

Tutorial on Designing, Implementing, and Analyzing a Degraded Image Paradigm:
A Facial Expression-Decoding Task Example

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Author Note

This work was supported by grants F32AA025830 (PI: Hone) and R01AA020970 (PI: Bartholow) from the National Institute on Alcohol Abuse and Alcoholism, National Institutes of Health.

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E-Prime Instructions

Degraded image stimulus movie files can be presented using E-Prime 3 (<https://pstnet.com/products/e-prime>), which is not freely available but is widely used in psychological laboratories (Psychology Software Tools, 2016). E-Prime recommends that researchers use a millisecond-accurate stimulus control and response input system, such as Chronos (Psychology Software Tools, 2015). Using Chronos (or a similar device) ensures that stimulus and response timing is accurate to within 1-2 milliseconds (Psychology Software Tools, 2015). We provide access to already programmed experimental E-Prime files that present degraded image stimulus movie files and record behavioral responses. To download a demo of E-Prime, go to <http://pstnet.com/request-a-demo/> and submit a request. Or, insert your E-Prime USB License Key. E-Prime 3 should be used for this experiment.

Run the Experiment

1. Once the E-Prime demo is downloaded, or your license key is inserted, download and open the “*e-prime_experiment*” folder.
2. In the “*e-prime_experiment*” folder, open the file “*face_task.es3*.”
3. E-Studio will open.
4. To run the experiment, you can either click on the blue running man icon, or press F7.
5. Several startup information boxes will open, where you can enter in the participant number, participant sex, session number, participant age, researcher’s initials, and computer station.
6. A “*Summary of Startup Info*” box will open, where you can confirm your entries.
7. You can press Ctrl+Alt+Shift to abort. Do not do this during actual data collection, if you do, no data will be logged.

8. Once the experiment is completed, you can press “q” on the keyboard to quit.

Access the Data

1. The data will be stored in the “*e-prime_experiment*” folder.
2. A single participant’s data will be labeled with the task name (e.g., “*face_task-*”) followed by the participant number and session number, (e.g. “*face_task-01-01.txt*”). One file is created for each participant (*.txt*).
3. In a participant data *.txt* file, under the “**** Header Start ****” section (i.e., the information entered by the researcher in the startup information boxes), the pertinent variables stored include:
 - *Experiment*: This is the task name (e.g., “*face_task*”).
 - *SessionDate*: This is the date the participant’s data was collected (e.g., 03-13-2019).
 - *SessionTime*: This is the date the participant’s data was collected (e.g., 14:27:00).
 - *Subject*: This is the participant number (e.g., 01).
 - *Sex*: This is the participant sex (i.e., female = 0; 1 = male).
 - *Session*: This is the session number (e.g., 01).
 - *Age*: This is the participant’s age.
 - *ResearcherInitials*: This is the researcher’s initials (e.g., AAA).
 - *Station*: This is the computer station at which the data were collected.
 - *DataFile.BaseName*: This is the participant’s data labeled with the task name followed by the participant number and session number (e.g., “*face_task-01-01*”).
4. Within the *.txt* file, under the first “**** LogFrame Start ****” section (i.e., the participant’s data), the most pertinent variables stored include:

- *Sex*: This is the sex of the face displayed in the first degraded image stimulus movie file that the participant viewed.
 - *PicID*: This is the filename of the first degraded image stimulus movie file that the participant viewed (e.g., “31AngryMaleWhite”).
 - *Emotion*: This is the emotion displayed by the face in the first degraded image stimulus movie file that the participant viewed (e.g., Angry).
 - *Race*: This is the race of the face in the first degraded image stimulus movie file that the participant viewed (e.g., White).
 - *FaceIdentify.RTTime*: This is the participant’s response time (since the onset of the study) on the first trial in milliseconds.
 - *FaceIdentify.ACC*: This is the participant’s accuracy on the first trial (i.e., incorrect = 0; correct = 1)
 - *FaceIdentify.RT*: This is the participant’s response time (since the onset of the trial) for on the first trial in milliseconds
 - *FaceIdentify.RESP*: This is the participant’s response on the first trial.
 - *FaceIdentify.CRESP*: This is the correct answer associated with the first trial.
5. To load the data files (.txt) into R for analysis, you will first need to install the R package ‘*rprime*’ (Mahr, 2015).
6. Once installed, you can then load the package, set your working directory to the folder containing the data, and run the following code:

```
install.packages('rprime')  
  
library(rprime)  
  
#set your working directory
```

```
setwd("C:/put/directory/here/eprime_files/")  
  
#load data  
  
data <- to_data_frame(FrameList(read_eprime("eprime_data.txt", remove_clock  
= T))))
```

Edit the Experiment

1. Copy the “*e-prime_experiment*” folder.
2. To replace degraded image stimulus movie files:
 - Open the copied “*e-prime_experiment*” folder.
 - In the copied “*e-prime_experiment*” 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 copied “*e-prime_experiment*” folder:
 - In the copied “*e-prime_experiment*” folder, open the file “*face_task.es3*.”
 - E-Studio will open.
 - In the “*Experiment Explorer*” window, click on “*FaceList*”.
 - In the “*PicID*” column, replace the old filenames with the new degraded image stimulus movie filenames. You do not need to put .avi at the end of the filename.
 - Save the changes.
 - Specify the correct answer in the “*CorrectFace*” column.
 - Save the changes.
 - Change other attributes of the degraded image to match the new degraded image stimulus movie files in the “*Emotion*,” “*Sex*,” “*Race*,” and “*StimNum*” columns.
 - Save the changes.

- To change the title of the attribute columns:
 - Double click on the title and an “*Edit Attribute*” box will appear, where you can edit the column title.
 - Save the changes.
- 4. To edit the answer options that participants will see:
 - Click on “*FaceIdentify*” in the “*Experiment Explorer*” window.
 - Right click on the text and select “*Sub-Object Property Pages*” and a “*Properties: Text1*” box will appear, where you can edit the answer options.
 - Save the changes.
- 5. To edit the instructions that participants will see:
 - Click on “*FaceIntro*,” “*FaceHello*,” “*FaceInstruct*,” or “*FaceGoodBye*” in the “*Experiment Explorer*” window.
 - Right click on the text and select “*Properties*” and a “*Properties FaceIntro*,” “*Properties FaceHello*,” “*Properties FaceInstruct*,” or “*Properties FaceGoodBye*” box will appear, where you can edit instructions.
 - Save the changes.
- 6. To edit the startup information boxes (i.e., where you can enter in the participant number, participant sex, session number, participant age, researcher’s initials, and computer station):
 - Click on “Edit” in the toolbar and select “*Experiment*” and a “*Properties: Experiment Object Properties*” box will appear.
 - Click on the “*Startup Info*” tab, where you can edit the startup information that the researcher will enter at the beginning of the experiment.

- 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 blue running man icon, or press F7.