**README: data and analysis code for Luettgau, Tempelmann, Kaiser & Jocham**

Use revaluation/Scripts/analysis\_script.m to rerun analyses of Experiment 1, 2, 3 and fmri.

Use revaluation/Scripts/analysis\_script\_exp5.m to rerun behavioral analyses of Experiment 5.

Use revaluation/Scripts/Luettgau\_RL.m and rl\_candyman.m to rerun computational modelling of Experiment 1, 2, 3 and fmri.

Use revaluation/Scripts/Simulation\_RL.m and make\_choices\_candyman.m to rerun simulations (/sim\_data/) based on computational parameters (/params/) of Experiment 1, 2, 3 and fmri.

Data is organized in MATLAB structure arrays, one for each subject.

Details for the behavioral data files format:

.infoP indicates subID

**\*\* .FOC (Pavlovian learning) columns, in candyman\_fmri\_pre in fmri\*\***

1 – trial number

2 – target (0 = blue/left, 1 = red/right square around CS)

3 – response to target (1 = left, 2 = right)

4 – response time to target in sec

5 – CS texture number (as created by Psychtoolbox)

6 – CS pre rating score

7 – US texture number (as created by Psychtoolbox)

8 – US value (pre rating)

9 – CS onset (relative to start time)

10 – ISI (fixation cross) onset

11 – US onset

12 – ITI onset

13 – ITI length in sec

14 – US presented (1) or not (0)

15 – empty

16 – trial followed by a pause?

17-20 – computer times for events in 9-14

21 – pause onset (relative to start time)

22 – pause onset (computer time)

23 – pause end (relative to start time)

24 – pause duration

25 – pause end (computer time)

26 – number of CS-US pair presented (1 = CS-A, 2= CS-B, 3 = CS0A, 4 = CS0B, 5 = CS+A, 6 = CS+B)

**\*\* .devaluation (revaluation choices) columns \*\***

1 – trial number

2 – left CS number (1-6), 1 = lower valued CS, 2 = higher valued CS, 3-6 are lures

3 – right CS number (1-6), 1 = lower valued CS, 2 = higher valued CS

4 – left CS texture number (as created by Psychtoolbox)

5 – left CS pre rating score

6 – left CS associated US texture number

7 – left CS associated US value (pre rating)

8 – right CS texture number (as created by Psychtoolbox)

9 – right CS pre rating score

10 – right CS associated US texture number

11 – right CS associated US value (pre rating)

12 – response (1 = left chosen, 2 = right chosen)

13 – response time (onset of choice to response) in sec

14 – 22 computer times in sec

**\*\* .forcedchoicekanjis (decision probe) columns \*\***

1 – trial number

2 – left CS number (1-6), 1 = CS-A, 2= CS-B, 3 = CS0A, 4 = CS0B, 5 = CS+A, 6 = CS+B

3 – right CS number (1-6), 1 = CS-A, 2= CS-B, 3 = CS0A, 4 = CS0B, 5 = CS+A, 6 = CS+B

4 – left CS texture number (as created by Psychtoolbox)

5 – left CS pre rating score

6 – left CS associated US texture number

7 – left CS associated US value (pre rating)

8 – right CS texture number (as created by Psychtoolbox)

9 – right CS pre rating score

10 – right CS associated US texture number

11 – right CS associated US value (pre rating)

12 – response (1 = left chosen, 2 = right chosen)

13 – response time (onset of choice to response) in sec

14 – 22 computer times in sec

**fMRI data files**

**\*\* .prerepsup (PRE fMRI run) columns \*\***

1 – trial number

2 – CS number (1-6), 1 = CS-A, 2= CS-B, 3 = CS0A, 4 = CS0B, 5 = CS+A, 6 = CS+B

3 – US number (1-3) 1 = US-, 2 = US0, 3 = US+

4 – CS texture number (as created by Psychtoolbox)

5 – US texture number (as created by Psychtoolbox)

6 – CS onset (relative to start time)

7 – ISI (fixation cross) onset

8 – US onset

9 – ITI onset

10 – ITI length in sec

11 – attentional control task probe presented (1) or not (0)

12 – attentional control task probe onset

13 – order of probe (1 = right/wrong, 2 = wrong/right)

14 – correct (1)/incorrect (0) probe

15 – response (1 = left chosen, 2 = right chosen)

16 – response time to probe in sec

17 – response time relative to start time

18 – rewarded/correct response (1) or punished/incorrect response/time out (-1)

19 – onset of displaying of selected probe answer

20 – trial followed by a pause?

21 – pause onset

22 – pause end

23 – computer time of 6

24 – computer time of 7

25 – computer time of 8

26 – computer time of 9

27 – computer time of 12

28 – computer time of 15

29 – computer time of 16

30 – computer time of 19

31 – computer time of pause onset

32 – computer time of pause end

**\*\* .postrepsup (POST fMRI run) columns \*\***

1 – trial number

2 – CS number (1-6), 1 = CS-A, 2= CS-B, 3 = CS0A, 4 = CS0B, 5 = CS+A, 6 = CS+B

3 – US number (1-3) 1 = US-, 2 = US0, 3 = US+

4 – CS texture number (as created by Psychtoolbox)

5 – US texture number (as created by Psychtoolbox)

6 – CS onset (relative to start time)

7 – ISI (fixation cross) onset

8 – US onset

9 – ITI onset

10 – ITI length in sec

11 – attentional control task probe presented (1) or not (0)

12 – attentional control task probe onset

13 – order of probe

14 – correct (1)/incorrect (0) probe

15 – response (1 = left chosen, 2 = right chosen)

16 – response time to probe in sec

17 – response time relative to start time

18 – rewarded/correct response (1) or punished/incorrect response/time out (-1)

19 – onset of displaying of selected probe answer

20 – trial followed by a pause?

21 – pause onset

22 – pause end

23 – computer time of 6

24 – computer time of 7

25 – computer time of 8

26 – computer time of 9

27 – computer time of 12

28 – computer time of 15

29 – computer time of 16

30 – computer time of 19

31 – computer time of pause onset

32 – computer time of pause end

**\*\* .trigger (log file of fMRI triggers) \*\***

1 – PRE run initial three volume onsets before start of experiment (computer time)

2 – PRE run initial synchronization triggers after every 15th trial (computer time)

3 – POST run initial three volume onsets before start of experiment (computer time)

4 – POST run initial synchronization triggers after every 15th trial (computer time)

**fMRI data/extracted parameters**

**\*\* /rsa\_stats/ \*\***

- contains .mat-files with extracted similarity structures (RSA) from right OFC (ending with \_R\_OFC\_ROI.mat) and left hippocampus (ending with \_L\_Hippocampus\_ROI.mat)

- PRE run starts with pre\_

- POST run starts with post\_

- PRE to POST difference starts with diff\_

- \_all\_corr\_ files contain all 66 pairwise correlation coefficients vectorized for n=42 subjects (for statistics)

- \_sim\_mat\_ files contain group averaged squareform correlation coefficients (for illustration/plotting)

**\*\* /extracted\_parameter\_estimates/ \*\***

- contains extracted parameters from several ROIs and several contrasts