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Announcing a Registered Reports special issue at *Cortex* for the ABCD study

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The Adolescent Brain Cognitive Development (ABCD) study is an NIH-funded longitudinal investigation of child health and neurocognitive development in the United States. Over a period of ten years the project will monitor the development of almost 12,000 children aged 9–10 at baseline, employing structural and functional MRI, genetics and other biomarkers, neuropsychological and cognitive testing, and a variety of assessments of health, culture and environment. The overall aim of the project is to understand key factors that can enhance or disrupt a young person's life trajectory.

Since its inception, open science has been central to the mission of the ABCD study. Anonymised data are made publicly available via an annual release on the NIMH Data Archive (NDA), with no exclusive access rights for the investigators involved. In 2018 the first of these data releases – involving baseline measurements of 4,524 participants – was made public, with a corresponding introduction to the initiative published in a special issue of *Developmental Cognitive Neuroscience*. In March 2019, the project plans to release the remainder of this initial baseline dataset, in total consisting of approximately 12,000 participants.

The regularity of an annual data release provides the opportunity to complement the transparency of the ABCD project with the rigour of the Registered Reports initiative, now offered by over 140 journals. In contrast to regular research articles, Registered Reports are peer reviewed and accepted based the study design and analysis plan, before results are known. The format thus prevents outcome-based publication decisions, eliminating publication bias while also preventing various forms of researcher bias, including selective reporting of statistically significant results and hypothesizing after results are known.

We are pleased to announce a partnership between the ABCD project and *Cortex*, including a special call for Stage 1 Registered Reports proposing analysis plans of the upcoming 2019 data release.

Information regarding funding agencies, recruitment sites, investigators, and project organization can be obtained from <https://abcdstudy.org>. Data for the baseline release of N = 4,524 subjects aged 9–10 year can be downloaded from the NDA website. After obtaining permissions as described there (see [Fig. 1](#)), data files can be downloaded in csv format; R scripts for merging these files and including some initial processing (e.g., computing the demographic categories used in this paper) can be found at <https://github.com/ABCD-STUDY/analysis-nda17>. Tabulated structural and functional data (e.g., using the Desikan atlas) are available in these files. An interactive Data Exploration and Analysis Portal (DEAP) will also be available to NDA-registered users of the ABCD data from October 15, 2018, which includes useful informatics tools for navigating, exploring, analysing, and downloading the data.

Access to ABCD data

The adolescent brain cognitive development study (ABCD) shares all data through the NIMH Data Archive (NDA, ndar.nih.gov/edit_collection.html?id=2573).

To request an account go to:

<https://data-archive.nih.gov/abcd/request-access>

What is shared:

Fast-Track Raw Image Data

2017 Assessments, Scores, ROIs

Requirements for getting access:

1. You must have a research-related need to access the data
2. You must be associated with an NIH-recognized research institution, defined as an institution registered in the NIH electronic research administration system (eRA Commons), and have the approval of an authorized signatory official of that institution.
3. Your institution must have an active Federal-wide Assurance (FWA).

NDAHelp@mail.nih.gov
call: 301-443-3265

1. [Download high-res image \(340KB\)](#)
2. [Download full-size image](#)

Fig. 1. Instructions for obtaining data permissions and downloading data.

Whole brain T1-and T2-weighted images are available for download separately as Fast-Track minimally-processed images. Details about this option will be made public shortly, but in the meantime authors are invited to contact Chris Chambers with any enquiries (chambersc1@cardiff.ac.uk).

Descriptions of study measures and image processing are given in the list of current publications at <https://abcdstudy.org>. ABCD data collection is organized by work groups; each work group published a paper describing data collection and measures obtained in a special issue of *Developmental Cognitive Neuroscience*. Work groups include Substance Use, Neurocognition, Mental and Physical Health, Biospecimens, and Neuroimaging.

How will the ABCD Registered Reports special issue work?

Authors are invited to submit Stage 1 Registered Reports proposing hypotheses and analysis plans for the upcoming data release in 2019. Authors are welcome to use the existing 2018 data release as a generative sample for exploratory hypothesis generation and pipeline validation, with the protocol proposing preregistered hypotheses on the as-yet unreleased sample. Since the ABCD study is in only its second year (with the baseline sample still being accumulated), the research proposed in this special issue should focus on static questions that can be assessed in the baseline data rather than addressing longitudinal questions.

Registered Reports submitted as part of the ABCD special issue will be promptly reviewed according to our existing Stage 1 criteria including:

1. The importance of the research question(s).
2. The logic, rationale, and plausibility of the proposed hypotheses.
3. The soundness and feasibility of the methodology and analysis pipeline (including statistical power analysis where appropriate).
4. Whether the clarity and degree of methodological detail is sufficient to exactly replicate the proposed experimental procedures and analysis pipeline.
5. Whether the authors have pre-specified sufficient outcome-neutral tests for ensuring that the results obtained can test the stated hypotheses, including positive controls and quality checks.

On the data release date in March 2019, all the Stage 1 protocols that have achieved *in principle acceptance* will be able to progress to data analysis and full reporting in the journal (Stage 2), combining the benefits of open data and large sample size with the rigour of unbiased hypothesis testing. Manuscripts resubmitted with results will then be assessed according to our existing Stage 2 criteria:

1. Whether the data are able to test the authors' proposed hypotheses by satisfying the approved outcome-neutral conditions (such as quality checks, positive controls)
2. Whether the Introduction, rationale and stated hypotheses are the same as the approved Stage 1 submission (required)
3. Whether the authors adhered precisely to the registered experimental procedures
4. Whether any unregistered *post hoc* analyses added by the authors are justified, methodologically sound, and informative
5. Whether the authors' conclusions are justified given the data

All accepted Stage 2 Registered Reports will then be published in a 2019 special issue.

As part of article assessment at both stages, we are pleased to welcome Dr Wes Thompson, Director of Biostatistics for the ABCD study, as an additional member of our Registered Reports editorial team, joining the existing team of Chris Chambers (Cardiff University), Zoltan Dienes (University of Sussex), Rob McIntosh (University of Edinburgh), Pia Rotshtein (University of Birmingham) and Sam Schwarzkopf (University of Auckland).

How will these Registered Reports differ from typical Registered Reports at *Cortex*?

Registered Reports at *Cortex* usually propose studies in which all aspects of the research, including the rationale, procedure and analysis plan, are revisable in principle. For the ABCD study, however, the data acquisition procedure, including the range and quantity of observations, is fixed while the questions being asked of the data, hypotheses tested, and analysis plans are flexible to the full extent permitted by the range of observations. Given the broad range of measurements being obtained in the study, this offers a wide latitude to explore questions about cognitive control, brain structure and function, genetics, and neuropsychology in a child sample. As noted, we strongly encourage authors to include pilot analyses and confirm, in advance, the validity of their proposed pipelines using the initial data release. These existing data also provide authors with the opportunity to generate novel

hypotheses in a large dataset, including them either as preliminary analyses within their Stage 1 submissions or as separate articles via our Exploratory Reports article type.

Submissions are now open. Prospective authors are invited to consult the Cortex Registered Reports author guidelines and we welcome any presubmission enquiries.