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
- Depressed individuals are often biased (i.e., pessimistic bias) in their anticipation of future negative outcomes
- Neural mechanisms underlying anticipatory bias may differ in BDD and MDD: BDD > MDD in LvlPFC activation during reward anticipation
- 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

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

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

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