import os

from time import time

from glob import glob

from random import choice

import numpy as np

from pandas import DataFrame, read\_csv, Series

from psychopy import visual, core, event

from eegnb import generate\_save\_fn

from eegnb import stimuli, experiments

exp\_dir = os.path.split(experiments.\_\_file\_\_)[0]

# fixed stim order list file

word\_list\_file = os.path.join(exp\_dir, "words", "words\_list.csv")

\_\_title\_\_ = "Words and Memory"

def present(duration=120, eeg=None, save\_fn=None, subject=0, session=0, ver=1):

iti = 0.5

soa = 2

record\_duration = np.float32(duration)

markernames = [1]

# Setup trial list

#image\_type = np.random.binomial(1, 0.15, n\_trials)

word\_lists = read\_csv(word\_list\_file)

n\_trials = word\_lists.shape[0]

#trials = DataFrame(dict(word\_, timestamp=np.zeros(n\_trials)))

def load\_text(stim\_text):

return visual.TextStim(win=mywin, text=stim\_text, color=[-1,-1,-1])

# Setup graphics

mywin = visual.Window([1600, 900], color=[1,1,1], monitor="testMonitor", units="deg", fullscr=True)

mywin.flip()

mywin.flip()

words = word\_lists.iloc[:,ver-1]

# shuffle word list

stim = words.sample(frac=1).reset\_index(drop=True)

# Show instructions

show\_instructions()

# start the EEG stream, will delay 5 seconds to let signal settle

if eeg:

if save\_fn is None: # If no save\_fn passed, generate a new unnamed save file

save\_fn = generate\_save\_fn(eeg.device\_name, "words\_memory", "unnamed")

print(

f"No path for a save file was passed to the experiment. Saving data to {save\_fn}"

)

eeg.start(save\_fn, duration=record\_duration)

# Iterate through the events

start = time()

for ii, trial in stim.items():

# Inter trial interval

core.wait(iti)

# Select and display text

#label = trials["image\_type"].iloc[ii]

word = trial

text = load\_text(word)

text.draw()

# Push sample

if eeg:

timestamp = time()

if eeg.backend == "muselsl":

marker = [markernames[label]]

else:

marker = markernames[0]

eeg.push\_sample(marker=marker, timestamp=timestamp)

mywin.flip()

# offset

core.wait(soa)

mywin.flip()

if len(event.getKeys()) > 0 or (time() - start) > record\_duration:

break

event.clearEvents()

directory = os.path.join(

os.path.expanduser("~"),

".eegnb",

"data",

"words\_memory",

"subject" + str(subject),

"session" + str(session)

)

if not os.path.exists(directory):

os.makedirs(directory)

outname = os.path.join(

directory,

"subject" + str(subject) + "\_session" + str(session) + "\_words.csv"

)

stim.to\_csv(path\_or\_buf=outname)

# Goodbye Screen

text = visual.TextStim(

win=mywin,

text = "Thank you for participating. Press spacebar to exit the experiment.",

color=[-1, -1, -1],

pos=[0, 5],

)

text.draw()

mywin.flip()

event.waitKeys(keyList="space")

mywin.mouseVisible = True

# Cleanup

if eeg:

eeg.stop()

mywin.close()

def show\_instructions():

instruction\_text = """

Welcome to the memory and music experiment!

Stay still, focus on the centre of the screen, and try not to blink. Try to remember the words displayed as you will be asked to recall them after.

Press spacebar to continue.

"""

# graphics

mywin = visual.Window([1600, 900], color=[1,1,1], monitor="testMonitor", units="deg", fullscr=True)

mywin.mouseVisible = False

mywin.flip()

mywin.flip()

# Instructions

text = visual.TextStim(win=mywin, text=instruction\_text, color=[-1, -1, -1])

text.draw()

mywin.flip()

event.waitKeys(keyList="space")

mywin.mouseVisible = True

mywin.close()