



Adolescent Brain Cognitive Development®
Teen Brains. Today's Science. Brighter Future.

ABCD Science Newsletter

Jan 2020

NEWS

Updated Known Issues in Release 2.0.1. We have identified four issues with Data Release 2.0.1 that impact some of the neuroimaging, genetics and behavioral data. For more information, please refer to the updated Known Issues document on the ABCD Collection page https://nda.nih.gov/edit_collection.html?id=2573.

DCAN Labs ABCD-BIDS MRI pipeline inputs and derivatives. This data collection from the Developmental Cognition and Neuroimaging (DCAN) Labs contains a regularly updated dataset of ABCD Brain Imaging Data Structure (BIDS) version 1.2.0 pipeline inputs and derivatives. Source data are currently comprised of all the ABCD Study participants baseline year 1 arm 1 DICOM imaging data that passed initial acquisition quality control from the ABCD Data Analysis and Informatics Center (DAIC) and were processed by DCAN Labs. The input DICOM data to this BIDS version 1.2.0 (<https://www.nature.com/articles/sdata201644>) data collection were retrieved from the NIMH Data Archive (NDA) share of ABCD fast-track data (https://nda.nih.gov/edit_collection.html?id=2573) and were last accessed on May 1, 2019. BIDS input data were converted from DICOMs using ABCD Dcm2Bids (<https://github.com/DCAN-Labs/abcd-dicom2bids>; <https://github.com/cbedetti/Dcm2Bids>). BIDS derivatives data were derived from the DCAN Labs ABCD-BIDS MRI processing pipeline which outputs Human Connectome Project (HCP) Minimal Preprocessing Pipelines-style data in both volume and surface spaces (<https://doi.org/10.5281/zenodo.2587210>, <https://doi.org/10.1016/j.neuroimage.2013.04.127>). The collection is here: https://nda.nih.gov/edit_collection.html?id=3165. For Release Notes, Comments, and to Report Issues see: <https://github.com/DCAN-Labs/nda-abcd-collection-3165>). For easy download of select files see: <https://github.com/DCAN-Labs/nda-abcd-s3-downloader>.

HIGHLIGHTS

ABCD Machine Learning. On GitHub is a python-based machine learning library specifically geared towards the ABCD tabular neuroimaging data. Extensive documentation is provided at <https://abcd-ml.readthedocs.io/en/latest/>.

TECHNICAL TIPS

dMRI and fMRI slice timing. As requested by the community, we have provided the dMRI and fMRI slice timing information on the ABCD NDA Collection page (https://nda.nih.gov/edit_collection.html?id=2573). This will be updated when new scanners are added (e.g. the GE Premier in 2020) or when scanner firmware/hardware updates require modifications to the slice timings. **Updated Fast Track Release Notes.** The Fast Track Release Notes have been updated to provide more download instructions and are available on the ABCD NDA Collection page (https://nda.nih.gov/edit_collection.html?id=2573) for qualified researchers.

RECENT PUBLICATIONS

- Marshall et al., (2020) Association of lead-exposure risk and family income with childhood brain outcomes. *Nature Medicine*, volume 26, pages 91–97.
- Fair et al., (2019) Correction of respiratory artifacts in MRI head motion estimates. *Neuroimage*. 2019 Nov 25;116400. doi: 10.1016/j.neuroimage.2019.116400.
- Pagliaccio et al., (2019) Brain Volume Abnormalities in Youth at High Risk for Depression: Adolescent Brain and Cognitive Development Study. *J Am Acad Child Adolesc Psychiatry*. 2019 Oct 18. pii: S0890-8567(19)32101-X. doi: 10.1016/j.jaac.2019.09.032.
- Lamberg (2019) Studies Highlight Impact of Sleep on Mental Health of Youth. *Psychiatric News*. <https://doi.org/10.1176/appi.pn.2019.9b24>. Accessed Dec 13, 2019.
- Laurie (2019) Brain Scans, Saliva Tests, and Baby Teeth: Inside the Massive, Government-Funded Effort to Understand How Kids' Brains Develop. Mother Jones. <https://www.motherjones.com/environment/2019/08/brain-scans-saliva-tests-and-baby-teeth-inside-the-massive-government-funded-effort-to-understand-how-kids-brains-develop/> Accessed Dec 13, 2019.
- Sripada et al., (2019) Prediction of neurocognition in youth from resting state fMRI. *Mol Psychiatry*. 2019 Aug 19. doi: 10.1038/s41380-019-0481-6. [Epub ahead of print].

ABCD CALENDAR

- March 19-21, 2020: **Neurodevelopmental risk and structural MRI metrics in the ABCD study and Gastrointestinal complaints and eating disorder symptoms in the ABCD study**. Society for Research on Adolescence (SRA) Biennial Meeting. San Diego, CA, USA.
- April 25-29, 2020: **The Developmental Perspective in Brain and Behavior: Analytic Tools and Findings from the Adolescent Brain Cognitive Development (ABCD) Study**. American Psychiatric Association Annual Meeting. Philadelphia, PA, USA.
- April 30-May 2, 2020: **Preview of the Adolescent Brain Cognitive Development (ABCD) Study Release 3.0**. Society of Biological Psychiatry Meeting. New York, NY, USA.
- June 26-30, 2020: **Researcher's Guide to the Adolescent Brain Cognitive Development (ABCD) Study: Release 3.0**. Organization for Human Brain Mapping (OHBM) Annual Meeting. Montreal, Canada.
- Summer 2020: **Curated ABCD Data Release 3.0**.