#### ABCD-ReproNim: An ABCD Course on Reproducible Data Analyses

# Introduction to the ABCD Study® Substance Use Module

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#### Learning Objectives of this Lecture



 Summarize the ABCD Study® Substance Use Module methods and measures so scientists can more effectively utilize the data



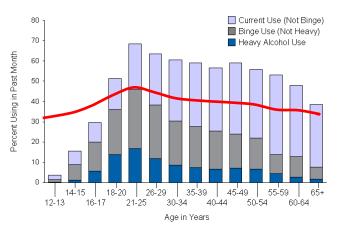
#### Adolescent SU Onset



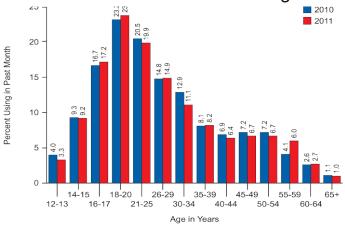
- The <u>initiation</u> and <u>escalation</u> of substance use occurs in early adolescence and peaks in young adulthood
- Little is known about SU in youth younger than 12 years old



SAMHSA - Past month alcohol use



SAMHSA - Past month illicit drug use



#### Substance Use Questions Addressed by ABCD



- 1. What are the risk and resilience factors leading to differential substance use trajectories?
- 2. What are the "gateway interactions" between use of different substances?
- 3. What are the effects of repeated substance use, including polysubstance use, on adolescent neurocognitive, emotional and physical development?
- 4. How does psychopathology alter, and how is it modified by, substance use patterns?
- 5. What are the effects of individual genetic, behavioral, neurobiological, and environmental differences on risk profiles and substance use outcomes?

# Substance Use Workgroup (2020+)



- Heitzeg, Mary (Co-Chair) Univ of Michigan
- Lisdahl, Krista (Co-Chair) UW-Milwaukee
- Cloak, Christine- University of Maryland School of Medicine
- Feldstein-Ewing, Sarah Oregon Health & Science University
- Gonzalez, Raul Florida International University
- Haist, Frank- University of California San Diego
- Jacobus, Joanna UCSD
- Kaufman, Annette- National Cancer Institute

- LeBlanc, Kim- National Institute on Drug Abuse
- Lessov-Schlaggar, Christina Washington University
- Lopez, Marsha National Institute on Drug Abuse
- Madden, Pam- Washington University
- Martz, Meghan- University of Michigan
- Ross, Jessica (Megan) University of Colorado Boulder
- Sher, Ken University of Missouri
- Tapert, Susan University of California San Diego
- Wade, Tasha University of California San Diego

#### Substance Use Assessment in ABCD



- 1. Detailed characterization of substance initiation, experimentation and use patterns in a large, diverse sample of youth across the US.
- 2. Youth attitudes and expectancies about SU and motives for continued use.
- 3. Subjective effects of early alcohol, nicotine, cannabis exposure.
- 4. Consequences of substance use (If used on 2+ occasions in past 6 months), such as withdrawal symptoms and AUD/DUD symptom counts.
- 5. Substance use in the environment- peer, sibling, family substance use; second-hand exposure; prenatal exposure; perceived availability in neighborhood.
- 6. Biological samples objective measure of recent substance use.

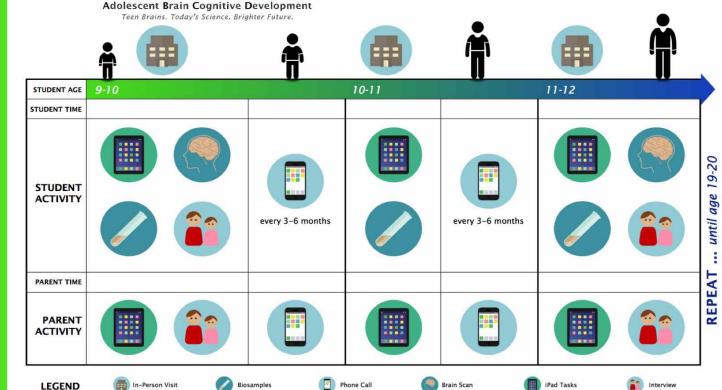








**ABCD Study** TIMELINE OF EVENTS



Asked on Day 1 & Day 2 to ALL participants

#### **PLUS Form**

Recent caffeine, medication, nicotine use (youth); Recent medication (parent)

"Heard of" Questions\*

\*Discontinued at 3-year forward



"Used since last visit" Questions; First Time Used?

Caffeine Intake Questions



SU Attitudes/Peer/Sibling Use:
Peer Tolerance\*, Peer SU,
Sibling SU\*\*\*, Intent to Use,
Perceived Harm\*, Availability\*\*,

\*Started at 1-Year

\*\*Started at 2-Year

\*\*\*Started at 3-Year



Youth expectancies:
Alcohol (AEQ) \*, Cigarettes (ASCQ) \*,
ENDS Expectancies \*\*\*, Vaping
Expectancies\*\*\*, Marijuana (MEEQ) \*
\*Started at 1-Year. \*\*\*Starting at 3-Year; Expectancies
now administered every other year (3, 5, 7, 9).

#### **Drug Toxicology**

Draeger Saliva\* (amph, benzo, THC, cocaine, MDMA, mtd, meth); Draeger breathalyzer\* (BAC); Nic Alert\* (Cotinine); Hair<sup>±</sup> (EtG, Meth/MDMA, amph, cocaine, PCP, opiates, benzo, THC-COOH, THC, CBD); iCup Urine\*\* (amph, barb, benzo, cocaine, THC-COOH, MDMA, mtd, meth, morphine, opiates, oxy, PCP, tricyclics)

\*10-33% plus all users; <sup>±</sup>Banked; \*\*All participants starting 4-year

Administered if youth endorsed only sipping alcohol or trying a nicotine/cannabis product

Low-Level Use (sipping, nicotine, cannabis) Questions Administered if youth endorsed MORE than a sip or using any other substance

Timeline Follow Back (covering since last session)

#### Substance Follow-Up Questions

**ABCD Substance Use** 

Interview

Diagram

i.e. e-cig flavoring, method of cannabis consumption, etc.

Alcohol Measures:
Acute Subjective Response\*;
AUD Symptoms (RAPI)<sup>±</sup>;
Hangover Symptom Scale<sup>±</sup>;
Drinking Motives Questionnaire<sup>±\*\*</sup>

\*Administered 1 use; <sup>±</sup>All administered if 2+ use;

\*\*Starting at 4-year, then every other year (4, 6, 8, 10)

Cannabis/Other Drug Measures:
Acute Subj Response\*; CUD Symptoms
MAPI<sup>±</sup>; Other Drug Symptoms (DAPI)<sup>±</sup>;
Vaping Motives<sup>±\*\*</sup>; Marijuana Motives<sup>±\*\*</sup>
Cannabis Withdrawal Scale\*\*\*

<sup>±</sup>All administered if 2+ use; \*Administered 1 use; \*\*\*Starting at 3-Year; \*\*Starting at 4-year & every other year.

Nicotine Measures:

Acute Subj Response (cig, ENDS, chew)\*;

Nic Dep Symptoms (PATH) \*;

Tobacco Motives Questionnaire\*\*\*

ENDS Motives & Reasons ENDS Use\*\*\*

<sup>±</sup>All administered if 2+ use; \*Administered 1 use;

\*\*Starting at 4-year, then every other year.

\*AUD/SUD K-SADS Module

<sup>±</sup>Administered if 2+ full use

All questions in blue are asked to all participants regarding relevant substances youth has heard of; exception is Intent to Use, which is administered only if heard of, but never used the substance. After year 3, heard of gating is discontinued. Questionnaires in green administered if youth endorsed a certain level of SU.

### **ABCD SU Module: Baseline**

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ABCD-ReproNim	5

ABCD Baseline Measures	What it measures:
Participant Last Use Survey (PLUS)	Tobacco/caffeine/med use in last 24 hours
If heard of drug:	
Drug Intro, Lifetime Use & Timeline Followback (6-mnth)	Quantity/frequency of all substance use
Peer Group Deviance (peer SU)	Peer group deviance including substance use
Intention to Use (PATH study)	Intention to use, curiousity, susceptibility
Caffeine intake	Caffeine use, type & quantity in past 6 months
Ever used <u>ANY</u> alcohol, MJ, nicotine:	
iSay Sipping Items	First/early alcohol use
MJ Low-Level Use Measure	First/early marijuana use
Tobacco Low-Level Use Measure	First/early tobacco use
Ever used 1+ full drink or puff:	
Subjective Response to Alcohol *	Sensitivity to alcohol effects
Subjective Response to Tobacco *	Sensitivity to tobacco effects
Subjective Response to Marijuana	Sensitivity to marijuana effects
2+ uses in past 6 months:	
Hangover Symptom Scale	Alcohol use hangover/withdrawal symptoms
Rutgers Alcohol Problem Index (RAPI)	Alcohol use consequences
Nicotine Dependence (PATH)	Tobacco use consequences
Marijuana Problem Index (MAPI)	Marijuana use consequences
Drug Problem Index (DAPI)	Other drug use consequences
Parent: Community Risk & Protective Factors*	Availability of substances in youth environment
Parent: Household SU Rules	Parental SU approval and rules
* Modified from PhenX	

### **ABCD SU Module: Year 1**

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ABCD Year 1 Measures	What it measures:
Participant Last Use Survey (PLUS)- parent/youth	Tobacco/caffeine/med use in last 24 hours
If heard of drug:	
Drug Intro, Use since last session & Timeline Followback	Quantity/frequency of all substance use since last sessions (Ends wording updated
Caffeine intake	Caffeine use, type & quantity in past month
Peer Group Deviance (Peer SU)	Peer group deviance including substance use
Intention to Use (PATH study)	Intention to use, curiosity, susceptibility
Peer Tolerance of Use*	Friend's attitudes about your use
Perceived Harm (MTF)	Youth's opinions about harm of drugs
Alcohol Expectancies (AEQ)	Youth's expectancies about alcohol
Cigarette Expectancies (ASCQ)	Youth's expectancies about cigarettes
Marijuana Expectancies (MEEQ)	Youth's expectancies about marijuana
Ever used <u>ANY</u> alcohol, MJ, nicotine:	
Say Sipping Items	First/early alcohol use
MJ Low-Level Use Measure	First/early marijuana use
Tobacco Low-Level Use Measure	First/early tobacco use
Ever used 1+ full drink or puff:	
Subjective Response to Alcohol *	Sensitivity to alcohol effects
Subjective Response to Tobacco *	Sensitivity to tobacco effects
Subjective Response to Marijuana	Sensitivity to marijuana effects
2+ uses in past year:	
Hangover Symptom Scale (HSS)	Alcohol use hangover/withdrawal symptoms
Rutgers Alcohol Problem Index (RAPI)	Alcohol use consequences
Nicotine Dependence (PATH)	Tobacco use consequences
Marijuana Problem Index (MAPI)	Marijuana use consequences
Drug Problem Index (DAPI)	Other drug use consequences
Parent: Community Risk & Protective Factors*	Availability of substances in youth environment
Household SU Rules	Parental SU approval and rules
* Modified from PhenX	

#### **ABCD SU Module: Year 2**

\* Modified from PhenX; Due to COVID- 3-year could have been administered remotely- note how SU interview/TLFB was administered

ABCD 2-year Measures	What it measures:
Participant Last Use Survey (PLUS)- parent/youth	Tobacco/caffeine/med use in last 24 hours (CBD added)
If heard of drug:	
Drug Intro, Use since last sessions, first use questions & Timeline Followback	Quantity/frequency patterns (CBD added; "estimated portion added to cover missed sessions;
	updated ENDs wording; 7/20 forward- smoked vs. vaped MJ separated)
Caffeine intake	Caffeine use, type & quantity in past month
Peer Group Deviance (Peer SU)	Peer group deviance including substance use
Intention to Use (PATH study)	Intention to use, curiosity, susceptibility
Peer Tolerance of Use*	Friend's attitudes about your use
Perceived Harm (MTF)	Youth's opinions about harm of drugs
Alcohol Expectancies (AEQ)	Youth's expectancies about alcohol
Cigarette Expectancies (ASCQ)	Youth's expectancies about cigarettes
Marijuana Expectancies (MEEQ)	Youth's expectancies about marijuana
Youth CRPF (MTF)	Availability of substances in environment
Ever used ANY alcohol, MJ, nicotine:	
iSay Sipping Items	First/early alcohol use
MJ Low-Level Use Measure	First/early marijuana use
Tobacco Low-Level Use Measure	First/early tobacco use
Ever used 1+ full drink or puff:	
Subjective Response to Alcohol *	Sensitivity to alcohol effects
Subjective Response to Tobacco *	Sensitivity to tobacco effects
Subjective Response to Marijuana	Sensitivity to marijuana effects
2+ uses in past year:	
Hangover Symptom Scale (HSS)	Alcohol use hangover/withdrawal symptoms
Rutgers Alcohol Problem Index (RAPI)	Alcohol use consequences
Nicotine Dependence (PATH)	Tobacco use consequences
Marijuana Problem Index (MAPI)	Marijuana use consequences
Drug Problem Index (DAPI)	Other drug use consequences
Parent: Community Risk & Protective Factors*	Availability of substances in youth environment
Household SU Rules	Parental SU approval and rules
SU Household density	Household density of SU, second-hand exposure, storage of drugs/alcohol in house

ADCD CILI	Maralala, Varano
	Module: Year 3
ABCD 3-year Measures*	What it measures:
Participant Last Use Survey (PLUS)- parent/youth	Tobacco/caffeine/med use in last 24 hours (CBD added)
If heard of drug:	
Drug Intro, Use since last sessions, first use questions & TLFB	Quantity/frequency patterns (7/20- smoked vs. vaped MJ separated)
Caffeine intake	Caffeine use, type & quantity in past month
Peer Group Deviance (Peer SU)	Peer group deviance including substance use (added ENDS question)
Intention to Use (PATH study)	Intention to use, curiosity, susceptibility (separated cigarettes and ENDS items)
Peer Tolerance of Use*	Friend's attitudes about your use (updated ENDS language)
Perceived Harm (MTF)	Youth's opinions about harm of drugs (updated ENDS language)
Alcohol Expectancies (AEQ)	Youth's expectancies about alcohol
Cigarette Expectancies (ASCQ)	Youth's expectancies about cigarettes
ENDS Expectancies	Youth's ENDS expectancies
Marijuana Expectancies (MEEQ)	Youth's expectancies about marijuana
Vaping Expectancies	Youth's vaping expectancies (7/20 forward)
Youth CRPF (MTF)	Availability of substances in environment (updated ENDS language)
SRY_SU_ABCD	Sibling substance use
Ever used ANY alcohol, MJ, nicotine:	
iSay Sipping Items	First/early alcohol use
MJ Low-Level Use Measure	First/early marijuana use
Tobacco Low-Level Use Measure	First/early tobacco use (updated ENDS language)
Ever used 1+ full drink or puff:	
Subjective Response to Alcohol *	Sensitivity to alcohol effects
Subjective Response to Tobacco *	Sensitivity to tobacco effects (updated ENDS language)
Subjective Response to Marijuana	Sensitivity to marijuana effects
2+ uses in past year:	
Hangover Symptom Scale (HSS)	Alcohol use hangover/withdrawal symptoms
Rutgers Alcohol Problem Index (RAPI)	Alcohol use consequences
Nicotine Dependence (PATH)	Tobacco use consequences
Marijuana Problem Index (MAPI)	Marijuana use consequences
Drug Problem Index (DAPI)	Other drug use consequences
Cannabis Withdrawal Scale	Cannabis withdrawal symptoms

Availability of substances in youth environment (updated ENDS language)

Household density of SU, second-hand exposure, storage of drugs/alcohol in house (updated ENDS language)

Parental SU approval and rules (added ENDS questions)

Notes: \*Modified from PhenX; Due to COVID- 3-year could have been administered remotely- note how SU interview/TLFB was administered

Parent: Community Risk & Protective Factors\*

Household SU Rules SU Household density

# **ABCD SU Module: Drug Toxicology**

ABC	D-Re	proN	im	1

ABCD Toxicology Measures	What it measures:		Detection Window	Who/When?
Draeger 5000 (Saliva)	Amphetamine (50ng/ml) Benzodiazepines (15ng/ml) Cannabis (THC) (5ng/ml) Cocaine (20 ng/ml) MDMA (75 ng/ml) Methadone (20 ng/ml) Methamphetamine (35 ng/ml)		20-50 hr 12-24 hr 4-16 hr 5-12 hr 24 hr 15 hr 24 hr	-Baseline/yearly -10% (baseline/1 year); 15% (2yr); 20% (3 yr) + any users -4 yr (only give if iCup urine screen is +) -Repeat if positive
NicAlert (Urine)	Cotinine (0-1000 ng/ml; positive if >100 ng/ml)	TO CO STATE OF THE PARTY OF THE	50 hours	-Baseline/yearly -10% (baseline/1 year); 15% (2yr); 20% (3-4 yr) + any users
Draeger Alcotest 5510 (Breath)	Breath alcohol detection (>.001 mg/L)		1-24 hr	-Baseline/yearly -10% (baseline/1 year); 20% (2yr); 33% (3 yr); 50% (4 yr) + any users -Repeat if positive
Hair (Psychemedics)	d Amphetamine (AMP1000 1,000 ng/ml), barbiturates (300 ng/ml), benzo (300 12 hr-1 week -50% (Starting 4yr)		-B (443); 1yr (134); 2 yr	
Abbott iCup (Urine; Redwood toxicology)			-50% (Starting 4yr) -If positive, give Draeger	

Proposed ABCD 4-year Measures: Being Piloted	What it measures:	
Participant Last Use Survey (PLUS)- parent/youth	Tobacco/caffeine/med use in last 24 hours	
If heard of drug:		
Drug Intro, Use since last sessions, first use questions & TLFB	Quantity/frequency patterns	
Caffeine intake	Caffeine use, type & quantity in past month	
Peer Group Deviance (Peer SU)	Peer group deviance including substance use	
Intention to Use (PATH study)	Intention to use, curiosity, susceptibility	
Peer Tolerance of Use*	Friend's attitudes about your use	
Perceived Harm (MTF)	Youth's opinions about harm of drugs	
Youth CRPF (MTF)	Availability of substances in environment	
SRY_SU_ABCD	Sibling substance use	
Ever used <u>ANY</u> alcohol, MJ, nicotine:		
iSay Sipping Items	First/early alcohol use	
MJ Low-Level Use Measure	First/early marijuana use	
Tobacco Low-Level Use Measure	First/early tobacco use	
Ever used 1+ full drink or puff:		
Subjective Response to Alcohol *	Sensitivity to alcohol effects	
Subjective Response to Tobacco *	Sensitivity to tobacco effects	
Subjective Response to Marijuana	Sensitivity to marijuana effects	
2+ uses in past year:		
Alcohol Motives (DMQ)	Motives for alcohol use	
Tobacco Motives Inventory	Motives for cigarette use	
ENDS Motives Inventory	Motives for ENDS use	
Reasons for ENDS Use	Reasons for ENDS use	
Marijuana Motives Measure (MMM)	Motives for marijuana use	
Vaping Motives	Motives for Vaping	
Hangover Symptom Scale (HSS)	Alcohol use hangover/withdrawal symptoms	
Rutgers Alcohol Problem Index (RAPI)	Alcohol use consequences	
Nicotine Dependence (PATH)	Tobacco use consequences	
Marijuana Problem Index (MAPI)	Marijuana use consequences	
Drug Problem Index (DAPI)	Other drug use consequences	
Cannabis Withdrawal Scale	Cannabis withdrawal symptoms	
Parent: Community Risk & Protective Factors*	Availability of substances in youth environment	
Household SU Rules	Parental SU approval and rules	
SU Household density	Household density of SU, second-hand exposure, storage of drugs/alcohol in house	
Notes: "Woalfied from Phenx; watch for COVID notes- 4-ye	ar could have been administered remotely- note how SU interview/TLFB was administered	



#### SU Module: Where to Find NDA Files?



- Baseline NDA 2 0 files\*.
- ABCD Parent Participant Last Use Survey Day (PLUS) (plus01)
- ABCD Parent Youth Last Use Survey Day (PLUS) (abcd\_plus01)
- ABCD Youth Alcohol Screen (yalcs01)- BAC tests
- ABCD Youth Nicalert (abcd\_ynm01)- Nic Alert Cotinine Tests
- ABCD Youth Toxicology Test (abcd\_ytt01)- Draeger drug toxicology saliva test
- ABCD Youth Hair Results (abcd-yhr01); ABCD Youth Hair Sample (abcd\_hers01)
- ABCD Parent Rules on Substance Use (prq01)
- ABCD Parent Community Risk and Protective Factors (CRPF) (su risk p ) measures availability of substances
- Y\_Substance Use Interview (abcd\_ysu02)
  - SU patterns lifetime use, age first and regular use, max use, last use, drug follow-up questions (tlfb\_ )
    - NOTE: \_calc\_ scores add in "0's" for non-users
  - Low level alcohol use (isip\_)
  - Low level nicotine use (first nicotine )
  - Low level MJ use (first\_mj\_)
  - Caffeine intake (caff\_intake\_)
    - NOTE: \_calc\_ scores add in "0's" for non-users
  - Peer use (peer\_deviance\_)
  - Intention to use (path\_)
  - Alcohol measures [Subjective effects (subj\_resp\_alc); HSS (hangover); RAPI (rapi\_)]
  - Nicotine measures [Subjective effects (subj\_resp\_nic\_); Nic dep (path\_nic\_dep)]
  - Cannabis measures [Subjective effects (sub\_res\_mj\_); MAPI (mapi\_); DAPI (dapi\_)]
- ABCD Timeline Follow-Back Survey Calendar Scores (TLFB) (abcd\_tlfb01)
  - tlfb\_cal\_scr\_ variables for each drug category



#### Welcome to the NIMH Data Archive

The National Institute of Mental Health Data Archive (NDA) makes available human subjects data collected from hundreds of research projects across many scientific domains. NDA provides infrastructure for sharing research data, tools, methods, and analyses enabling collaborative science and discovery. De-identified human subjects data, harmonized to a common standard, are available to qualified researchers. Summany data are available to all.

The NDA mission is to accelerate scientific research and discovery through data sharing, data harmonization, and the reporting of research results.

\*See NDA data dictionaries for details

### SU Module: Where to Find NDA Files?



- NDA 2.0 Files (Year 1, Year 2, Year 3) \*
- Files were split apart into more sections due to RedCap changes
- ABCD Youth Mid Year Phone Interview- Substance Use (abcd ymypisu01)
  - 6-month phone interview: Alcohol, Tobacco, cannabis products, inhalants, prescription misuse, LTC misuse, "other" drugs
- ABCD Parent Participant Last Use Survey Day 2 3 4 (plus01)
- ABCD Parent Youth Last Use Survey Day 1 2 3 4 (abcd\_plus01)
  - pls1\_sess (variable indicating session type the PLUS form was given for: neurocog, MRI or other session); if want to control for recent substance use, need to link the PLUS form with correct session type
- ABCD Youth Alcohol Screen (yalcs01)- BAC tests
- ABCD Youth Nicalert (abcd\_ynm01)- Nic Alert Cotinine Tests
- ABCD Youth Toxicology Test (abcd\_ytt01)- Draeger drug toxicology saliva t
- ABCD Youth Hair Results (abcd-yhr01); ABCD Youth Hair Sample (abcd\_her
- ABCD Parent Rules on Substance Use (prq01)
- ABCD Parent Community Risk and Protective Factors (CRPF) (abcd\_crpf01)
- Y Substance Intro and Use Patterns (abcd ysuip01)
  - Use since last session, age of first use (tlfb\_)
  - Low level alcohol use (isip )
  - Low level nicotine use (first nicotine )
  - Low level MJ use (first\_mj\_)
  - Caffeine intake (caff\_intake\_)
    - NOTE: \_calc\_ scores add in "0's" for non-users

\*See NDA data dictionaries for details



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### SU Module: Where to Find NDA Files?



- NDA 2.0 Files (Year 1, Year 2, Year 3) \*
- ABCD Timeline Follow-Back Survey Calendar Scores (TLFB) (abcd\_tlfb01)
  - tlfb\_cal\_scr\_ variables for each drug category
- Y Substance Use Attitudes (abcd ysua01) \*\*
  - Peer use (peer\_deviance\_); Intention to use (path\_); peer tolerance (ptu\_); perceived harm (phs\_1\_)
- ABCD Youth Alcohol Measures (abcd\_yam01) \*\*
  - Expectancies AEQ (aeq\_); Subjective effects (subj\_resp\_alc); HSS (hangover); RAPI (rapi\_)
- ABCD Youth Nicotine Measures (abcd\_ynm01) \*\*
  - Expectancies ASCQ (ascq\_); Subjective effects (res\_tobacco\_); Nicotine Dependence (path\_nic\_dep\_)
- ABCD Youth Marijuana Illicit Drug Measures (abcd\_ymidm01) \*\*
  - Expectancies MEEQ (meeq\_); Subjective effects (sub\_res\_mj\_); MAPI (mapi\_); DAPI (dapi\_)]
- ABCD Summary Scores (SU)
  - Caffeine total scores
    - su caff ss sum (baseline)
    - su\_caff\_ss\_sum\_l (follow-up visits)
  - Subjective Effects total scores
    - subj\_resp\_alc\_total\_first
    - res\_tobacco\_total\_chew\_i
    - sub\_res\_mj\_total



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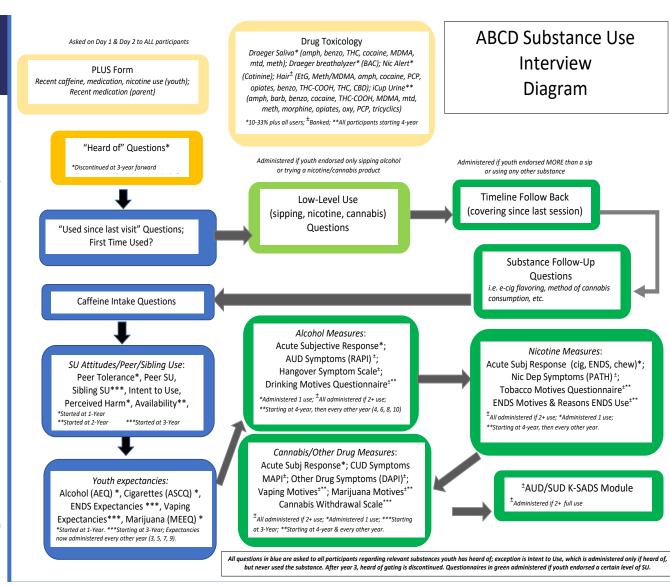
The NDA mission is to accelerate scientific research and discovery through data sharing, data harmonization, and t reporting of research results.

• \*See NDA data dictionaries for details; \*\*Sibling SU, Household density (parent inventory), Youth availability, Vaping expectancies, ENDS expectancies, Cannabis withdrawal will be in NDA 3.0 release; Motive inventories will be launched at 4-year time-point and available in NDA 4.0

# SU Interview Flow

#### **Gating Notes**

- "Heard of" years: baseline-2 year
  - Only receive once, do not give items related to the drug if they haven't "heard of" it.
  - "\_calc\_" variables generally put 0's if didn't "hear of" for use variables.
- User will need to put in zero's for other measures (e.g., HSS, RAPI)
- Release 4.0 will have new TLFB variables (e.g., combined all tobacco use days, cannabis use days). Users can also make those variables (but in 2.0/3.0 there aren't many users).
- If used, ask about whether first use, low-level use/TLFB, subjective effects, and consequences of use (eg., HSS, RAPI, Nic Dep, MAPI, DAPI)



# For Example: Used/First use?

B. "Now I'm going to ask if you tried these drugs for the first time during the period since we last saw you on 04-29-2018. Was

C. Date of First Use?IF YES, ASK: "What was the date of the first time you tried\_\_\_\_\_?" Interviewer: Estimate first use date

O No



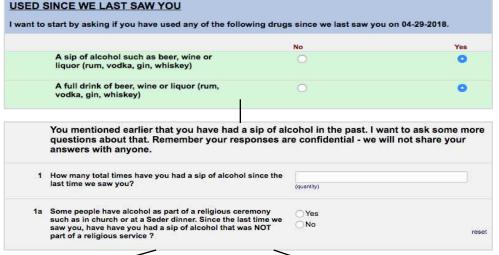
Gating Examples: SU Patterns Interview

using mm/dd/yyyy. If the day is unknown, assume the 15th of the given month.

Was this the first time you tried alcohol?

D. Age of First Use Onset (calculated in years based on [current date]-[date of first use]).

this the first time you tried ?"



reset



# Low Use Alcohol (iSip)



Asks about sips of alcohol.

If not part of religious services, will ask follow-up questions.

Gating Note: If already filled out at previous session, they will only answer # of sips but not follow-up questions.

	You mentioned earlier that you have had a sip of all questions about that. Remember your responses a answers with anyone.	
1	How many total times have you had a sip of alcohol since the last time we saw you?	1
		(quantity)
1a	Some people have alcohol as part of a religious ceremony such as in church or at a Seder dinner. Since the last time we saw you, have have you had a sip of alcohol that was NOT part of a religious service?	<ul><li>Yes</li><li>No</li><li>reset</li></ul>
1b	How many times?	(quantity)
	Please <u>DO NOT</u> include alcoholic drinks you had as part of a ridinner. <u>DO</u> include any other experiences you have had with drivith your parents.	
2	How old were you the first time you had a sip of alcohol?	
		Years
3	Did you continue to drink the alcoholic drink (and finish it) after the first sip?	Yes No
4	What type of alcohol was your first sip of an alcoholic beverage?	Beer  Wine coolers/Beer substitutes (this includes Smirnoff Ice, Bacardi Silver, Hard Cider, Hard Lemonade [Mike's, Doc Otis])  Shots of hard alcohol or drinking liquor out of a bottle (this includes rum, vodka, gin, tequila, whiskey)  Mixed drinks (for example: liquor mixed with gode.)
		<ul> <li>Mixed drinks (for example: liquor mixed with soda or juice)</li> </ul>



### Low Use Tobacco



Follow-up questions ask about first puff of tobacco or first use.

If already filled out at previous session, they will only answer # of puffs but not follow-up questions.

This example is baseline wording. ENDS wording was updated mid 2/3 year "electronic nicotine or vaping products, such as e-cigarettes, vape pens, or Juuls"

	When answering these questions, please <u>do not</u> include cigare cigarettes) you had as part of a religious ceremony.	ettes or other tobacco products (e.g., hookah,	-
	Please $\underline{do}$ include any other experiences you have had with ciphave had with your parents.	garettes or tobacco including puffs or dips yo	u may
1	Have you had a puff of a cigarette, e-cigarette, or vape pen,	O Yes	
	hookah, cigar or pipe since the last time we saw you?	No, part of a religious service only	
		○No	
			rese
	How many times since the last time we saw you had a puff of a cigarette, e-cigarette, vape pen, hookah, cigar or pipe?		
2	Which type of cigarette/e-cigarette product was it?	Cigarette	
		e-cigarette or vape pen	
		hookah	
		Cigar	
		pipe	
		Choose One	rese
	We would like to find out more about your very first experience questions, please answer for the FIRST time you ever had a pu		
2			
•	How old were you the first time you had a puff of a cigarette		
,	How old were you the first time you had a puff of a cigarette or e-cigarette?	Years	
		Years Yes No	resi
4	or e-cigarette?  Did you continue to smoke the cigarette/e-cigarette after the		rese
4	or e-cigarette?  Did you continue to smoke the cigarette/e-cigarette after the first puff?	Yes No  Menthol or mint	rese
4	or e-cigarette?  Did you continue to smoke the cigarette/e-cigarette after the first puff?	Yes No	rese





# Low Use Marijuana



Measures first use of marijuana product

If already filled out at previous session, they will only answer # of puffs but not follow-up questions.

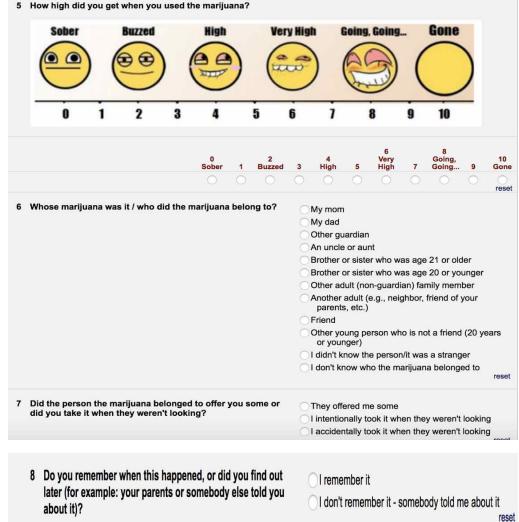
At 2/3 year, vaping and smoking are separated

	smoking joints, blunts, bongs, or eating marijuana food, or smo	oking concentrates like dabs or hash.
1	How many total times have you used marijuana since the last	
	time we saw you?	Frequency
	We would like to find out more about your very first experience please answer for the FIRST time you ever used marijuana.	s with marijuana. For this next set of questions,
1	How old were you the first time you first used marijuana?	
		years old
1	Did you continue to use marijuana after the first puff or	Yes
1	taste?	No
		res
	What type of marijuana was your first experience with?	Regular smoked marijuana (smoked pot, grass, weed, ganja)
		<ul> <li>Smoked marijuana that was very strong (sensimilla, &gt;20% THC strain)</li> </ul>
		<ul> <li>Marijuana that you eat (pot cookies, gummy bears brownies, etc)</li> </ul>
		Fake marijuana or synthetics such as K2 and spic (fake weed, herbal incense)
		Marijuana oils or concentrates (("710"; hash oil; BHO/butane hash oil/dabs/ shatter/budder/hone; oil; Co2 oil/vaporizer pen; Rick Simpson Oil/RSO/phoenix tears)
		Marijuana infused alcohol drinks





At 2/3 year, additional items were added for who it belonged to (see data dictionary)



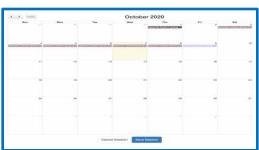




#### Detailed vs. Estimated TLFB



- Detailed TLFB: Last 12 months
- Use standard doses (Standard Unit slides)
- RAs go month by month
- As accurate as possible
- Measures calculated: total dose, average dose, week day v. weekend total dose; max dose, co-use days (e.g., alc+cannabis; alc+nic; nic+cannabis).
- Estimated TLFB: For periods >12 months
- General pattern
  - Total dose (standard dose and days used), average dose per occasion
  - Not concerned with weekday/weekend, max, co-use days
  - More reliant on repeated typical dose over the month



# REDCap TLFB Instructions

#### Past Year TLFB Calendar

INTERVIEWER: If they used any of the above drugs since the last assessment- then administer TLFB to cover time since last assessment. Pull up the most recent phone interview completed and note which substances were reported and approximately when- remind participant of these incidents to assist with memory.

"Ok, now I want to closely measure how much of the drugs you have used since we last saw on 04-29-2018. You said you have used: (list drugs) during this time. So now we are going to measure that use more closely.

This will not be too hard of a task, because I am going to help you use a calendar like this one {orient to calendar}. What the calendar does is give you a picture of the dates and patterns of your substance use...What we have found is that calendars are very useful in helping people recall their drug or alcohol use. The idea is to record the amount of {fill in drug} in standard amounts you have used on each day. For example, if you drank alcohol we would measure in drinks, such as a 12 oz can of beer, or a 5 oz glass of wine- and I will show you pictures and help you measure. We will go back approximately one year week by week, then for any remaining time we will focus on your typical or average use. If you cannot remember exact details, then we will record your typical use for that week.

THE IMPORTANT THING IS THAT WE WRITE SOMETHING ON EACH MONTH OF THE CALENDAR. ... Next I want to see if there were any really important dates since the last assessment, such as holidays, vacations, special sporting events, birthdays or other parties that may help you recall your drug or alcohol use. Interviewer: Fill in these dates under events so they can help with memory of drugs used.

Great, next I will show you pictures of ways to measure each drug and please let me know how you use the drug.

Interviewer:Detailed TLFB: Last 12 months. Take out the appropriate Standard Unit slides and show the participant each drug picture, and ask how they typically use the drug. Get them oriented on how we will measure the drugs. Then go week by week through the first 12 months. Remember TIPS below.

Estimated TLFB: For periods >12 months, get their general pattern (number of occasions per month, average number of standard units per occasion). The important thing for that time-period is to capture general pattern; we will not be measuring co-use days or weekday vs. weekend information.

Click here to open the TLFB Calendar in ABCD Reports.

#### TLFB TIPS:

- · You will need: scrap pieces of paper (shred after), calculator, and standard unit slides
- Ask how they use each substance (especially alcohol, marijuana, nicotine) & about how often they use them to get a sense of their pattern before starting.
- For first 12 months, try to get accurate information going back month by month.• If they cannot remember specific dates, have them give best guess. Try to differentiate weekend vs. weekday use.
- · Fractions of standard units are allowable.
- Try to be accurate about co-use (e.g., did they use alcohol and MJ on the same days- doesn't matter what the date is, but try to put the events on the same days).
- If someone has a general pattern, you can use that, but BEFORE entering, ask if there were any days or timeperiods that month where they had substantially more or less than what was typical.
- · Click on an event in the calendar to erase it.
- If entering a repeated event- make SURE to check the box "limit range by days of the week" AND pick the days (e.g., click on Friday/Saturday to reflect weekend drinking; click on each day to reflect daily smoking). If you make a mistake on a repeated event, you will have to erase each single event- so to be safe, only do repeated events for 1-2 months max.
- This is a flexible interview- you can fill out regularly used drugs first, then fill in less frequently used drugs. If there is a lot of co-use (e.g., they typically drink and smoke), then fill those out together month to month. ESTIMATED period >12 months: if need to fill out beyond 12 months, then hit "ESTIMATE" button and fill in average number of occasions (all substances) and average number of standard units (for alcohol, marijuana, nicotine).



#### Report Page TLFB Set Up Assessment Setup Participant ABCD\_TEST\_TLFB 08/28 02/24 08/29 02/25 11/27/2018 08/29 02/25 11/27/2019 05/26/2018 05/26/2019 05/25/2020 Oct 31st 2018 Nov 27th 2017 Oct 31st 2018 Nov 15th 2019 Session name 2 Year Follow up (Year 3) Session run 01 Number of months captured 12 Session Date 10/07/2020 ubstances (none selected) Alcohol Cigarettes Electronic nicotine device Cigars Hookah Pipe Tobacco Smokeless tobacco Smoked MJ flower Vaped MJ flower Edible MJ Nicotine replacement MJ Blunts Vaped MJ oil Smoked MJ oil MJ infused alcohol MJ tinctures Synthetic MJ CBD non-medical use Magic mushrooms Salvia Cocaine Rx Sedatives Rx Opioids Rx Stimulants Cathinones Methamphetamine Ecstasy Ketamine Heroin Cough or cold medicine Hallucinogens Inhalants Steroids Bittamugen Other Special Events Range: Oct 2019 to Oct 2020 **Event name** Start date End date Event name **=**

Event name

誧



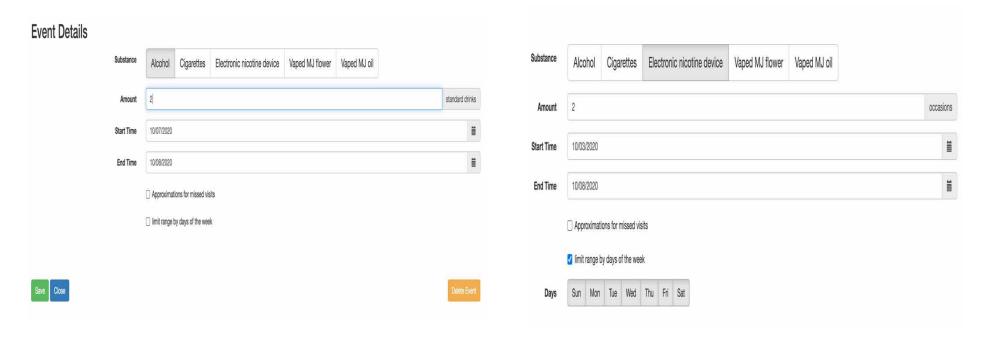
Put in # of months <u>since last TLFB</u> (could range from 9-24 months)

Past 12 months= DETAILED >12 months= ESTIMATED

RA highlights all the substances used since last session

# Enter an "Event" (Detailed Version)

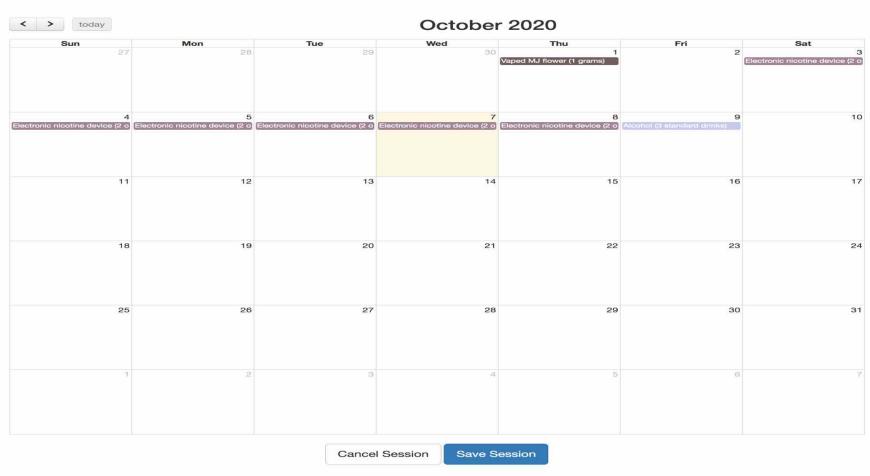




- Input standard unit for the drug (for many, that is occasions)
- Can enter repeated events (e.g., daily use that week or month)

# Example Month





## TLFB Follow up Questions



- A series of follow-up questions will appear depending on what the youth used.
- Questions should be answered considering their use in the past 12 months for the following drugs:
- Cigarettes
- ENDS
- Cannabis
- CBD
- Cocaine
- Methamphetamine
- Heroin









# Cigarette & E-Cigarette Follow-Up Questionschleren

Year 1-3 - "JUUL" added to list of e-cig product pictures

Year 2- added questions about flavoring; how often use JUUL device; and whether they have tried "dripping"- (dropping ecig directly onto hot coils to get thicker smoke)

	E-Cigarette Follow-up Qu	estions:	
During the past year, how m smoke in your Electronic cig hookah? For example, 1 pen contains 1ml of liquid. Measu ml; 10ml bottles, click on do	arettes, vape pens, or e- style cartridge typically are in ml; 1 pen-style cartridge=1	(ml)	
Don't know		ODon't know	reset
During the past year, what w nicotine used in your Electro hookah? For example, streng mg/ml.	nic cigarettes, vape pens, or e-	Answer in mg/ml; leave blank if unknown	
Don't know		ODon't know	reset
Of the times you smoked e-c how often did it contain nico	igarettes during the past year, tine?	Never Almost never Sometimes Most of the time Almost always Always Don't know	
During the past year, did you throw away) or a re-chargeal cigarette?	typically use a closed (one you ble (one with a battery) e-	Disposable (throw-away) Re-chargeable Don't know	reset
Disposable Examples of closed e-	Battery, Re-C		
cigarette types	Cartridge (fillable) "Tank"	Battery	

# Smoked MJ Follow-Up Questions



Year 2/3- separated smoked vs. vaped flower (and asked types of vaporizer)

In the past year, what was the primary way you inhaled or smoked marijuana?    vaporizer (with flower, not concentrate or oil)	bong, pipe, bowl, homemade device hookah (with tobacco added) blunt with tobacco added) blunt with tobacco paper rolled joint or spliff  During the past year, what brand or strain of marijuana do you smoke? If you do not know, just say "I don't know."  Interviewer: enter name, say "home grown," if unknown click on "don't know  Don't know  Don't know  Don't know  Don't know  Low (around < 5% THC) Medium (10%) High (15%) Very high (20%+) Don't know  Of the times you smoked MJ sDuring the past year, how often did you smoke highly potent marijuana (such as "Skunk", or MJ that is 15% THC or higher)? It is okay if you don't know.  Never Almost never Sometimes Most of the time Almost always Always
you smoke? If you do not know, just say "I don't know." Interviewer: enter name, say "home grown," if unknown click on "don't know  Don't know  Don't know  Don't know  Low (around < 5% THC) Medium (10%) High (15%) Very high (20%+) Don't know  Of the times you smoked MJ sDuring the past year, how often did you smoke highly potent marijuana (such as "skunk", or MJ that is 15% THC or higher)? It is okay if you don't know.  Never Almost never Sometimes Most of the time Almost always Always	you smoke? If you do not know, just say "I don't know." Interviewer: enter name, say "home grown," if unknown click on "don't know  Don't know  Don't know  Don't know  Low (around < 5% THC) Medium (10%) High (15%) Very high (20%+) Don't know  Of the times you smoked MJ sDuring the past year, how often did you smoke highly potent marijuana (such as "skunk", or MJ that is 15% THC or higher)? It is okay if you don't know.  Never Almost never Sometimes Most of the time Almost always Always Don't know
How strong or potent do you think your smoked marijuana was that you used during the past year? Try to estimate the potency:  Low (around < 5% THC) Medium (10%) High (15%) Very high (20%+) Don't know  Of the times you smoked MJ sDuring the past year, how often did you smoke highly potent marijuana (such as "skunk", or MJ that is 15% THC or higher)? It is okay if you don't know.  Never Almost never Sometimes Most of the time Almost always Always	How strong or potent do you think your smoked marijuana was that you used during the past year? Try to estimate the potency:    Low (around < 5% THC)
was that you used during the past year? Try to estimate the potency:    Medium (10%)   High (15%)     Very high (20%+)     Don't know    Of the times you smoked MJ sDuring the past year, how often did you smoke highly potent marijuana (such as "skunk", or MJ that is 15% THC or higher)? It is okay if you don't know.    Never   Almost never     Sometimes     Most of the time     Almost always     Always	was that you used during the past year? Try to estimate the potency:    Medium (10%)   High (15%)     Very high (20%+)     Don't know    Of the times you smoked MJ sDuring the past year, how often did you smoke highly potent marijuana (such as "skunk", or MJ that is 15% THC or higher)? It is okay if you don't know.    Never   Almost never     Sometimes     Most of the time     Almost always     Always     Don't know
often did you smoke highly potent marijuana (such as "skunk"; or MJ that is 15% THC or higher)? It is okay if you don't know.  Almost never Sometimes Most of the time Almost always Always	often did you smoke highly potent marijuana (such as "skunk"; or MJ that is 15% THC or higher)? It is okay if you don't know.  Almost never Sometimes Most of the time Almost always Always Don't know
	During the past year, how high did you typically get when you smoked marijuana?



# Concentrate MJ Follow-Up Questions ABCD-Reprofit



Year 2/3- separated smoked vs. vaped concentrates/oils and simplified concentrates list wording

manjuana Concentrates Follow	op adconono.
What was the typical type of MJ concentrate that you used during the past year?	Hash Kief Water hash Co2 oil BHO Other
During the past year, what was the typical route of administration you used for your concentrates (pipe, vaporizer, dab/butane)?	Pipe Vaporizer Dab/Butane Other
How strong or potent do you think your typical marijuana concentrate was during the past year? Try to estimate the potency:	Low is around 20% THC Medium (40%) High (60%) Very high (80%+) If you do not know.
Of the times you used MJ concentrates during the past year, how often did you smoke highly potent marijuana concentrate (concentrate that is 80% THC or higher)? IF you do not know, that is ok too.	Never Almost never Sometimes Most of the time Almost always Always Don't know



Wax

# Cocaine, Heroin, Meth Follow-Up Questions



Similar questions are asked if they used methamphetamine or heroin

What was the typical route of administration you used when taking cocaine during the past year?	Smoking	
taking cocame during the past year?	Oral ingestion	
	<ul><li>Intranasal (snorting)</li></ul>	
	<ul> <li>Injecting subcutaneous</li> </ul>	
	<ul> <li>Injecting intramuscular</li> </ul>	
	<ul> <li>Injecting intravenous</li> </ul>	
Of the times you used cocaine during the past year, how	Never	
often did you inject it?	Almost never	
	Sometimes	
	Most of the time	
	○ Almost always	
	Always	
	O Don't know	
Of the times you injected cocaine during the past year, how	Never	
often did you use clean needles?	Almost never	
	Sometimes	
	Most of the time	
	○ Almost always	
	Always	
	OI never injected cocaine	
Of the times you used cocaine sDuring the past year, how	Never	
often did you smoke it?	Almost never	
	Sometimes	
	Most of the time	
	Almost always	
	Always	

Cocaine Follow-up Questions:



# Caffeine Intake- PAST MONTH PATTERN

Did the child use caffeine in the past month?



reset



#### RA: If they drink less than weekly, then input the fraction representing weekly use. For example, if someone has 2 coffees a month the math would be 2/4 because there are 4 weeks in one month, the answer is 0.5 per week- so enter "0.5". If they had 1 coffee per month it would be 1/4="0.25". If someone had less than 1 coffee in the past month, then the answer would be 0. 1 Coffee (instant, brewed) with caffeine, including flavored types Enter as DECIMAL. Typical serving size - 1 Cup (8 oz) 2 Espresso drinks with caffeine (Latte, Mocha, Americano) Enter as DECIMAL. Typical serving size - 1 shot espresso 3 Tea with caffeine (Green Tea, Black Tea, Sweet Tea, Earl Enter as DECIMAL. Typical serving size - 1 Cup (8 oz) 4 Soda with caffeine (Mountain Dew, Jolt, Coke, Pepsi, Dr. Pepper, Barg's root beer) Enter as DECIMAL. Typical serving size - 1 Can (12 oz) 5 Energy drinks (Red Bull, Monster, Rock Star, 5-hr energy\*, AMP, Full Throttle) Enter as DECIMAL. Typical serving size - 1 cup (8 oz) \* 5 hr energy is 2 oz

Submit

Yes
No

Typically, how many drinks of the following beverages did you have per week in the past month?

# Y\_Substance Use Attitudes



#### • Peer Tolerance:

- Asked if "heard of"
- Self-report of friends' attitudes about their substance use
- Friends are people that are around their age

#### Peer Group Deviance

- Asked if "heard of"
- Measures friends' use of alcohol, nicotine, marijuana, inhalants, and "other" drugs

#### Path Inventory – Intention to Use

- Measures the youth's intention to use alcohol, nicotine and marijuana.
- Asked if "heard of" and did not already use

#### Perceived Harm

- Opinions about how much others risk harming themselves by taking drugs
- Asked if "heard of"



## Y\_Alcohol Measures



- Alcohol Expectancy Questionnaire (AEQ)
  - Measures thoughts, feelings, and beliefs about effects of alcohol use and looks at child's opinions about how much others risk harming themselves by taking drugs.
- Acute Subjective Response to Alcohol
  - Gating: 1 FULL drink past year.
  - Measures the participant's subjective response to alcohol following the first 5 times ever drank, recent 3 months, and over their heaviest period.
- Gating: 2 FULL drinks past year
- Hangover Symptom Scale
  - Measures frequency of hangover symptoms in past 6 months
- Rutgers Alcohol Problem Index
  - Symptom frequency checklist of alcohol-related problems in past 6 months



### Y Nicotine Measures



#### ASCQ

- Measures thoughts, feelings, and beliefs about the effects of cigarettes.
- Asked if "heard of" tobacco.



#### Acute Subjective Response to Tobacco

- Measures the participant's subjective response to nicotine following their first exposure.
- Prompted if had 1 nicotine use past year

#### • PATH – Nicotine Dependence

- Symptom frequency checklist of nicotine-related problems over past 6 months.
- Prompts if 2 nicotine use past year

### Y\_Marijuana Illicit Drug Measures



#### MEEQ

- Asked if "heard of" marijuana.
- Measures thoughts, feelings, and beliefs about the effects of marijuana.



#### Acute Subjective Response to Marijuana

- If used marijuana, will only be asked if did not complete at previous session. Prompted if **1 marijuana use past year.**
- Measures the participant's subjective response to marijuana after first couple uses.

#### • MAPI - Marijuana Problem Index

- Prompts if 2 marijuana uses past year
- Symptom frequency checklist of marijuana-related problems over past 6 months.

# Drug Problem Index (DAPI)



Used other illicit drugs on at least 2 occasions in past year.

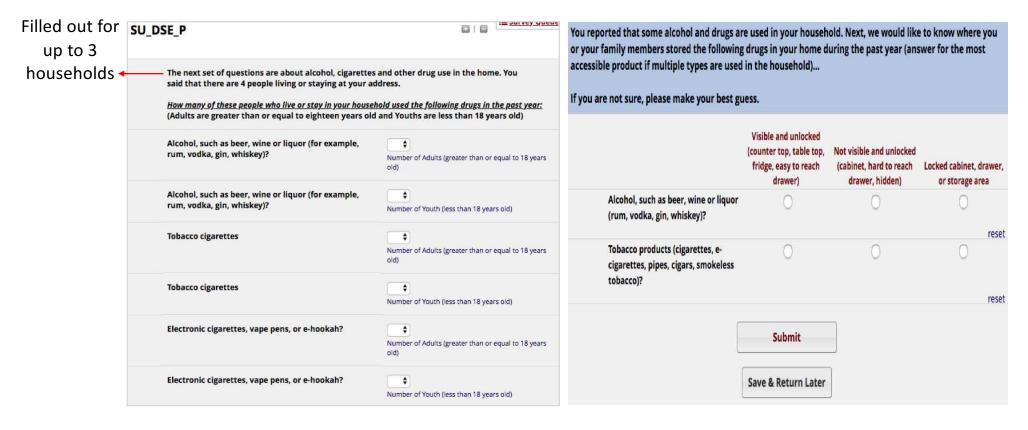
Symptom frequency checklist of "other" drug-related problems over

past 6 months.



# NEW: Parents: SU Density, Exposure, Storage (yr 2)

 Purpose: to assess substance use in others living at youth's residence(s), exposure to second-hand tobacco, ENDS, and marijuana smoke, and how intoxicating substance are stored (visible, within reach, locked?)



# Sibling Substance Use (SRY\_SU) (3 yr+)



- "Do you have any <u>older</u> siblings, or siblings younger by no more than one and a half years? For example, if you are around age 15, they are around age 12 and a half." YES/NO
- "Now I am going to ask you some questions about your siblings' past year substance use. If you have more than one older or close-in-age sibling, answer questions thinking of the heaviest using sibling for each substance. In the past 12 months, has your sibling(s) used..."
- Asks about alcohol, cigarettes, ENDS, marijuana, inhalants, rx stimulants, anxiolytics, opiates, and "other drugs"
- Then asks follow-up questions:
- "In the past 12 months, how many times have you seen your sibling(s) use..." (never, just a few, many times)
- "In the past 12 months, have your sibling(s) ever given you..." (no, yes, a few times, yes, many times)

### AUD/DUD Modules on KSADs



- During Substance Use Interview, RA's are prompted in RedCap to administer AUD and/or DUD KSAD modules, based on whether they reported 2 or more alcohol, cannabis, nicotine and other drug use episodes.
  - For the **other drug use**, they are guided to **pick the appropriate module** (e.g., stimulants, opiates, ecstasy, etc)



#### **Final Notes**



- Must consider gating; if did not hear of drug, then answers will be missing baseline-2
  year
  - Added "calc" variables when possible to add back in zero's when appropriate (e.g., assume if didn't "hear of" inhalants, then they did not use inhalants).
- Match PLUS form to date administered or type of session (neurocog or MRI) in order to control for very recent caffeine, nicotine, or rx
  - Coming out with coded variable in DEAP
- Expectancies and Motives will be administered every other year to save time
- In future, will have calculated co-use and combined product type variables for TLFB (e.g., total days used ANY cannabis product)
- In NDA 3.0/4.0, more summary variables will be calculated; until then, scientists may decide to create total scores or re-code categories
- Due to COVID-19, year 2-3 batteries were potentially administered virtually; this may impact SU battery reporting. Currently examining it's impact, but advise to examine how batteries were administered (virtual, hybrid, in-person).