**TNT-F: TNT > IMDF** [*lab > fMRI > lab*]

**1. TNT\_evaluation1\_lab**

Trial structure

**Randomization/order:** fixed order for each participant (see Affect\_EvalPhase spreadsheet in PhaseOrders excel file)

**Scene only: 6.5 s**

**SAM under smaller scene: up to 10 s** (response terminated)

**Jittered fixation: exponential distribution of mean 5 s and truncated at 6.5 s**

**2. TNT\_learning\_lab**

Trial structure

**Randomization/order:** fixed order for each participant (see LearningPhase spreadsheet in PhaseOrders excel file)

**Fixation: 1 s**

**Object/scene pair: 6 s**

**3. TNT\_testfeedback\_lab**

Trial structure

**Randomization/order:** fully randomized for each participant (same stimulus list as in TNT\_learning\_lab above)

**Cue object: 4s** (“???” displayed bellow cue; press w if you know correct response scene; press x if you don’t; response terminated)

**Forced choice recognition: 4 s** (only displayed if w is pressed; use mouse to select 1 of 3 scenes displayed bellow cue object; 2 foils taken from other pairs and with same valence category as the target; response terminated)

**Feedback: 1 s** (“Correct” or “Incorrect” displayed in center when x is pressed or when nothing is pressed)

**Object/scene refresher: 2.5 s** (always display cue with correct scene framed in blue bellow)

**Fixation: 500 ms**

**>> Message: “EXCELLENT!!!”** is displayed at the end of the entire cycle if 80% correct in neu, neg, and overallconditions; otherwise **“THANKS!”** is displayed

**Notes**

* Move on to criterion test if “EXCELLENT!!!” feedback is displayed in first test-feedback cycle
* Administer second test-feedback cycle if “THANKS!” is not displayed in the first cycle
* 2 cycles max: if under 80% on 2nd test-feedback cycle still move on to criterion test or terminate entire TNT?

**4. TNT\_criteriontest\_lab**

Trial structure: object/scene pair refresher

**Randomization/order:** fully randomized for each participant (same stimulus list as in TNT\_learning\_lab above)

**Object/scene pair: 2 s**

Trial structure: criterion test

**Randomization/order:** fully randomized for each participant (same stimulus list as in TNT\_learning\_lab above)

**Cue object: 4s** (“???” displayed bellow cue object; press w if you know correct response scene; press x if you don’t; response terminated)

**Forced choice recognition: 4 s** (only displayed if w is pressed; use mouse to select 1 of 3 scenes displayed bellow cue object; 2 foils taken from other pairs and with same valence category as the target; response terminated)

**Fixation: 500 ms**

**>> Message: “EXCELLENT!!!”** is displayed at the end of the entire cycle if 70% correct in neu, neg, and overallconditions; otherwise **“THANKS!”** is displayed

**Notes**

* Participants must achieve at least 70% correct in all categories (“EXCELLENT”) – if that is not achieved, then reiterate instructions and to do their best, then administer refresher and criterion test again (max 3 cycles).

**5. TNTF\_practice1\_lab**

Trial structure: TNT\_practice1

**Randomization/order:** fully randomized for each participant (see TNT\_Entrainment\_All matlab struct for fillers to use)

**Jittered fixation: 1.4 – 2.6 s** (exponential distribution from design optimization)

**Cue object framed in green (*Think*) or red (*No-Think*): 3s**

[20% null trials with 3 s duration]

>> Administer diagnostic questionnaire 1

**6. TNTF\_practice2\_lab**

Trial structure: TNT\_practice2

**Randomization/order:** same as above

**Jittered fixation: 1.4 – 2.6 s** (exponential distribution from design optimization)

**Cue object framed in green (*Think*) or red (*No-Think*): 3 s**

**Intrusion rating: 3 s** (response terminated)

[20% null trials with 3 s duration]

>> Administer intrusions part of diagnostic questionnaire 1; administer entire 2nd

diagnostic questionnaire.

**Questions**

* @Mike: How to account for timing differences in fMRI when trial is advanced after response terminated choices? (@Davide)

**7. TNTF\_fMRI**

**Neuroimaging measurement order:** mpRAGE > rs-fMRI > DTI (pair refresher) > fMRI (TNTF)

Trial structure: object/scene pair refresher **>> DTI <<**

**Randomization/order:** same as pair refresher in TNT\_criteriontest\_lab

**Object/scene pair: 2 s**

Trial structure: TNT **>> fMRI <<**

Equiprobable conditions: Tneu=0.20, Tneg=0.20, NTneu=0.20, NTneg=0.20, Null=0.20

**Randomization/order:** use 4 counterbalanced pseudorandomized run lists from design optimization (constraint of no more than 3 of the same T/NT conditions occurring consecutively)

**Jittered fixation: 1.4 – 2.6 s** (exponential distribution from design optimization)

**Cue object framed in green (*Think*) or red (*No-Think*): 3 s**

**Intrusion rating: 3 s** (response terminated)

[20% null trials with 3 s duration]

Trial structure: IMDF **>> fMRI <<**

**Randomization/order:** use counterbalanced pseudorandomized run lists from design optimization (constraint of no more than three consecutive trials with the same instruction and valence type)

**Fixation: 1 s**

**Negative or neutral scene: 2 s**

**Object on scene: 4 s** (pts instructed to think of how well object and scene go together)

**TBR (“MMM”) or TBF (“VVV”) cue: 2 s** (half of trials followed by TBF/other half followed by TBR; fully randomized with the constraint of no more than three consecutive trials with the same instruction and valence type)

**Blank jittered ISI: 1-5 s #5-7 s** (exponential distribution from design optimization; Merchewka et al., 2016)

[20% null events with 2 s duration]

**Notes**

* 60-45 s breaks btw runs

**8. TNTF\_recall\_lab**

Trial Structure: TNT recall

**Randomization/order:** fully randomized for each participant (same stimulus list as in TNT\_learning\_lab above)

**ISI fixation: 500 ms**

**Cue object (no frames): indefinite time** (press w if you know correct response scene; press x if you don’t; response terminated)

**Verbal Recall (only if w pressed): 15 s** (display:“Please describe the image uniquely in 1 sentence (15 sec);” after 5 s display: “10 seconds remaining”; after another 5 s display: “5 seconds remaining”; record responses via opensesame)

**If x pressed: 15 s (display “Please wait for 15 sec”; after 5 s display: “ 10 seconds remaining”; after another 5 s display: “5 seconds remaining”**

Trial Structure: IMDF recall

[Start with 2 practice trials]

**Randomization/order:**

**Fixation: 1 s**

**Unobstructed scene preview: 2 s**

**3-object display superimposed on scene: 6 s** (within the 3-object display all

objects come from same memory instruction and valence – ctrls for item strength within test trial. Target objects appeared equally often in any of the three test locations on the screen)

**Confidence judgement: 4 s** (binary: low/high – indicating their confidence that

the selected object was previously paired with test scene)

**9.** **TNT\_evaluation2\_lab:** same as TNT\_evaluation1\_lab

**10. TNT\_postexperimental\_questionnaires**

**General notes**

* Reiterate instructions and to be still etc during breaks and btw runs in scanner!
* Integrate DSS (full version) after post-experimental questionnaires
* (Can’t rate IMDF pics before because that would already constitute encoding)
* In TNT and IMDF null trials contain a fixation cross
* Collect as much physio as possible in the scanner
* Update inclusion/exclusion criteria in light of TNT/DF

**General questions**:

* @Christian: Serotonin transporter gene collected in our blood samples? This may be an interesting biomarker to track for dissociation in relation to attentional bias etc.
* @Mike: I noticed that in Subbu’s task the text and background colors change between the various phases. So, I am wondering if in my task it should be same, given that I am doing fMRI i.e. is black text on grey background in the lab and white text on grey background ok for me to use with fMRI? I noticed in the TNT training video that white text on black background throughout all phases is the current standard. Which way should I go?
* @Mike: Does it make sense to still conduct the DF task on participants who don’t pass the TNT criterion test?
* @Mike: I previously tried to setup the eyetracker in the lab adjacent to our scanner – that eyetracker is old and not communicating with python, so I had to switch labs. The new lab is in another building – I did a comfortably paced test walk from there to the scanner in under 5min – is this problematic at all (since time lost between learning phase and scanner is critical)? I would think a 5 min loss is ok but wanted to double check this with you.
* @Mike: currently I have a TR of 2, which seems to be standard. However, Pierre used a TR of 2.05. Do you have any thoughts on which way to go?
* @Mike: to alert you: I have bent over backwards with genetic design optimization algorithms and have tried almost everything: I got both Tor Wagers genetic algorithm (GA) to run in matlab and was able to get the neuropowertools GA to run using its python source code - however, my TNT design is simply too complex for these algorithms to handle and their settings are not granular enough e.g. the main problems are that there is no way to model the intrusion ratings independently from the stimulus, it’s not possible to set individual durations and trail numbers for each stimulus condition, and they can’t handle hard probabilities. I am now giving it one last go with optseq2 (which is not a genetic algorithm): it has the advantage of more granular settings for more complex designs, but still has the same problem as the GA’s of not being able to model the intrusion ratings independently. I had another chat with Davide and we came up with the idea of modeling the duration of the intrusion rating as part of the null trials and jittered ITI durations instead. I will let you know of the results once I’ve run the optimization, however, we may need to think of a plan-B if it goes south. As an alternative, how would you feel about using Subbu’s block randomization?