Functional connectivity of creativity: Seed to voxel analysis

Zofia Piętka-Danilewicz

UNIWERSYTET MIKOŁAJA KOPERNIKA W TORUNIU

What and why?

Many of us wonder what is the main factor which make us stand out from the crowd. Very often it's not our apperance but abbilities and creativity. The question is: **Can we see some outstanding differences in brains of more or less creative people?**

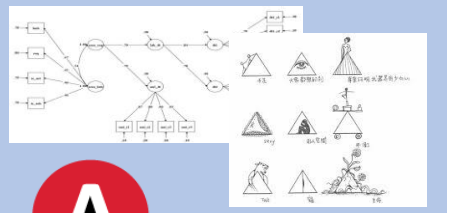
I made a **seed- based funcional connectivity**, to check which region in brain correlates with those abilities. Apart from many connections, I tried to visualized regions involved in both – verbal and visual creativity.

How?

People were solving tests connected with divergent thinking, everyday creativity and creative achievement

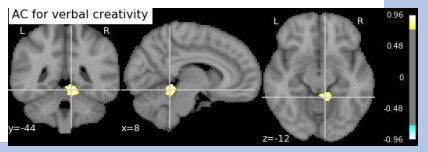
Seed to voxel analysis :

1. Create a seed for anterior cerebellum and right parahippocampal gyrus
2. Extract timeseries from a seed and brain regions
3. Calculate seed to voxel correlations

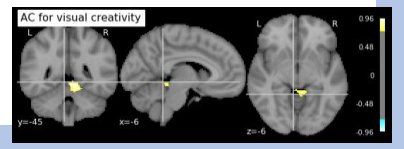


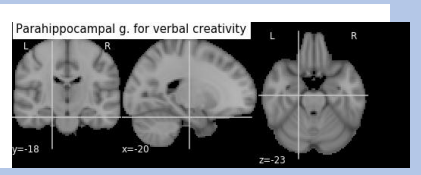
TEST MY CREATIVITY

My Results

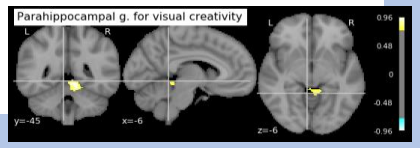


Frist analysis showed that verbal creatyvity is connected with Anterior Cerebellum actyvity.





Second analysis showed unactive area of parahippocampal gyrus while verbal creativity.



In third and forth cases the same MNI coordinates were given, and both showed only Anterior Cerebellum region avtive.

Conclusions

Despite many spontaneous connections which have influence on our creativity we can distinguish specyfic regions responsilbe for those activation.

The anterior lobe of the cerebellum is implicated as a volumetric predictor of verbal and visual scores.

References

• This analysis was performed on the dataset obtained from the OpenNeuro project(https://openneuro.org/datasets/ds002330/versions/1.1.0)

• Sunavsky, A., Poppenk, J.(2020). Neuroimaging predictors of creativity in healthy adults. *Neuroimage.* doi: 10.1016/j.neuroimage.2019.116292

• ~analysis was made in a native space~