OVERVIEW

SUMMARY

Attention Deficit Hyperactivity Disorder (ADHD) affects at least 5-10% of school-age children and is associated with substantial lifelong impairment, with annual direct costs exceeding $36 billion/year in the US. Despite a voluminous empirical literature, the scientific community remains without a comprehensive model of the pathophysiology of ADHD. Further, the clinical community remains without objective biological tools capable of informing the diagnosis of ADHD for an individual or guiding clinicians in their decision-making regarding treatment.

The ADHD-200 Sample is a grassroots initiative, dedicated to accelerating the scientific community's understanding of the neural basis of ADHD through the implementation of open data-sharing and discovery-based science. Towards this goal, we are pleased to announce the unrestricted public release of 776 resting-state fMRI and anatomical datasets aggregated across 8 independent imaging sites, 491 of which were obtained from typically developing individuals and 285 in children and adolescents with ADHD (ages: 7-21 years old). Accompanying phenotypic information includes: diagnostic status, dimensional ADHD symptom measures, age, sex, intelligence quotient (IQ) and lifetime medication status. Preliminary quality control assessments (usable vs. questionable) based upon visual timeseries inspection are included for all resting state fMRI scans.

In accordance with HIPAA guidelines and 1000 Functional Connectomes Project protocols, all datasets are anonymous, with no protected health information included.

PROJECT COORDINATOR

Michael P. Milham, M.D., Ph.D.

STEERING COMMITTEE

Jan Buitelaar, M.D., F. Xavier Castellanos, M.D., Ph.D., Daniel Dickstein, Ph.D., Damien Fair, P.A.-C, Ph.D., David Kennedy, Ph.D., Beatric Luna, Ph.D., Michael P. Milham, M.D., Ph.D., Stewart Mostofsky, M.D., Joel Nigg, Ph.D, Julie B. Schweitzer, Ph.D., Katerina Velanova, Ph.D., Yu-Feng Wang, M.D., Ph.D., Yu-Feng Zang, M.D.

DATA ORGANIZATION

Maarten Mennes, Ph.D., David Gutman, Saroja Bangaru, Jessica Sunshine, and Michael P. Milham, M.D., Ph.D.

USAGE AGREEMENT

License

Consistent with the policies of the 1000 Functional Connectome Project, data usage is unrestricted for non-commercial research purposes. We kindly request that the specific datasets included in analyses be specified appropriately, and that their funding sources be acknowledged. As per INDI protocol, we simply require that user register with the NITRC and 1000 Functional Connectomes Project to gain access.

Register

Note: You must be logged into NITRC to download the ADHD-200 datasets.

PHENOTYPIC KEY

Phenotypic Key

Key explaining the values used to code site, gender, handedness, diagnosis, ADHD measure, IQ measure, medication status and quality control in each sample's phenotypic.csv file.

UPDATES AND BUG FIXES

April 11 2011 - Voxel size fix for some structural images: A data preparation error affected the structural images for 73 participants. The images were not de-obliqued prior to reorienting with 3dresample. This has resulted in the dimension sizes for the x and z dimensions being reversed (running the 3drefit –deoblique avoids this). We apologize for any inconvenience this causes and have taken the following steps:

1. Releases affected by this problem were updated. The affected releases are Peking_1 (n=7), NYU_part2 (n=2), and OHSU (n=64).
2. A quick-fix release that only contains structurals of the 73 affected participants can be found below. A list of affected subject can be found here.

Voxel Size Quick-Fix Release

July 1 2011 - Phenotypic information fix: A data preparation error affected the phenotypic information for 49 participants. The errors originated in the initial translation of site-specific measures to the common phenotypic set. KKI was most affected with the IQ information for 38 subjects being wrongly matched. We apologize for any inconvenience this causes and have taken the following steps:

1. We have checked all phenotypic information using newly written automatic scripts.
2. Releases affected by this problem were updated. The affected releases are Peking_1 (n=2, gender), KKI (n=38, IQ measures), NYU_part1 (n=5, gender), and OHSU (n=1, gender; n=3, age).
3. A quick-fix release that only contains phenotypic information for the 49 affected participants can be found below.

Phenotypic Quick-Fix .csv

ADHD-200 Preprocessed

A consortium of the International Neuroimaging Datasharing Initiative (INDI), the ADHD-200 Sample is a collaboration of 8 international imaging sites that have aggregated and are openly sharing neuroimaging data from **362 children and adolescents diagnosed with ADHD** and **585 typically developing controls**. These 947 datasets are composed of structural and resting state functional MRI data along with phenotypic information.

In 2011, the ADHD-200 Consortium hosted a competition to identify biomarkers of attention deficit/hyperactivity disorder (ADHD) using the ADHD-200 data. The Preprocessed Connectomes Project (PCP) began as an initiative to make the competition accessible to a broader range of researchers by preprocessing the data and openly sharing the results. The data from this initiative was used by many of the participants in the competition, including the winning team, and has resulted in several publications, MS theses, PhD disertations, and even patents (see reference list).

The ADHD-200 data was preprocessed by three different teams using their preferred tools. The Athena pipeline is based on tools from the AFNI and FSL software packages, the NIAK pipeline uses the Neuroimaging Analysis Kit on CBRAIN, and the Burner pipeline performed voxel-based-morphometry processing using SPM8. The preprocessed results can be downloaded from NITRC and from an Amazon Web Services Public S3 Bucket (see download instructions).

In accordance with HIPAA guidelines and 1000 Functional Connectomes Project / INDI protocols, all datasets are anonymous, with no protected health information included.

Citation

If you use ADHD-200 preprocessed data in your research, please cite it in your publications along with the specific pipeline that you used:

Pierre Bellec, Carlton Chu, François Chouinard-Decorte, Yassine Benhajali, Daniel S. Margulies, R. Cameron Craddock (2017). The Neuro Bureau ADHD-200 Preprocessed repository. *NeuroImage, 144, Part B, pp. 275 - 286.* doi:10.1016/j.neuroimage.2016.06.034

Also, please let us know about your publication so that we can add it to our list of Publications.

Pipeline Scripts

Bash scripts that implement the Athena pipeline are available here.

Scripts that run in Matlab and Octave for the NIAK pipeline can be found here.

Credits

ADHD-200 Preprocessed Founders
R. Cameron Craddock[1,2,3], Pierre Bellec[1,4,5]

Data Processing
The Athena Pipeline: R. Cameron Craddock[1,2,3]
The Burner Pipeline: Carlton Chu[1,6]
The NIAK Pipeline: Francois Chouinard-Decorte[1,4,7], Pierre Bellec[1,4,5]

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