
ABCD Human Subject Study

Adolescent Brain Cognitive Development – ABCDSTUDY.org

Release Notes for Annual Release 1.1

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Other Non-Imaging Instruments

October 31, 2018

List of Instruments

Name of Instrument	Short Name
ABCD Screener	abcd_screen01
ACS Post Stratification Weights	acspsw01
Residential History Derived Scores	abcd_rhds01
ABCD Longitudinal Tracking	abcd_lt_01

General Information

ABCD Screener: Eligibility screener and screener risk measures

As the ABCD Study aims to recruit a sample that reflects the diversity of the US population of nine and ten year olds, its philosophy is to be as inclusive as possible.

ABCD Inclusion/Exclusion criteria

Some exclusions are necessary, however, which include the following criteria:

- Any condition that might render the assessment procedures dangerous to participants (e.g., MRI contra-indications);
 - The presence of a medical or psychiatric condition that would affect the participant's capability to complete the assessments (e.g., schizophrenia; severe autism) or other circumstances that would affect the ability to complete the assessments such as poor English skills or sensorimotor impairments;
 - Existing alcohol or substance use disorders in order to obtain a baseline assessment unaffected by exposure effects;
 - Intention to move away from an ABCD site in the coming years;
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- Extreme prematurity or low birth weight are exclusionary;
- The presence of focal brain abnormalities that might impact the automated processing pipelines.

In addition to the specific exclusionary criteria listed below, an expert group adjudicates on unusual cases such as those presenting with uncommon medical conditions.

Youth Criteria at Study Entry

Inclusion Criteria:

- Age 9.00 to 10.99 years at time of baseline assessments;
- Able to validly complete baseline assessments including MRI scanning;
- Fluent in English.

Exclusion Criteria:

- MRI contraindications such as orthodontic braces or irremovable dental appliances containing ferromagnetic materials, claustrophobia that cannot be overcome with repeated attempts, non-removable ferromagnetic metal implants that may distort the images, or youth is pregnant on day of scanning based on urine pregnancy test in postmenarcheal girls;
- Youth is not fluent in English (all youth materials are in English, but parents can be assessed in Spanish at some sites);
- Non-correctable vision, hearing or sensorimotor impairments that may confound the child's responses on the assessments;
- A history of persistent major neurological disorders such as cerebral palsy, brain tumor, stroke, brain aneurysm, brain hemorrhage, or subdural hematoma. Other exclusionary medical or neurological conditions include multiple sclerosis, sickle cell disease, and the following seizure disorder diagnoses: Lennox-Gastaut syndrome, Dravet syndrome, and Landau Kleffner syndrome;
- Gestational age less than 28 weeks or birthweight less than 1,200 grams (2 lb 10 oz). Birth complications that resulted in hospitalization for more than a month are exclusionary (but not if the hospitalization was due to prematurity alone);
- A current diagnosis of schizophrenia, autism spectrum disorder (moderate or severe), mental retardation/intellectual disability, or alcohol/substance use disorder. (A past diagnosis that has remitted is not exclusionary);
- A history of traumatic brain injury (TBI): TBI with loss of consciousness >30 minutes, or Amnesia >24 hours, or positive neuroimaging findings (e.g., symptomatic hemorrhage) secondary to TBI;
- A parent/guardian's report that the child would be unable to complete the baseline assessments (i.e., answer questions, solve puzzles on an iPad, follow directions, and lie still in the MRI scanner).

Parent/Legal Guardian Criteria at Study Entry

Inclusion Criteria:

- Serve as the primary custodial parent or legal guardian with child in home for the majority of the year.

Exclusion Criteria:

- Unwilling to attend annual visits and complete the parental assessments.

ACS Post Stratification Weights - ACS post stratification weights for demographic and socioeconomic measures, and family relationships table

The American Community Survey (ACS, 2010, US Census Bureau) is used to obtain detailed information about the population targeted by the ABCD Study. Individual data collection sites have targets assigned to them that overall should produce a match of the ABCD cohort and the ACS defined targets. For example, these targets include ethnicity and highest household education for each data collection site. However, remaining differences between the ABCD cohort and the ACS targets can be minimized by introducing weights for each participant. These weights are available for 20 individual imputation runs. The individual weights and the mean over the 20 runs (`acs_wi_post`) are available for each participant in the ACS Post Stratification Weights (`acspsw01`) instrument and might be used in statistical analysis to reduce cohort effects.

The family relationship section of the "ACS Post Stratification Weights" (`acspsw01`) table contains the following measures related to the family structure of participants inside the NDA17 data share for ABCD: `rel_family_id`, `rel_group_id`, `rel_relationship`, and `rel_same_sex`. These values are derived from information contained in pairs of participant IDs that are marked as either sibling, twin, or triplet. The family ID is the same for all participants in a family and different between families. Inside a family each set of twins, triplets or siblings will have a unique group ID. A family with 2 sets of twins and one siblings will there have three unique group IDs. The `rel_same_sex` variable will indicate (1) twin or triplets with the same sex. All other mixed-sex twins or triplets as well as siblings will not have a value.

The relationships twin and triplet are calculated from the subset of participants from part of the current data release. If a single twin was not part of the NDA17 release its paired twin part of the study will be listed as a sibling. This will result in slight changes in the family structure across different ABCD data releases.

ABCD Longitudinal Tracking

Includes site ID of subject at each visit to facilitate identification of the site ID associated with each scan

Notes

Residential History Derived Scores

The residential history is established according to the parents' report on where they lived. The variables were then retrieved based on the coordinates of their address. The query database was built based on digital archives from federal government, which we described as the following:

1. Smart location database from EPA.

The description for the smart location database can be found at: <https://www.epa.gov/smartgrowth/smart-location-mapping#walkability>. We used estimates based on 2010 census. The resulting variables include gross residential density and walkability index. The resolution of this database is at the census tract level.

2. Uniform crime report from FBI, compiled by ICPSR.

The description for this database can be found at: <http://www.icpsr.umich.edu/icpsrweb/NACJD/studies/33523>. To maintain a stability on the crime estimates, here we used three year averages, 2010 to 2012. The resolution of this database is at the county level.

3. Area deprivation index, calculated from American Community Survey.

The area deprivation index (ADI) is calculated based on a published study for the socioeconomic inequality impact on health (<http://annals.org/aim/fullarticle/1983380/neighborhood-socioeconomic-disadvantage-30-day-rehospitalization-retrospective-cohort-study>). The database we used here for query is the 2011 - 2015 American Community Survey 5-year summary. Although the area deprivation index has 18 different sub-scores, the recommendation is to use the national percentiles. The resolution of this is at the census tract level.

4. Population density, UN adjusted, from SEDAC.

The estimation is based on the 2010 census tract while adjusted based on potential under-reporting across the world.

5. Satellite based pollution measures (PM 2.5 and NO2 levels).

Both were obtained from NASA SEDAC. The resolution is at 100 km². Both were 3 year average estimates, spanning from 2010 to 2012.

6. Elevation.

This is based on direct query to the Google map, which contains elevations given where participants live.

All variables are truncated to avoid potential identification while maintain overall variations for analytical purposes.