

Programming Assignment 3

Experiment Overview

There is a link between group synchrony and cooperation (Reddish, Fischer, & Bulbulia, 2013; Wiltermuth & Heath, 2009), and researchers have proposed that this relationship may be due to Endogenous Opioid System (EOS) activation, as shown by increases in pain thresholds after group synchrony. Some have posited that physical and social pain have similar neural substrates (Eisenberger, Lieberman, & Williams, 2003; MacDonald, Kingsbury, & Shaw, 2005), but the question of whether group dance/movement can also induce a higher individual threshold for social pain remains.

This question relates to the “contact hypothesis,” which posits that intergroup contact can improve intergroup relations (Islam & Hewstone, 1993). Investigating how group movement impacts intergroup interaction, particularly as compared to “perspective-taking”, nuances the “contact hypothesis.”

This experiment investigates:

- Do the analgesic effects of group movement extend to make individuals more resilient to social exclusion? How does this compare to the effect of perspective-taking?
- Does group movement impact individuals’ competence at perspective-taking?

The hypothesis is that group movement will result in higher social pain thresholds, higher social closeness ratings, and improve perspective-taking ability.

The experiment’s dance manipulation and video stimulus are borrowed from Tarr, Launay, & Dunbar, 2016. This experiment also uses a customized Cyberball (Williams & Jarvis, 2006) game as a social exclusion manipulation, the Positive and Negative Affect Scale (PANAS: Mackinnon et al., 1999), and the Inclusion of Other in Self (IOS: Aron, Aron, & Smollan, 1992) scale. Brexit audio recordings were made for this study and the “control” audio file was downloaded from a YouTube ad.

Description of procedure:

The experiment runs in groups of four participants all in the same condition. Participants are randomly assigned to group (and thus condition and trial time/date) prior to entering the lab (not part of program). Once running, the program assigns the same condition to every four participants before changing. The program counterbalances condition groups (i.e. if two control groups have run and one of each other condition, it will randomly choose from the three other conditions).

There are four between-participants conditions:

- 1) Dance Condition
- 2) Perspective-Taking Condition
- 3) Dance + Perspective-Taking “Combo” Condition
- 4) Control Condition

Once a trial starts, participants give informed consent, demographics information, and their political stance on Brexit. The Brexit question only impacts participants in the “perspective-taking” or “combo” condition.

Next, participants put their hand in a bucket of ice water while pressing “start” on the on-screen timer. Once this becomes painful, they press “stop.” Time elapsed is the analgesia pre-score. Start/stop done on keypad press to minimize errors. Then they each fill out the PANAS scale and the program calculates their PANAS pre-scores.

Participants in different conditions then receive different instructions:

- 1) Dance Condition: Watch an instructional video and wait for the experimenter to facilitate the group dance task (task done live, not part of the computer program).
- 2) Perspective-Taking Condition: Listen to an audio recording of an opposing view on Brexit. If participant has no Brexit view, they listen to the YouTube ad. Summarize three points from the audio as a manipulation check/ qualitative measure.
- 3) Combo Condition: Do the full dance and perspective-taking conditions.
- 4) Control Condition: Listen to the YouTube ad audio and summarize its points.

Next, all participants play Cyberball, in which they are excluded after their initial throw. They are told that they are playing with others in the room. After Cyberball, each participant does another ice-bucket analgesia measure, self-reports on social closeness according to the IOS, completes a PANAS post-test, and is debriefed.

Experimenter’s manual:

To run this experiment, the following files must be in the Python Directory:

- AssessmentThreeUI.ui
- AssessmentThreePython.py
- Functions.py
- GUI.py
- MainCode.py
- CyberballandCustomWidgets.py
- Audio Files: antiBrexitVoice.wav, neutralAudio.wav, proBrexitVoice.wav
- Video Files: dancePractice.mov and video.mov (short video for testing only)
- Picture Files: IOS-scale.png, uclLogo.jpg, avatar1.png, avatar2.png, ballresized.png, methrow.png, Player2Done.png, Player2Start.png, Speechbubble.png, thrown.png

If not already in the directory, the program will create a csv titled “Output” to hold the results. If this file is already in the directory, the program continues adding to it.

The experiment runs from the “MainCode” module. Each participant’s results, including analgesia and PANAS difference scores, are recorded as a row in the csv when a full trial is completed.

Conditions are defined in the beginning of the Experiment class and can be changed by editing lines in the start of the class and its assignCondition method. Because this experiment is run in groups, it takes 5 trials to switch conditions. To circumvent this when testing the program,

“comment out (##)” lines in the “assignCondition” method and write self.condition==“whateverConditionYou’reTesting”.

Audio and video stimuli are changeable by adding the file desired to the Python directory and substituting the file name for “.wav” or “.mov” names in the code. This program only works with audio as “.wav” and video as “.mov”. *When testing this program, substitute in “video.mov”, which is 9s long, to avoid watching the dance instruction video (“dancePractive.mov”, 8min).*

This program was created on a Mac, so layout on a PC may be altered/undesirable and may impact some functionalities like animation appearance.

Program highlights:

- **Cyberball:** This game was coded by hand using a class that animates labels.
- **Custom widgets:** ColouredLabel class, videowidget, QuestionnaireItem class and widgets.
- **OOP:** The PANAS questionnaire, Experiment class, the ColouredLabel class, and Cyberball exclusion game use OOP.
- **Flexible conditions/stimuli:** Users cannot proceed without following instructions at each step. Otherwise, error messages show. Stimuli and conditions are easily changeable.
- **Video:** The dance video requires an absolute path because the program was created on a Mac computer, which required importing “path” from the os library.
- **Audio:** Audio plays using QSound.
- **Dependent choices:** Condition assignment depends on what is previously recorded in the “Output” csv and counterbalances condition groups. Participant audio selection is determined by their condition and political view. Program flexibility allows the combo condition to make use of existing functions without dedicated QStackedWidget page.
- **Timers:** Multiple timers run simultaneously to record dependent variables, start and stop stimuli, and animate the Cyberball game. Analgesia timers can be hidden if preferable.
- **Ordered Dictionary:** The assignCondition method uses an Ordered Dictionary and itemgetter (from operator and collections libraries, respectively) to order the dictionary of conditions and counterbalance condition groups.

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