



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

# ABCD Protocol Summary

Two-year Follow-up

[ABCDStudy.org](http://ABCDStudy.org)



# The Adolescent Brain Cognitive Development (ABCD) Study

The ABCD Study is the largest long-term study of brain development and child health in the United States. The ABCD Research Consortium consists of a Coordinating Center (CC), a Data Analysis, Informatics and Resources Center (DAIRC), and 21 research sites across the country (see map), which have invited more than 10,000 children ages 9-10 to join the study. Researchers will track their biological and behavioral development through adolescence into young adulthood.

The ABCD CC, DAIRC, and Consortium Workgroups have established standardized and harmonized assessments of physical and mental health, neurocognition, substance use, and culture and environment. They also have established multimodal structural and functional brain imaging and bioassay protocols. Brain imaging and biospecimen collection for genetic analyses will be done every other year, and the remaining assessments will be conducted and additional biospecimens will be collected semi-annually or annually.

## ABCD Open Science Model

One goal of the multisite longitudinal ABCD Study is to create a unique data resource for the entire scientific community by embracing an open science model. Curated data are released annually through the NIMH Data Archive. For more information on what is included in each data release, please see <https://abcdstudy.org/scientists/data-sharing/>.

Sharing ABCD data in this way will allow scientists from all over the world to conduct analyses, pool resources, and enrich the value of this study by rapidly expanding the types of scientific questions answered.

## Locations of ABCD Research Sites in the United States

	<b>Coordinating Center</b>	University of California, San Diego
	<b>Data Analysis and Informatics Center</b>	University of California, San Diego
	<b>Research Sites</b>	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



# Physical Health

ABCD 2-Year Follow-up	What it measures:	Youth (min)	Parent (min)
Anthropometrics*	Height, weight, waist circumference	3	
Blood Pressure	Blood pressure	4	
Snellen Vision Screen	Vision screen	2	
Youth Risk Behavior Survey - Exercise	Physical exercise	1	
Pain Questionnaire	Pain	1	
Munich ChronoType Questionnaire	Sleep, chronotype	3	
Pubertal Development Scale & Menstrual Cycle Survey	Pubertal stage and menstrual phase	2	2
Block Kids Food Screener	Foods child ate in past week	8	3
Demographics Survey*	Demographics, race, gender, family structure, SES, education and occupation; youth resilience		2
Medical History Questionnaire	Medical history and health services utilization		2
Medications Survey*	Current and past medications		2
Sleep Disturbance Scale for Children	Sleep and sleep disorders		3
Sports and Activities Involvement Questionnaire	Involvement in sports, music, and hobbies, TBI risk		2
Ohio State TBI Screen-Short	Traumatic brain injury of youth		2
<b>Total Minutes</b>		<b>24</b>	<b>18</b>

\*Modified from PhenX

# Mental Health

ABCD 2-Year Follow-up	What it measures:	Youth (min)	Parent (min)
<b>Kiddie Schedule for Affective Disorders and Schizophrenia (KSADS 5)</b>			
<b>Background Items Survey</b>	<b>Youth:</b> School, sexual orientation	1	
	<b>Parent:</b> School, family, social relations		4
<b>Diagnostic Interview for DSM-5</b>	<b>Youth:</b> Mood Disorders, Social Anxiety Disorder, Generalized Anxiety Disorder, Eating Disorder, Conduct Disorder, (Alcohol and Drug Use Disorders if applicable), Sleep, Suicidality	11	
	<b>Parent:</b> All modules except Enuresis & Encopresis, Tic Disorders, and Selective Mutism		20
<b>UPPS-P for Children - Short form (ABCD version)</b>	Impulsivity, urgency	6	
<b>Behavioral Inhibition/Behavioral Approach System (BIS/BAS) Scales*</b>	Inhibition and reward seeking	3	
<b>Prodromal Psychosis Scale</b>	Prodromal psychosis level	4	
<b>Youth Resilience Scale</b>	Peer friendships	2	
<b>Brief Problem Monitor Scale</b>	Attention, internalizing and externalizing functioning	1	
<b>Self-Reported Delinquency Scale - Causes and Correlates of Delinquency Program</b>	Youth delinquency behaviors	1	
<b>Peer Experiences Questionnaire</b>	Peer bullying and peer victimization	1	
<b>Cyberbullying Questionnaire</b>	Cyberbullying experiences	1	
<b>Life Events Scale</b>	Lifetime and past year stressful and traumatic events	4	2
<b>Gender Identity Questionnaire</b>	Early dating and sexual behavior	1	3

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# Mental Health (cont.)

ABCD 2-Year Follow-up	What it measures:	Youth (min)	Parent (min)
Child Behavior Checklist	Dimensional psychopathology, adaptive functioning		5
Parent General Behavior Inventory - Mania	Subsyndromal mania		2
ASEBA Adult Self-Report	Parent report on personal psychopathological syndromes		7
ASEBA Adult Behavior Checklist	Parent report on youth's other parent's psychopathological syndromes		3
Early Adolescent Temperament Questionnaire	Youth personality, temperament		5
Occupation Survey	Parent occupation		2
<b>Total Minutes</b>		<b>36</b>	<b>53</b>

\*Modified from PhenX

# Substance Use

ABCD 2-Year Follow-up	What it measures:	Youth (min)	Parent (min)
Participant Last Use Survey	Tobacco/caffeine/medication usage in the last 24 hours	1	1
Community Risk & Protective Factors*	Perceived availability for youth	1	2
Parent Rules	Parental SU approval and rules		2
Household Substance Use, Density, Storage & Second-Hand Exposure	Use, access and exposure to substances in household		8
<b>Heard of alcohol, tobacco/nicotine, marijuana, other:</b>			
Peer Group Deviance*	Peer group deviance & influences	1	
PATH Intention to Use Tobacco Survey	Intention to use, susceptibility (if haven't used yet)	1	
Perceived Harm of Substance Use*	Youth perceptions of harm caused by use of substances	1	
Peer Tolerance of Use	Acceptability of peers' use of substances	2	
Alcohol Expectancies Questionnaire - Adolescent, Brief	Expectations of alcohol's effects if one used it	2	
Adolescent Smoking Consequences Questionnaire	Perceptions of tobacco use consequences	2	
Caffeine intake	Caffeine use, type & quantity (if used caffeine)	1	
Marijuana Effect Expectancy Questionnaire	Perceptions of marijuana use and consequences	2	
<b>Having tried alcohol, tobacco/nicotine, marijuana (e.g., sip or puff) since last visit:</b>			
iSay II Q2 Sipping Items	Early alcohol use (if sipped alcohol)	1	
Tobacco Low-Level Use Measure	Early tobacco use (if puffed or chewed tobacco)	1	
Marijuana Low-Level Use Measure	Early marijuana use (if puffed or tasted MJ)	1	

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# Substance Use (cont.)

ABCD 2-Year Follow-up	What it measures:	Youth (min)	Parent (min)
Having used alcohol, tobacco/nicotine, marijuana (more than just a sip or puff) since last visit:			
Timeline Follow-back	Quantity/frequency of all substance use	3-20	
Acute Subjective Response to Alcohol*	Sensitivity to alcohol effects	1	
Acute Subjective Response to Tobacco*	Sensitivity to tobacco effects	1	
Acute Subjective Response to Marijuana	Sensitivity to marijuana effects	1	
Having 2 or more occasions of the respective substance use since last visit:			
Hangover Symptom Scale	Alcohol hangover experiences	2	
Rutgers Alcohol Problem Index	Alcohol use consequences	1	
Nicotine Dependence (from PATH)	Nicotine use consequences	2	
Marijuana Problem Index	Marijuana use consequences	1	
Drug Problem Index	Other drug use consequences	1	
<b>Total Minutes</b>		<b>12-46</b>	<b>13</b>

\*Modified from PhenX



# NeuroCognition

ABCD 2-Year Follow-up	What it measures:	Youth (min)
<b>NIH Toolbox Tasks</b>		
Picture Vocabulary	Language: vocabulary knowledge, estimated verbal IQ	4
Flanker Inhibitory Control & Attention	Attention, cognitive control; executive function; inhibition of automatic response	4
Pattern Comparison Processing Speed	Information processing; processing speed	3
Picture Sequence Memory Form B	Episodic memory; sequencing	6
Oral Reading Recognition	Language: oral reading (decoding) skills, academic achievement	2
Rey Auditory Verbal Learning Test (alternate version)	Learning and memory	11
Little Man Task	Visuospatial processing, flexibility, attention	4
RAVLT Delayed Recall	Memory recall	2
Game of Dice Task	Aversion/attraction to risky decisions	6
Social Influence Task	Social influence	9
<b>Total Minutes</b>		<b>51</b>

# Culture & Environment

ABCD 2-Year Follow-up	What it measures:	Youth (min)	Parent (min)
Parental Monitoring Survey	Parental monitoring/supervision	1	
School Risk & Protective Factors Survey*	Risk and protective factors	1	
Peer Behavior Profile: Prosocial Peer Involvement & Delinquent Peer Involvement	Prosocial activity; academic achievement, and rule breaking of youth's friends	2	
Peer Network Health: Protective Scale	Positive/protective features of youth's network of friends	1	
Perceived Discrimination Scale	Experiences and perception of discrimination	1	
Mexican American Cultural Values Scale	<b>Youth:</b> Familism, religion, self-reliance	2	
	<b>Parent:</b> Familism, religion, independence, self-reliance		4
School Attendance of Youth & Grades	Number of excused and unexcused school absences, grades, and participation in an Individualized Education Program	1	1
Prosocial Behavior Survey	Resilience	1	1
Acculturation Survey*	Cultural factors	1	1
Family Environment Scale - Family Conflict Subscale*	Family dynamics, cohesion, expressiveness, conflict	1	3
Neighborhood Safety/Crime Survey *	Risk and protective factors, crime	1	1
Vancouver Index of Acculturation	Acculturation		3
Multi-Group Ethnic Identity	Cultural affiliation		2
Community Cohesion and Informal Social Control Subscales of the Project on Human Development in Chicago Neighborhoods (PHDCN)	Assessment of neighborhood cohesion and prosocial characteristics		2
<b>Total Minutes</b>		<b>13</b>	<b>18</b>

\*Modified from PhenX

# Brain Imaging

ABCD Scan Module	Protocol	Youth (min)
Pre Scan (outside scanner)	Day of Scan Additional MRI Screening*	1
	MRI Simulator with motion compliance while practicing tasks	20-30
	Pre Scan Questionnaire	1
Scan (inside scanner)	Setup	3-6
	Localizer	1.5
	3D T1 (show child movie)	6.5-8
	fMRI Field Map	0.25
	rsfMRI 2-5 min. runs with 10-sec film clip^ between runs^	10
	Diffusion Field Map	0.25
	DTI (show child movie)	9-10
	3D T2 (show child movie)	6-7
	fMRI Field Map	0.25
	rsfMRI up to 2 -5 min. runs with 10 sec. film clip between runs^	5-10
	fMRI Field Map	0.25
	fMRI Monetary Incentive Task (2-5 5 min.runs)	12
	fMRI Field Map	0.25
	fMRI Stop Signal Task (2-5.75 min. runs)	13
	fMRI Field Map	0.25
fMRI Emotional N-Back Task (2-5.1 min. runs)	12	
Post Scan (outside scanner)	Post Scan Questionnaire	1
	Recognition Memory for Emotional N-Back Task	11
	Monetary Incentive Delay Task Survey	2
<b>Total Minutes</b>		<b>116-137</b>

\*To be completed by Parent and Child at screening, at scheduling, and at scan. All other measures Child only

^To avoid fatigue, sleep, compliance problems will show 10-20 sec. movie clips between each 5 min. rsfMRI run

# Mobile Technology and Other Data Sources

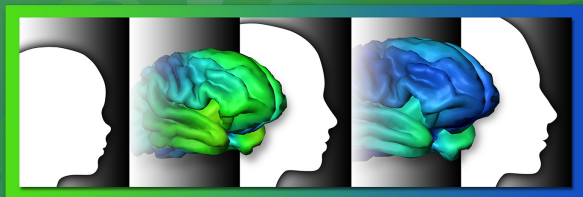
ABCD 2-Year Follow-up	What It Measures:	Youth (min)	Parent (min)	Teacher (min)
Geocoding from Residential History	Environmental risk		3	
School Records	Educational attainment		3	
Brief Problem Monitor - Teacher Form	Dimensional psychopathology, adaptive functioning			2
Fitbit Pre and Post Assessments	Sleep, health, activity	6	10	
Screen Time Survey	Screen time utilization	15	13	
<b>Total Minutes</b>		<b>21</b>	<b>29</b>	<b>2</b>

# Biospecimens

ABCD 2-Year Follow-up	What It Measures:	Method	Youth (min)	Parent (min)
Alcohol Screen*	Past day alcohol use	Breathalyzer	1	
Drug Screen*	Past day drug use	Oral fluid-Drager	1	
NicAlert*	Past day nicotine use	Urine	1	
Substance Use History	Metabolites of past 3 month substance use	Hair (~ 100 strands)	4	
Venipuncture	Hemoglobin A1C, cholesterol, CBC, anemia, genetic factors	Blood	30	
Pubertal Hormones	Estradiol, testosterone, DHEA	Oral fluid	6	
Baby Teeth	Substance & environmental toxin exposure	Prior/newly shed baby teeth		1
<b>Total Minutes</b>			<b>43</b>	<b>1</b>

\*Subset of participants





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