Adolescent Brain Cognitive Development


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Director, ABCD Project
Division of Extramural Research, NIDA
May 3, 2017
Federal Collaborators

- National Institute on Drug Abuse
- National Institute on Alcohol Abuse and Alcoholism
- National Cancer Institute
- Eunice Kennedy Shriver National Institute of Child Health and Human Development
- National Institute of Mental Health
- National Institute on Minority Health and Health Disparities
- National Institute of Neurological Disorders and Stroke
- NIH Office of Behavioral and Social Sciences Research
- NIH Office of Research on Women's Health
- Centers for Disease Control and Prevention - Division of Adolescent and School Health
- National Institute of Justice
**Physical Health**
- PhenX Anthropometrics (height/weight/waist measurements)
- Snellen Vision Screener
- Edinburgh Handedness Inventory
- Youth Risk Behavior Survey: Exercise
- Pubertal Development Scale
- Menstrual Cycle Survey (pubescent girls)
- Screen Time Survey

**Biospecimens**
- Breathalyser and Oral Fluids (subset)
- Saliva Samples for DNA, Puberty
- Blood Samples (subset)
- Hair Sample
- Baby Teeth

**Mental Health**
- Kiddie Schedule for Affective Disorders and Schizophrenia
  - Background Items Survey
  - Diagnostic Interview for DSM-V (5 modules)
  - PhenX UPPS-P for Children Survey
  - PhenX Behavioral Inhibition/Behavioral Approach System (BIS/BAS) Scales
  - Prodromal Psychosis Scale
  - Youth Resilience Scale

**Neurocognition**
- NIH Toolbox Tasks:
  - Picture Vocabulary
  - Flanker Inhibitory Control & Attention
  - List Sorting Working Memory
  - Dimensional Change Card Sort
  - Pattern Comparison Processing Speed
  - Picture Sequence Memory
  - Oral Reading Recognition
  - Rey Auditory Verbal Learning Task
  - Cash Choice Task
  - Little Man Task
  - Matrix Reasoning Task
  - RAVLT Delayed Recall

**Culture & Environment**
- Prosocial Tendencies Survey
- PhenX Acculturation Survey
- Parental Monitoring Survey
- Acceptance Subscale from Children's Report of Parental Behavior Inventory (CPRBI) - Short
- PhenX Family Environment Scale - Family Conflict
- PhenX Neighborhood Safety/Crime Survey
- PhenX School Risk & Protective Factors Survey

**Substance Use**
- For most participants:
  - Timeline Follow-Back Survey
  - PhenX Peer Group Deviance Survey
  - PATH Intention to Use Tobacco Survey
  - Caffeine Intake Survey
  - Participant Last Use Survey (PLUS) for substance use within the last 24 hrs

**Other Data Sources**
- Geocoding from Residential History
- School Records
- FitBit (subset)
- Brief Problem Monitor - Teacher Form

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*For participants with differing levels of substance use (low, moderate, heavy). Follow-up items include: 155Y-FQ Stopping Items; Tobacco Low-Level Use Measure; MJ Low-Level Use Measure; PhenX Acute Subjective Response to Alcohol, Tobacco, or MJ; Hangover Symptom Scale; Rutgers Alcohol Problem Index (RAPS); Nicotine Dependence (PATH); Drug Problem Index (MAP); MJ Problem Index (MAP)*
**Physical Health**
- PhenX Demographics Survey
- Medical History Questionnaire
- Developmental History Questionnaire
- PhenX Medications Survey
- Menstrual Cycle Survey
- Sleep Disturbances Scale for Children
- Sports and Activities Involvement Questionnaire
- Screen Time Survey
- Ohio State TBI Screen - Short

**Mental Health**
- Kiddie Schedule for Affective Disorders and Schizophrenia
  - Background Items Survey
  - Diagnostic Interview for DSM-5
- Child Behavior Checklist
- General Behavior Inventory - Mania
- Adult Self Report Survey
- Family History Assessment Survey

**Substance Use**
- Parent Rules Survey
- PhenX Community Risk and Protective Factors
- Participant Last Use Survey (PLUS) for substance use within the last 24 hrs.

**Culture & Environment**
- Vancouver Index of Acculturation - Short Survey
- Multi-Group Ethnic Identity Measure-R Survey
- Prosocial Tendencies Survey
- Mexican American Cultural Values Scale
- PhenX Acculturation Survey
- PhenX Family Environment Scale - Family Conflict
- PhenX Neighborhood Safety/ Crime Survey
- Native American Acculturation Scale

*For participants with differing levels of substance use (low, moderate, heavy), follow-up items include: (Yes/No/2 Sipping items; Tobacco Low-Level Use Measure; MJ Low-Level Use Measure; PhenX Acute Subjective Responses to Alcohol; Tobacco, or MJ; Hangover Symptom Scale; Rutgers Alcohol Problem Index (RAPI); Nicotine Dependence (PATH); Drug Problem Index (MAP); M/F Problem Index (MAP)*

*ABCD Study.org*
Enrollment Progress
Locations of ABCD Research Sites in the United States

- University of California, San Diego
- University of California, San Diego
- Children's Hospital of Los Angeles
- Florida International University
- Laureate Institute for Brain Research
- Icahn School of Medicine at Mount Sinai
- Oregon Health & Science University
- SRI International
- University of California, Los Angeles
- University of California, San Diego
- University of Colorado
- University of Florida
- University of Maryland
- University of Michigan
- University of Minnesota
- University of Pittsburgh
- Medical University of South Carolina
- University of Utah
- University of Vermont
- Virginia Commonwealth University
- Washington University in St. Louis
- University of Wisconsin-Milwaukee
- Yale University
## ABCD Enrollment as of April 30, 2017

### ABCD Enrollment through April 30, 2017

<table>
<thead>
<tr>
<th>Date</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/1/2016</td>
<td>0</td>
</tr>
<tr>
<td>10/1/2016</td>
<td>59</td>
</tr>
<tr>
<td>11/1/2016</td>
<td>197</td>
</tr>
<tr>
<td>12/1/2016</td>
<td>423</td>
</tr>
<tr>
<td>1/1/2017</td>
<td>672</td>
</tr>
<tr>
<td>2/1/2017</td>
<td>1016</td>
</tr>
<tr>
<td>3/1/2017</td>
<td>1380</td>
</tr>
<tr>
<td>4/1/2017</td>
<td>1837</td>
</tr>
<tr>
<td>5/1/2017</td>
<td>2302</td>
</tr>
</tbody>
</table>

### ABCD Enrollment Target by Month

- **September 2016**: 59
- **October 2016**: 138
- **November 2016**: 231
- **December 2016**: 244
- **January 2017**: 344
- **February 2017**: 364
- **March 2017**: 457

The graph shows the enrollment trend from September 2016 to May 2017, with a significant increase in participants each month.
ABCD Enrollment as of April 30, 2017
ABCD Demographics as of April 30, 2017

- **Male**: #1237 (54%)
  - M: 249
  - A: 246
  - M: 5

- **Female**: #1058 (46%)
  - M: 213
  - A: 286
  - M: 3

- **Other**: #7
  - M: 1
  - A: 4
  - M: 0

- **Total**: #2302
  - M: 454
  - A: 458
  - M: 3

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- **Low Risk**: #1305 (57%)
  - M: 252
  - A: 196
  - M: 0

- **High Risk**: #997 (43%)
  - M: 182
  - A: 189
  - M: 0

- **Total**: #2302
  - M: 454
  - A: 458
  - M: 3

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- **Singletons**
  - Other (10/9%)
  - Asian (3/5%)
  - Hispanic (24/24%)

- **Twins**
  - Asian (4/0%)
  - Hispanic (0/20%)
  - Black (11/25%)

- **White**: (70/45%)
ABCD SES (n=1380)
Non-Imaging Assessments
Assessment Completeness as of April 30, 2017

Singletons

Complete: 239, Not Complete: 31, Total: 270

Complete: 196, Not Complete: 25, Total: 221

Complete: 145, Not Complete: 48, Total: 193

Complete: 164, Not Complete: 116, Total: 280

Complete: 166, Not Complete: 168, Total: 334

Complete: 51, Not Complete: 44, Total: 95

Complete: 107, Not Complete: 27, Total: 134

Complete: 91, Not Complete: 33, Total: 124

Complete: 73, Not Complete: 30, Total: 103

Complete: 80, Not Complete: 72, Total: 152

Complete: 61, Not Complete: 27, Total: 88

Complete: 43, Not Complete: 45, Total: 88

Complete: 34, Not Complete: 47, Total: 81

Complete: 23, Not Complete: 37, Total: 60

Complete: 18, Not Complete: 20, Total: 38

Complete: 15, Not Complete: 21, Total: 36

Twins

Complete: 92, Not Complete: 60, Total: 152

Complete: 136, Not Complete: 18, Total: 154

Complete: 108, Not Complete: 19, Total: 127

Complete: 118, Not Complete: 15, Total: 133

Complete: 136, Not Complete: 18, Total: 154

Complete: 118, Not Complete: 15, Total: 133
## Substance Use

N=1839 (through 3/31/17); Valid percents presented

<table>
<thead>
<tr>
<th>Heard Of:</th>
<th>Use:</th>
<th>Peer Use: ³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>97.2%</td>
<td></td>
</tr>
<tr>
<td>Tobacco</td>
<td>94.2%</td>
<td></td>
</tr>
<tr>
<td>MJ</td>
<td>57.6%</td>
<td></td>
</tr>
<tr>
<td>MJ-synth</td>
<td>6.3%</td>
<td></td>
</tr>
<tr>
<td>RX misuse</td>
<td>37.5%</td>
<td></td>
</tr>
<tr>
<td>Inhalants</td>
<td>27.8%</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>13.3%</td>
<td></td>
</tr>
<tr>
<td>stimulants</td>
<td>5.5%</td>
<td></td>
</tr>
<tr>
<td>heroin</td>
<td>2.5%</td>
<td></td>
</tr>
<tr>
<td>Fake drug</td>
<td>1.5%</td>
<td>³a few, some or most</td>
</tr>
</tbody>
</table>
## Substance Use

N=1839 (through 3/31/17); Valid percents presented

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<tr>
<th>Heard Of:</th>
<th>Use:</th>
<th>Peer Use:³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>Sip of alcohol</td>
<td>25.9%</td>
</tr>
<tr>
<td></td>
<td>Full drink of alcohol</td>
<td>0.7% (n=3)</td>
</tr>
<tr>
<td>Tobacco</td>
<td>Tobacco puff</td>
<td>0.5% (n=7)</td>
</tr>
<tr>
<td></td>
<td>Tobacco more than puff</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td>Other tobacco/nicotine¹</td>
<td>0.5% (n=7)</td>
</tr>
<tr>
<td></td>
<td>¹pipe, cigar, e-cig, hookah, chew, nicotine replacement</td>
<td></td>
</tr>
<tr>
<td>MJ</td>
<td>Marijuana puff/taste</td>
<td>0.1% (n=1)</td>
</tr>
<tr>
<td>MJ-synth</td>
<td>Other marijuana use²</td>
<td>0.1% (n=1)</td>
</tr>
<tr>
<td></td>
<td>²tincture</td>
<td></td>
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<tr>
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<tr>
<td></td>
<td>Full drink of alcohol</td>
<td>0.7% (n=3)</td>
</tr>
<tr>
<td></td>
<td>Get drunk</td>
<td>1.0%</td>
</tr>
<tr>
<td>Tobacco</td>
<td>Tobacco puff</td>
<td>0.5% (n=7)</td>
</tr>
<tr>
<td></td>
<td>Smoke cigarettes</td>
<td>1.7%</td>
</tr>
<tr>
<td></td>
<td>Use other nicotine</td>
<td>0.9%</td>
</tr>
<tr>
<td></td>
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²tincture
³a few, some or most

N=1839 (through 3/31/17); Valid percents presented
No significant differences by risk status
Imaging
Imaging Completeness as of April 30, 2017
Unprocessed raw DICOM data with minimal demographic information:
NDA pGUID, Age*, DOB*, Sex

In review by Informatics workgroup

NIMH Data Archive
Dissemination
ABCD Meetings/Symposia

• American Psychiatric Association – May 23, 2017; San Diego, CA

• American Psychological Association – August 5, 2017; Washington, DC

• ACNP (submitted) – December 3-7, 2017; Palm Springs, CA
ABCD Facebook and Twitter Pages are LIVE!

facebook.com/TheABCDStudy

@abcdstudy
Adolescent Brain Cognitive Development


For More Information, Please Visit: ABCDStudy.org
High Risk Screener
(very true or often true = 2; somewhat or sometimes true = 1; not true = 0)

Externalizing Domain (2 or more)
• Is disobedient at school?
• Lies or cheats?
• Destroys things belonging to his/her family or others?
• Steals outside the home?
• In the past six months, has anyone who lives with your child (e.g., you, a spouse or partner) smoked a cigarette, e-cigarette, or any other type of tobacco? (0/1)

Internalizing Domain (1 or more on both components)
• Is too fearful or anxious?
• Is unhappy, sad, or depressed?
• Experiences physical problems that are without known medical cause—such as aches or pains, feeling sick, headaches, stomachaches, rashes, or vomiting?
• Tends to be slow at making friends?
• Finds life to be stressful?