab, where you can edit the startup information that the

    researcher will enter at the beginning of the experiment.

   o Save the changes.

7. Save all changes, and then the experiment is ready to run with the new degraded image

  stimulus movie files.

8. Test the experiment by either clicking on the green running man icon, or press Ctrl+R.