



Adolescent Brain Cognitive Development

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OHSU Site Co-Principal Investigator:

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What is ABCD?

- In 2015, the National Institutes of Health put out a request for applications



Adolescent Brain Cognitive Development

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A longitudinal study of about 10,000 children from ages 9-10 through early adulthood to assess factors that influence individual brain development trajectories and functional outcomes

- NIH intended to fund 10-15 research sites, for a total of \$25 million in grants each year for 5 years

ABCD Initiated by NIH Collaborative Research on Addiction (CRAN)

- NIDA, NIAAA, National Cancer Institute
- Many other federal collaborators are now participating

Federal Partners: *Teen Brains. Today's Science. Brighter Future.*

National
Institute on
Drug Abuse

National
Institute on
Alcohol Abuse
and Alcoholism

National Cancer
Institute

National
Institute of
Mental Health

*Eunice Kennedy
Shriver* National
Institute of Child
Health and Human
Development

National
Heart, Lung,
and Blood
Institute

National
Institute of
Neurological
Disorders and
Stroke

National
Institute on
Minority Health
and Health
Disparities

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

Centers for
Disease Control
and Prevention -
Division of
Violence
Prevention

National Science
Foundation

National
Endowment for
the Arts

Where are we now?

- 11,868 9-10 year old children were recruited over a 24 month period from 21 sites across the country!
- Following baseline data collection, we have completed 6mo, 1yr, 18mo, and now, 2yr follow-up visits with 98% retention!

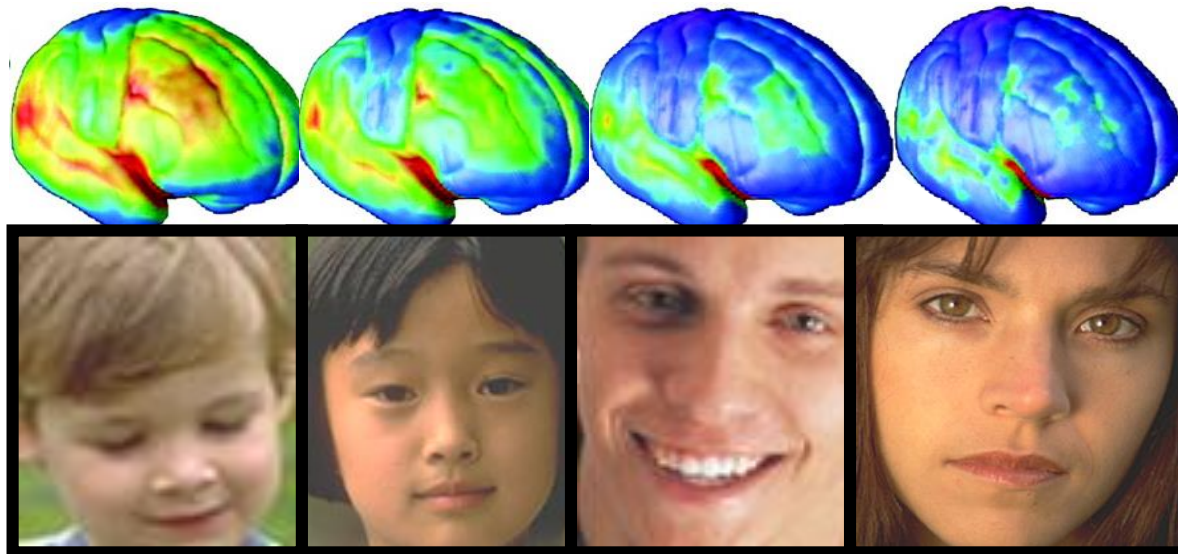
Locations of ABCD Research Sites in the United States

	Coordinating Center	University of California, San Diego
	Data Analysis and Informatics Center	University of California, San Diego
	Research Sites	Children's Hospital of Los Angeles Florida International University Laureate Institute for Brain Research 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 University of Rochester 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



Why are we doing this?

- Based mostly on smaller and often cross-sectional studies, we know that adolescence is a time of extraordinary change in the brain and behavior



ABCD Protocol

Assessment Domains

Assessment Domains	Youth	Parent	Parent-2	Teacher
Substance Use	✓	✓		
Neurocognition	✓	✓		
Mental Health	✓	✓	✓	✓
Physical Health	✓	✓		
Culture & Environment	✓	✓		
Genetics	✓			
Mobile Tech	✓	✓		
Passive Data		✓		

Comprehensive assessments at baseline and biennial follow up visits

Briefer assessments at face-to-face interim year visits

More frequent phone/web assessments



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ABCD Study

TIMELINE OF EVENTS



STUDENT AGE	9-10		10-11		11-12	
STUDENT TIME	6-7 hours		15 minutes	2-3 hours	15 minutes	6-7 hours
STUDENT ACTIVITY		 every 3-6 months		 every 3-6 months		
PARENT TIME	3 hours		5 minutes	1 hour	5 minutes	3 hours
PARENT ACTIVITY						

REPEAT ... until age 19-20

LEGEND



ABCD Youth Protocol Summary: Baseline

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

Brain Imaging

Structural MRI

- 3D T1 - Weighted
- 3D T2 - Weighted
- Diffusion Tensor Imaging

Functional MRI (fMRI)

- Resting State
- Monetary Incentive Delay Task
- Stop Signal Task
- Emotional N-Back Task

Biospecimens

Breathalyzer 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-5 (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 (CRPBI) - 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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ABCD Parent Protocol Summary: Baseline

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



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Mid-Year Follow Up Protocol

ABCD Follow-up Measure	What it measures:	Youth (min)	Parent (min)
Introduction			4
Brief Problem Monitor Scale	Dimensional psychopathology, adaptive functioning in past week	3	
Yes/No Substance Use Questions	Past 6-month heard-of or use of substances	3-7	
NIH Toolbox Positive Affect Short Form	Positive emotions and affective well-being in past week	1	
Mid Year Phone Interview Closing Questions		2	
Total Minutes		9-13	4

ABCD Youth Protocol Summary: One-year Follow-up

Physical Health

PhenX Anthropometrics (height/
weight/waist measurements)
Pubertal Development Scale and
Menstrual Cycle Survey
Screen Time Survey
Gender Identity Questionnaire

Mental Health

Kiddie Schedule for Affective Disorders and Schizophrenia

- Background Items Survey
- Diagnostic Interview for
DSM-5 (Suicide module and
Alcohol Use Disorder/Drug
Use Disorder modules, if
applicable)

Prodromal Psychosis Scale
7-Up Mania Items
Abbreviated Self-Reported
Delinquency Scale
NIH Toolbox Positive Affect Items
Brief Problem Monitor Scale
Life Events Scale

Substance Use

Participant Last Use Survey (PLUS)
for substance use within the last
24 hrs

For most participants*:

PhenX Peer Group Deviance
Survey
PATH Intention to Use Tobacco
Survey
PhenX Perceived Harm of
Substance Use
PhenX Peer Tolerance of Use
Alcohol Expectancies
Questionnaire
Adolescent Smoking
Consequences (Expectancies)
Marijuana Effect Expectancy
Questionnaire
Timeline Follow-back Survey
ISay II Q2 Sipping Items (sip)
Low Level Tobacco Use (puff)
Low Level Marijuana Use (puff/
taste)
Caffeine Intake Survey

Neurocognition

Delay Discounting Task
Emotional Faces Stroop Task

Culture & Environment

Prosocial Behavior Survey
PhenX Acculturation Survey
Parental Monitoring Survey
Acceptance Subscale from
Children's Report of Parental
Behavior Inventory - Short
PhenX Family Environment Scale -
Family Conflict
PhenX Neighborhood Safety/
Crime Survey
PhenX School Risk & Protective
Factors Survey
Perceived Discrimination Scale
Wills Problem Solving Scale

Biospecimens

Subset of participants:
Breathalyzer (alcohol screen)
Oral Fluids (drug screen)
Urine (NicAlert)
Oral Fluids (pubertal hormones)
Hair (substance use metabolites)
Baby Teeth (substance and
environmental toxin exposure)

Physical Health

PhenX Demographics Survey
Medical History Questionnaire
PhenX Medications Survey
Pubertal Development Scale and Menstrual Cycle Survey
Sleep Disturbances Scale for Children
Sports and Activities Involvement Questionnaire
Screen Time Survey
Ohio State TBI Screen - Short
Child Nutrition Assessment
Gender Identity Questionnaire

Mental Health

Kiddie Schedule for Affective Disorders and Schizophrenia

- Background Items Survey
- Diagnostic Interview for DSM-5 (Psychosis, Eating disorders, ADHD, ODD, & CD modules)

Child Behavior Checklist

General Behavior Inventory - Mania

Life Events Scale

Short Social Responsiveness Scale

Substance Use

Participant Last Use Survey (PLUS) for substance use within the last 24 hrs.

Parent Rules

PhenX Community Risk and Protective Factors

Culture & Environment

Prosocial Behavior Survey

Mexican American Cultural Values Scale

PhenX Acculturation Survey

PhenX Family Environment Scale - Family Conflict

PhenX Neighborhood Safety/Crime Survey

Other Data Sources

Geocoding from residential history

School Records

Brief Problem Monitor - Teacher Form



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For More Information, Please Visit:

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