**more univariate effects**

i agreed with chris on running a univariate analysis looking at distances at the time of the cue. also some kind of signal that could at the time of the cue predict successful planning.

here an email..

results of the GLM we were talking about on the last time.

there are a few things i didn't do yet, so i'll run a new GLM with the things that are missing here.

**things we wanted to check**

at the time of the cue

distance of journey in number of stations  
distance of journey in number of lines  
distance of journey in number of exchange stations

successful journeys (Corr)

easy vs hard journeys (Easy)

interaction

at the time of the trial

distance from start (Tgoal)  
distance to goal (Dgoal)

interaction (TDgoal)  
distance from last subgoal (Tchange)

distance to next subgoal (Dchange)  
interaction (TDchange)

**GLM design**

i model three different onsets (cue, trial and feedback screens).

i was having problems bevause there are not enough easy journeys (10%). mainly, there are a few sessions without easy journeys – SPM complains about a correlation between regressors.

i've solved this by concatenating all sessions.

it all made a big glm, so i used the HRF assumption instead of a FIR. also, after solving the correlation between regressors problem i forgot to add :

– distances at the time of the cue

– interaction Corr \* Easy at the time of the cue.

the first trial and the goal are treated as subgoals when calculating distances.

distances are modeled as log(1+d). the +1 was to avoid null distances (the logarithm is -inf then).

**Results at the time of the cue**

successful journeys "Cue(Corr)":  
right hippocampus (+4.87)

bilateral anterior striatum (+4.50)  
  
successful journeys "Cue(Easy)":

 left orbitofrontal (-5.51)

right angular gyrus or alike (+6.51)

**Results during navigation, related to goal**

distance to goal "Trial(Dgoal)":

bilateral precuneus superior (+6.53)

bilateral precuneus inferior (+5.23)

somewhere in bilateral frontal superior (+6.45)

somewhere in right frontal superior posterior (-6.30)

bilateral thalamus, but individual voxels (+3.98)

time since start "Trial(Tgoal)":

somewhere in right parietal inferior (+5.17)

somewhere in bilateral orbitofrontal, not medial (+5.66)

somewhere in right frontal superior (+4.13)

interaction:

**big beautiful vmPFC (+4.94)** – i'm not sure of the right interpretation of this... length of journey?

left hippocampus (+5.41)

**Results during navigation, related to subgoal / change**

distance to change "Trial(Dchange)":

bilateral precuneus superior (+5.48)  
  
time since last change "Trial(Tgoal)":

nothing

interaction:

nothing

there it goes. take care with the interpretation:

1. journeys go left to right in the 1st barplot, but right to left in the 2nd and 3rd

2. in the 4th plot, easy journeys are usually shorter (5 to 7 stations) than hard journeys (5 to 11)

3. the optimal distance to journey is decorrelated from the distance from start in two ways:  
- because the optimal length of journey varies  
- and because people sometimes can eventually get lost.

to tear apart both factors, i've re-done the whole analysis only with trials were all responses are correct.

results:

1. vmpfc goes up with time

2. vmpfc goes down when you're just in the last  station (also when you become certain that you will get the reward)

3. vmpfc is more active in long (possibly hard) journeys

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