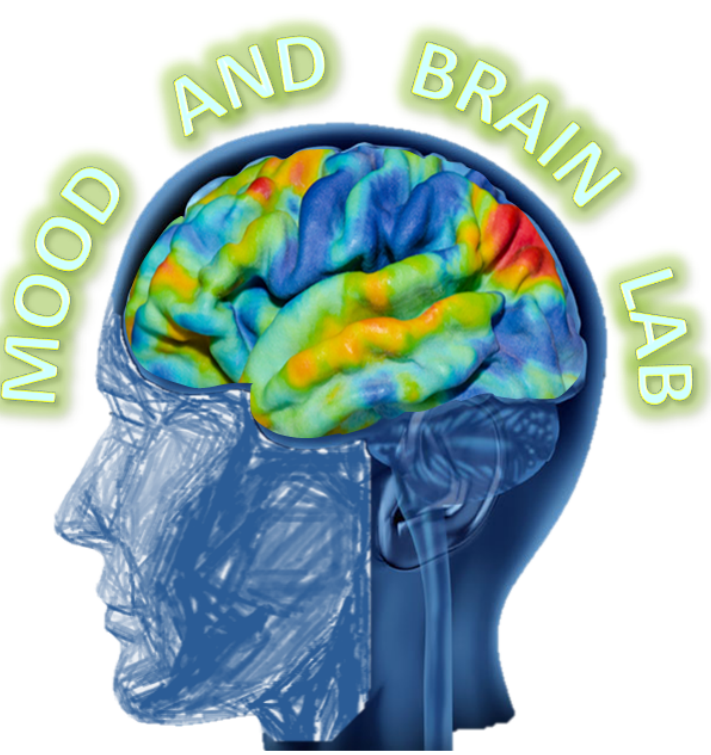


# Inter-regional connectivity within the win/loss anticipation network in depressed individuals with bipolar disorder, in depressed individuals with major depressive disorder and healthy controls.



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## Introduction

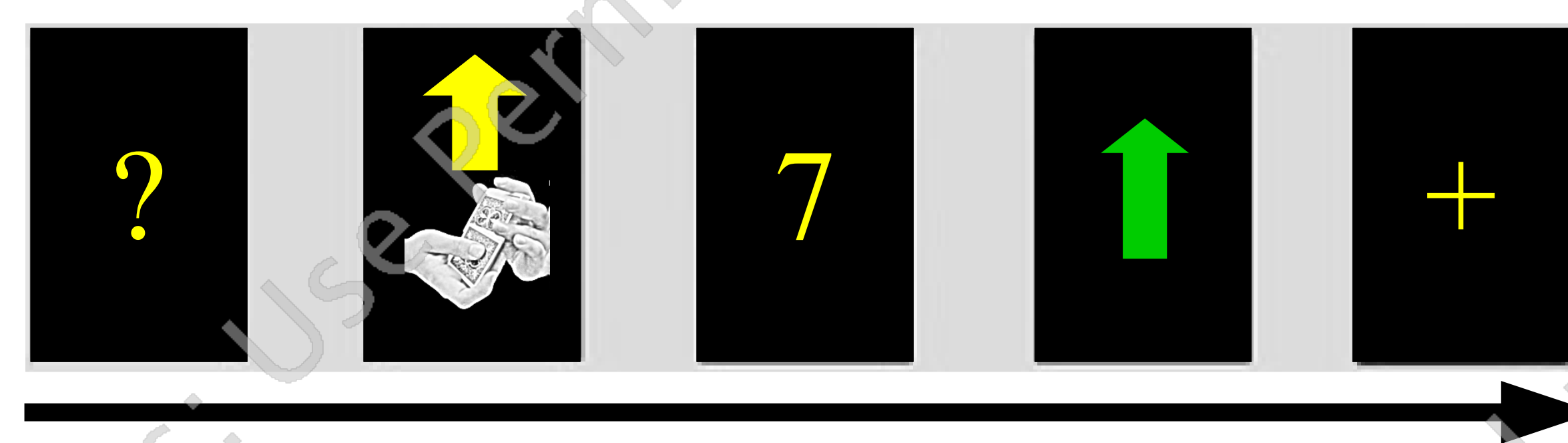
- ◆ Bipolar disorder (BDD) is often misdiagnosed as major depressive disorder (MDD)
- ◆ Identifying biomarkers distinguishing BDD from MDD would help to develop better therapeutic strategies and improve treatment outcomes<sup>1</sup>
- ◆ Depressed individuals are often biased (i.e., pessimistic bias) in their anticipation of future negative outcomes<sup>2,3</sup>
- ◆ Neural mechanisms underlying anticipatory bias may differ in BDD and MDD: BDD > MDD in LvlPFC activation during reward anticipation<sup>4</sup>
- ◆ **Goal:** to determine the differences in connectivity within the reward anticipation network between BDD, MDD and HC

## Methods

### Participants:

- ◆ BDD= 31 [24 female, mean age=33(±8), HAMD=26(±7)]
- ◆ MDD=39 [31 female, mean age=32(±8), HAMD=27(±6)]
- ◆ HC = 36 [26 female, mean age=33(±6), HAMD=2(±2)]

### Reward Task:



**Decision:** 4 sec  
**Anticipation:** 6 sec  
**Outcome:** 1 sec  
**ITI:** 9 sec

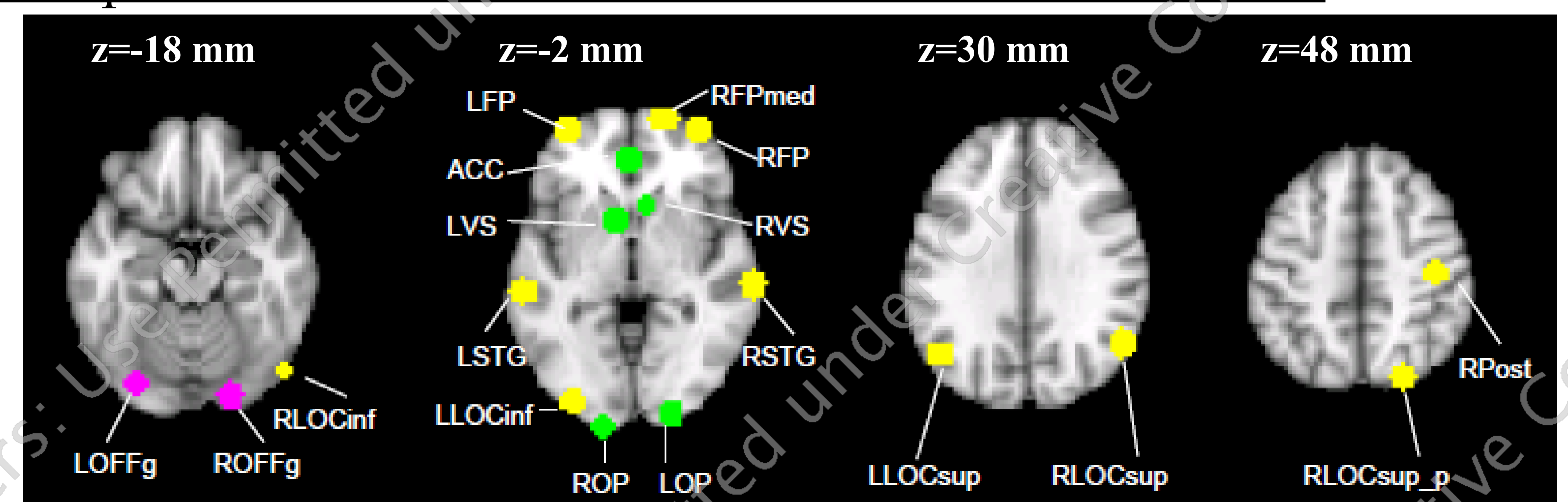
### FMRI data analyses:

- ◆ FSL 5.0: to identify the anticipation network
- ◆ Graph modeling (TETRAD-5.1.0-6): ImaGES algorithm to determine connections; LOFS algorithm to orient connections<sup>5</sup>

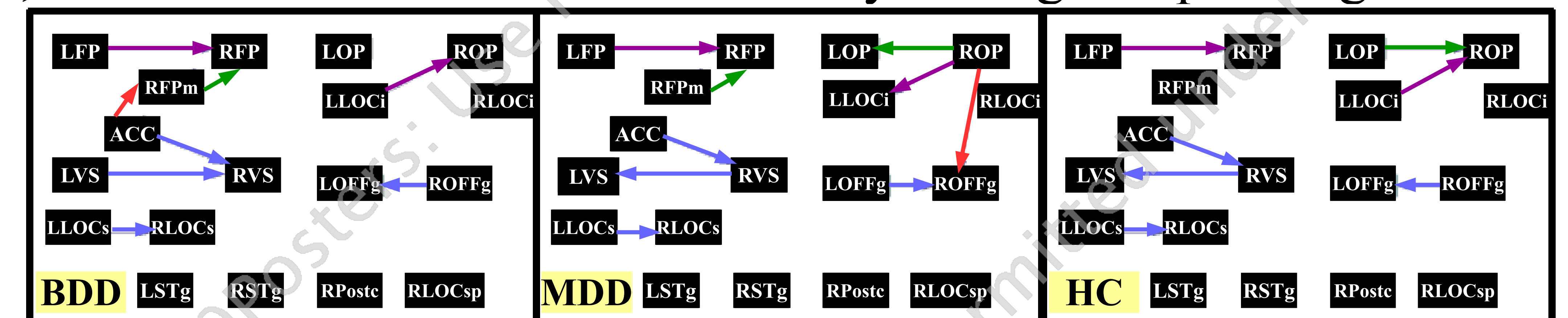
## Results

- ◆ **ROIs:** Main effect of Win and Loss anticipation vs. baseline (yellow); Win vs. Loss anticipation (green), Loss vs. Win anticipation (magenta)

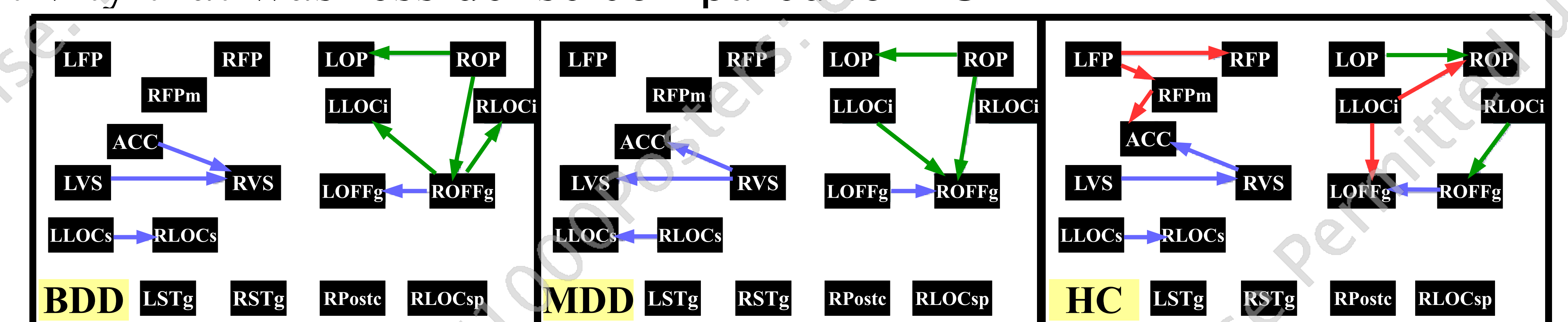
### A. 8 mm sphere around the coordinates with maximum z-score



### B. Win anticipation: BDD had denser connectivity among fronto-striatal regions, while MDD had denser connectivity among occipital regions



### C. Loss anticipation: BDD and MDD had similar fronto-striatal connectivity that was less dense compared to HC



→ 3 groups, all conditions    → 3 groups, specific condition    → 2 groups, specific condition    → Unique

## Conclusion

Altered fronto-striatal and occipital connectivity patterns during win anticipation distinguished BDD from MDD and HC and might reflect a neurobiological mechanism for impaired processing of positive stimuli in BDD

## References

1. Phillips & Swartz, 2014 (AJP)
2. Andersen et al., 1992 (J Pers Soc psy)
3. Strunk & Adler, 2009 (Behav Res Ther)
4. Chase et al., 2013 (Bipolar Disord)
5. Ramsey et al., 2011 (Neuroimage)

## Acknowledgments

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