**Programming Guide**

After every step the current EEG set needs to be stored within the workspace

* Import Data
  + Save as new data set with name ‘ADHD/Control’ ‘P(participant)’ ‘P#’ (eg. v3p = 3)
  + Sampling rate of 128
  + Import electrode locations Standard-10-20-Cap19new.ced
* Save externally for future reference
* Run pop\_clean\_rawdata with default settings but burst criterion off
* Re-reference data to average
* Save externally for future reference

ICA:

* Run pop\_eegfiltnew with a low cut off of 1 Hz
* Run Pop\_runica with channels equal to (19 – channels removed in pop\_clean\_rawdata) + 1
* Save externally for future reference
* Transfer ICA weights to dataset saved immediately after the first re-referencing
  + Pop\_editset ‘icaweights’
* Run ICA label
* Save dataset for future reference

Blink ERP:

* Run code for the identification of individual blink locations
  + Extract Temporal location
  + Save
  + Convert to range (50ms before and 100ms after)
  + Save
* Import back into original file creating specific epochs
* Save dataset comprised of said epochs externally for future analysis

ICA:

* Returning to ICA label, flag artefacts for rejection using either .95 or .9 confidence intervals
* Reject artefacts
* Save Externally for future reference
* Re-reference to average
* Save Externally for future reference
* Run Low/High pass filters at .5 & 60 Hz
* Save Final File for Analysis

**Analysis Prep:**

Microstate Generation:

ERP Analysis:

(Cho et al., 2015; Deng et al., 2024; Klug & Gramann, 2021; Nagabhushan Kalburgi et al., 2024; Pant et al., 2024)

**Ref:**

Cho, R. Y., Walker, C. P., Polizzotto, N. R., Wozny, T. A., Fissell, C., Chen, C.-M. A., & Lewis, D. A. (2015). Development of Sensory Gamma Oscillations and Cross-Frequency Coupling from Childhood to Early Adulthood. *Cerebral Cortex*, *25*(6), 1509–1518. https://doi.org/10.1093/cercor/bht341

Deng, Q., Wu, C., Parker, E., Zhu, J., Liu, T. C.-Y., Duan, R., & Yang, L. (2024). Mystery of gamma wave stimulation in brain disorders. *Molecular Neurodegeneration*, *19*(1), 96. https://doi.org/10.1186/s13024-024-00785-x

Klug, M., & Gramann, K. (2021). Identifying key factors for improving ICA-based decomposition of EEG data in mobile and stationary experiments. *European Journal of Neuroscience*, *54*(12), 8406–8420. https://doi.org/10.1111/ejn.14992

Nagabhushan Kalburgi, S., Kleinert, T., Aryan, D., Nash, K., Schiller, B., & Koenig, T. (2024). MICROSTATELAB: The EEGLAB Toolbox for Resting-State Microstate Analysis. *Brain Topography*, *37*(4), 621–645. https://doi.org/10.1007/s10548-023-01003-5

Pant, A., Kumar, A., Verma, C., & Illés, Z. (2024). Comparative exploration on EEG signal filtering using window control methods. *Results in Control and Optimization*, *17*, 100485. https://doi.org/10.1016/j.rico.2024.100485