

Investigating the relationship between bipolar disorder traits, creativity and cardiac autonomic function using ECG

Introduction

- Bipolar disorder is split into 2 categories, bipolar 1 classifies the manic-depressive state as dominant and bipolar 2 requires the lifetime experience of one depressive and one hypomanic episode (American Psychiatric Association's (2022) Diagnostic and Statistical Manual of Mental Disorders (5th ed. Text revision; DSM-5-TR).
- Attention deficit/hyperactivity disorder (ADHD) is characterised as developmentally inappropriate levels of inattention or hyperactivity/impulsivity (DuPaul et al., 2009).
- Both are associated with creativity. Burkhardt et al (2019) suggested the effect of creativity on the treatment process of bipolar should be investigated so this study used an echocardiogram (ECG) to build on this suggestion.
- It is hypothesised that while conducting a creative task, stress levels will be lower in those with high bipolar traits compared to those with low bipolar traits.

Results

Kubios analysed the ECG output producing the root square mean of successive difference (RMSSD), the stress index (calculated using Baevsky's stress index) and the low frequency to high frequency ratio. a Wilcoxon signed rank test was used to compare the baseline results to the results from the creative task. No significant results were found, apart from a correlation between ADHD traits and bipolar disorder traits.

Discussion

This study do not match the findings from previous research. So, the hypothesis was not supported however the raw data suggests that it could be supported if the sample size was larger.

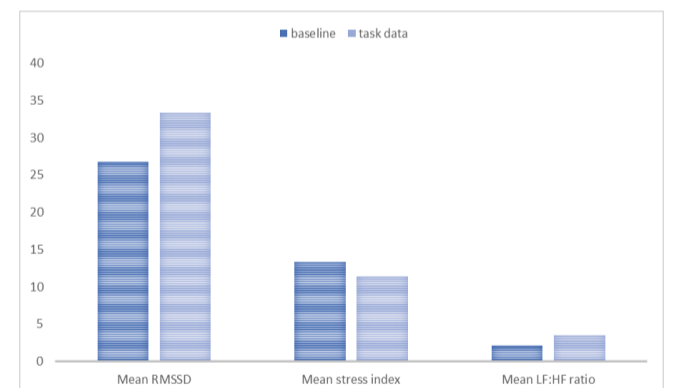
References

- American Psychiatric Association (2022) *Diagnostic and statistical manual of mental disorders: DSM-5*. 5th edn. Washington, D.C.: American Psychiatric Publishing.
- Burkhardt, E., Pfennig, A., Breitling, G., Pfeiffer, S., Sauer, C., Bechdorf, A., Correll, C.U., Bauer, M. and Leopold, K., 2019. Creativity in persons at-risk for bipolar disorder—A pilot study. *Early intervention in psychiatry*, 13(5), pp.1165-1172.
- DuPaul, G.J., Weyandt, L.L., O'Dell, S.M. and Varejao, M., 2009. College students with ADHD: Current status and future directions. *Journal of attention disorders*, 13(3), pp.234-250.
<https://www.kubios.com/>

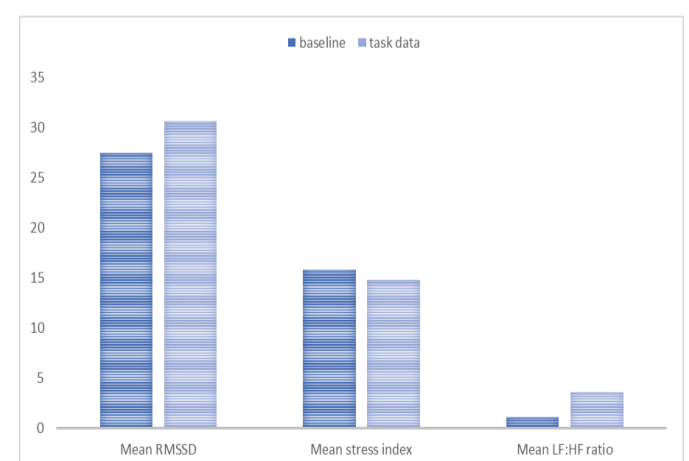
Method

25 participants were given 3 questionnaires to establish levels of ADHD, bipolar traits and creativity. 7 participants chose to come to the lab to complete the second half of the study. This involved undergoing an ECG. Participants did this or 10 minutes to establish a baseline and then for a further 30 minutes while doing a colouring task to monitor how stress levels changed while doing a creative task. Stress levels monitored by the ECG were used as indicators of the participant's psychological state.

Data from high bipolar traits group



Data from low bipolar traits group



Student Researcher: Lauren Ratcliffe

Supervisor: Dr Kyla Pennington

