

NCANDA: Characterization of the Sample

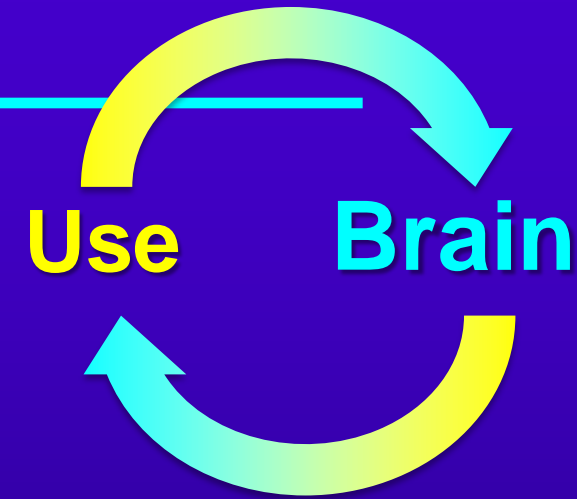
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Kristin Tomlinson, Kevin Cummins,
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Michael De Bellis, Bonnie Nagel, Weiwei Chu,
Torsten Rohlfing, Killian Pohl, Edith Sullivan,
Adolf Pfefferbaum, & Sandra Brown

NCANDA Overview



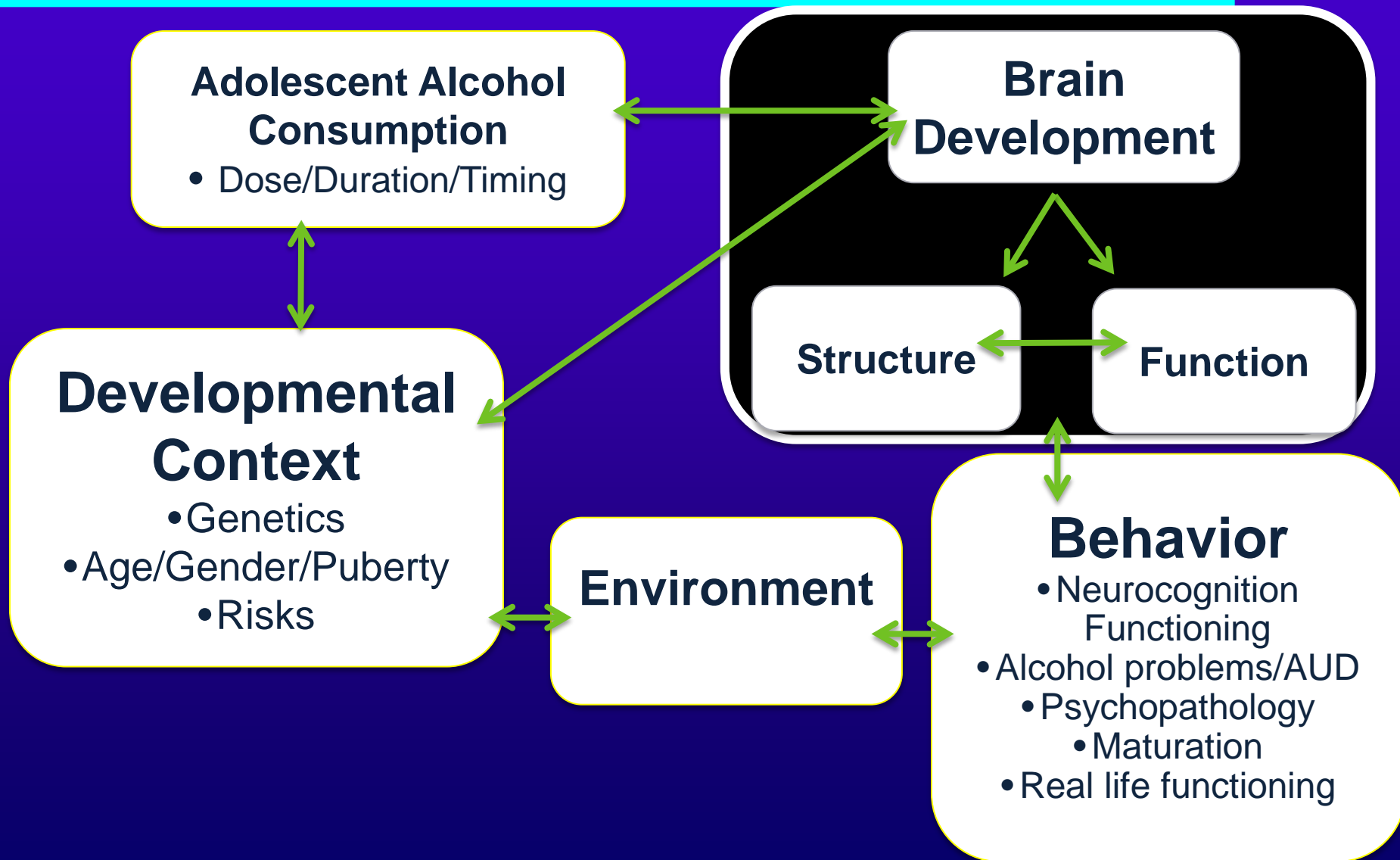
- ◆ Aims
- ◆ Recruitment
- ◆ Protocol
- ◆ Sample characteristics
- ◆ Next directions

Background



- ◆ **Adolescence:**
 - Neuromaturation
 - Escalations in substance use
- ◆ **Deleterious effects of heavy drinking on adolescent neuromaturation suggested**
 - Cross-sectional analyses
 - Smaller longitudinal studies
- ◆ **Verify in large, representative sample**

NCANDA Conceptual Model



NCANDA Aims

1. Drinking → adolescent neurodevelopment
2. Effects of dose, duration, and age of drinking
3. Resolution of effects with abstinence
4. Modulating factors:
 - Pubertal stage
 - Sleep
 - Sex
 - Psychopathology
 - Family history of alcoholism
5. Brain features → addiction & psychopathology

NCANDA

Design

Administration:

- Sandy Brown – Coordinator
- Susan Tapert – Scientific Director

Data:

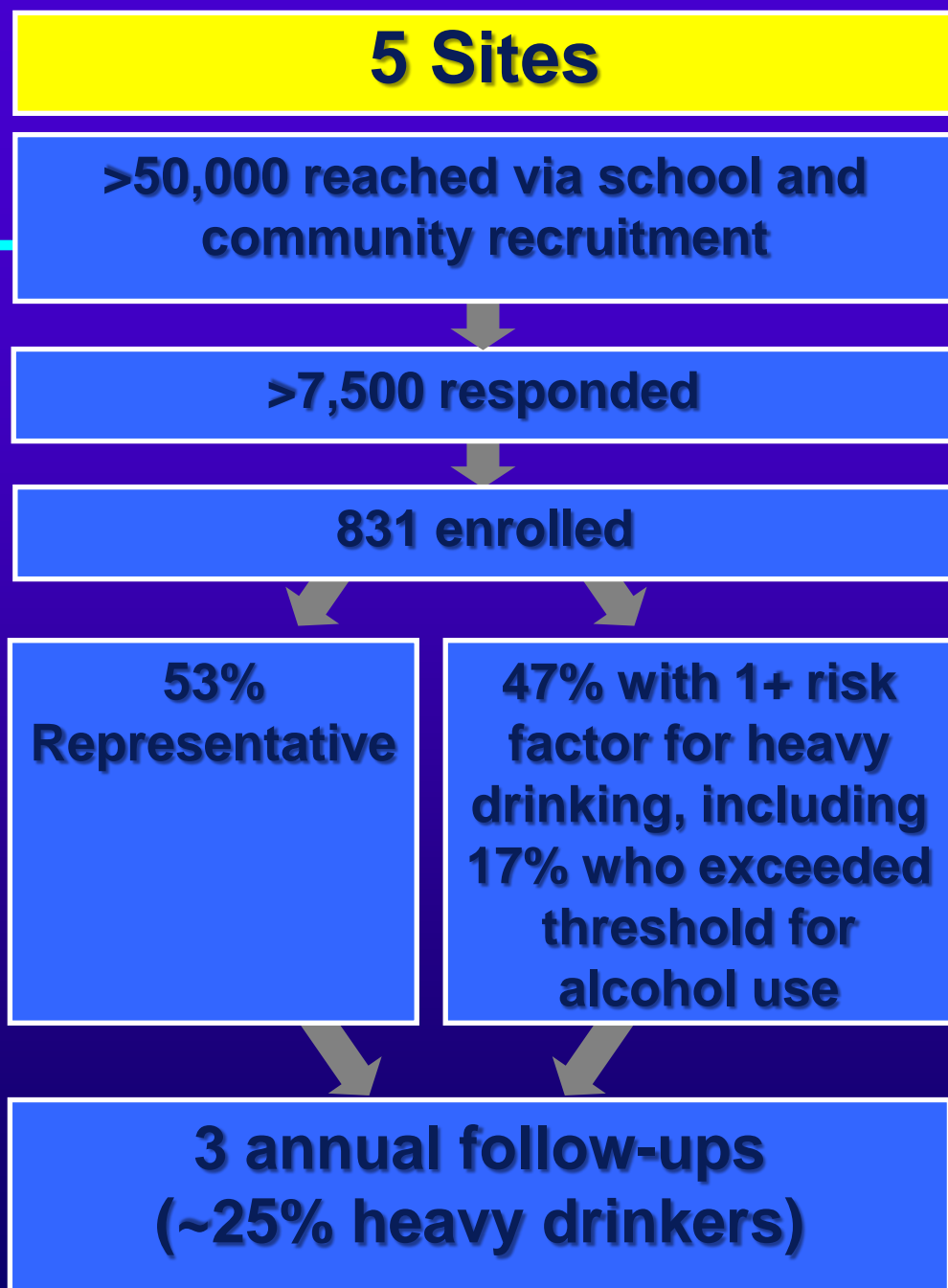
- Dolf Pfefferbaum
- Kilian Pohl
- Edie Sullivan

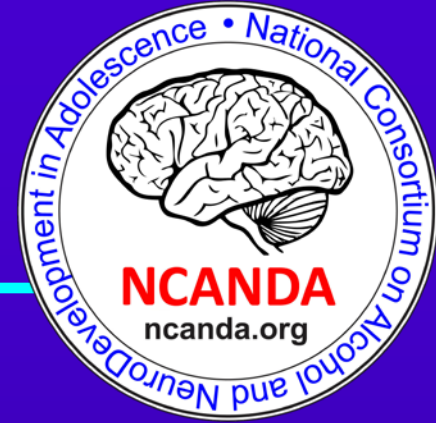
Sites:

- U Pittsburgh – Duncan Clark
- SRI – Ian Colrain & Fiona Baker
- Duke Univ – Michael DeBellis
- OHSU – Bonnie Nagel
- UCSD – Susan Tapert

Scientific Advisors:

- Ken Sher
- Raquel Gur
- Andrea Hussong
- Arpana Argrawal
- Bob Zucker





Exclusions at Project Entry

- ◆ Not age 12.0 - 21.9 years
- ◆ No parental consent
- ◆ Factors that preclude valid participation
- ◆ Early developmental problems
- ◆ Major psychiatric disorder
- ◆ Medications
- ◆ Serious medical problem
- ◆ Excessive substance use

Substance Use Criteria

For classification as Non/Low Drinker:

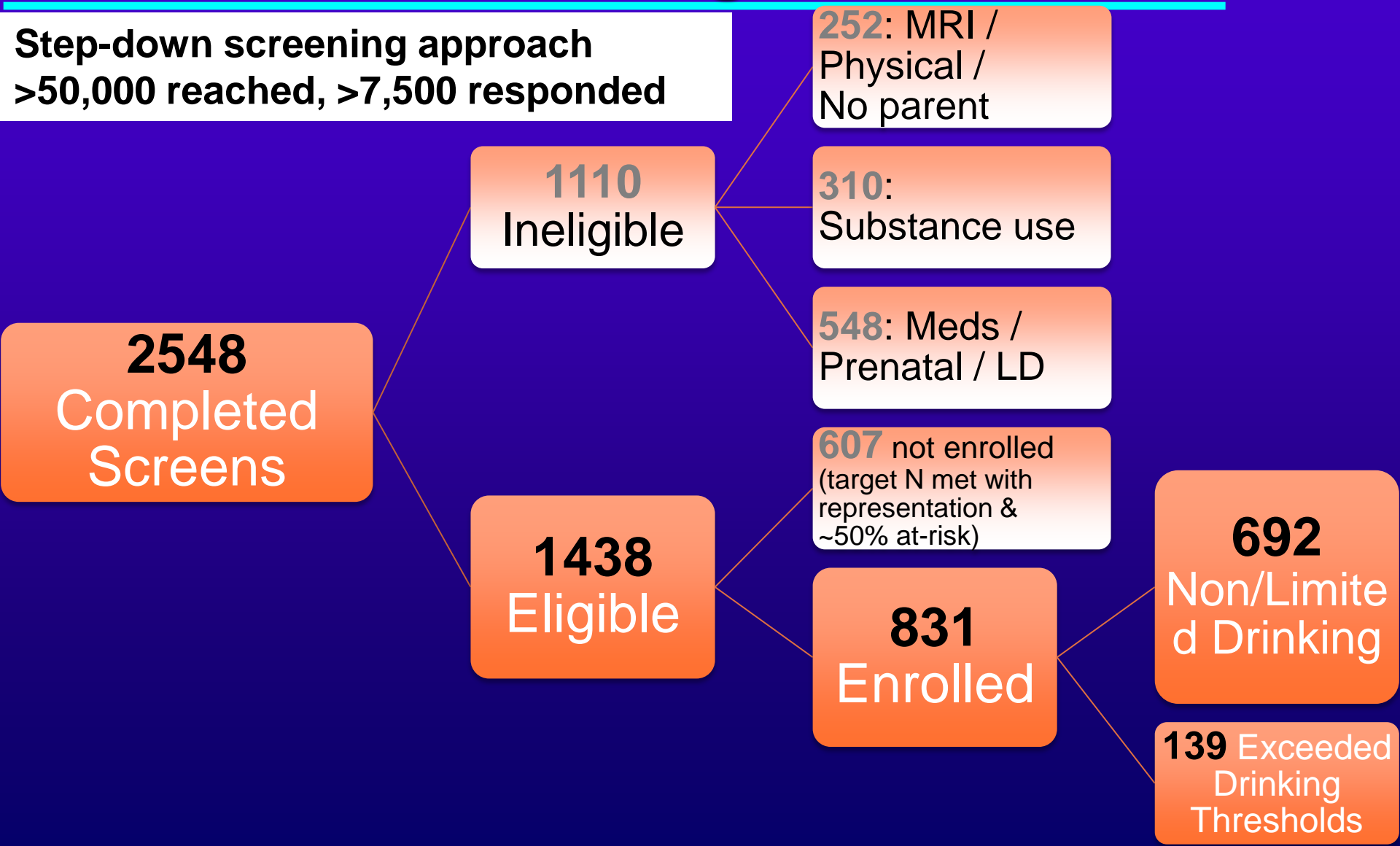
Age	Lifetime Days Drinking ^a	Maximum Drinks on One Occasion ^a		Lifetime Days Cigarette Use ^b	Lifetime Days Marijuana Use ^b	Lifetime Other Drug Use ^b
		Male	Female			
12-12.9	≤5	≤3	≤3	≤10	≤5	≤1
13-13.9	≤5	≤3	≤3	≤10	≤10	≤2
14-14.9	≤5	≤4	≤3	≤20	≤15	≤3
15-15.9	≤5	≤4	≤3	≤30	≤20	≤4
16-16.9	≤11	≤4	≤3	≤40	≤25	≤5
17-17.9	≤23	≤4	≤3	≤50	≤30	≤6
18-18.9	≤51	≤4	≤3	≤60	≤35	≤7
19-19.9	≤51	≤4	≤3	≤70	≤40	≤8
20-20.9	≤51	≤5	≤3	≤80	≤45	≤9
21-21.9	≤51	≤5	≤3	≤90	≤50	≤10

^a NIAAA, 2008

^b SAMHSA, 2013

NCANDA Screening

Step-down screening approach
>50,000 reached, >7,500 responded



2548
Completed
Screens

1110
Ineligible

252: MRI /
Physical /
No parent

310:
Substance use

548: Meds /
Prenatal / LD

607 not enrolled
(target N met with
representation &
~50% at-risk)

1438
Eligible

831
Enrolled



692
Non/Limited
Drinking

139 Exceeded
Drinking
Thresholds

Modified Accelerated Longitudinal Design

- ◆ Samples subjects from range of ages
- ◆ Oversampled age 12-15
- ◆ Allowed ~15% to **exceed drinking** thresholds
 - Mostly 18-21
 - Can estimate trajectories representing continuum from non-drinking to heavy drinking
 - Accelerated time scale

NCANDA Protocol: Interview

Youth	Youth assent (age 12-17) or consent (18+)	
	Computerized Semi-Structured Assessment for the Genetics of Alcoholism *NCANDA Version	
	Demographic Interview	
	Family History Assessment Module	
	MacArthur Sociodemographic Questionnaire (18+)	
	Customary Drinking & Drug Use Record	
	Traumatic Brain Injury Identification Method-Short Form	
	Youth Self-Report (12-17) or Adult Self-Report (18+) – dimensional psychopathology	
	Exit interview	
	Locator update and payment	
Parent / Informant	Parent consent	
	Computerized Semi-Structured Assessment for the Genetics of Alcoholism-Parent (12-17)	
	Demographic Interview-Parent	
	Traumatic Brain Injury Identification Method-Short Form	
	Family History Assessment Module	
	MacArthur Sociodemographic Questionnaire - Parent	
	Child Behavior Checklist (12-17)	
	Access to Substances (12-17)	
	Exit interview	
	Locator update and Payment	

NCANDA Self-Report Measures:

Access to Substances & Neighborhood Strength (12-17)

Alcohol Expectancy Questionnaire-Adolescent version

Behavior Rating Inventory of Executive Function

California Healthy Kids Survey (12-18)

Child Trauma Questionnaire

Driving & Riding Behavior & History Questionnaire (15+)

Drug Taking Confidence Questionnaire

Hangover Symptom Survey

Life Events Questionnaire

Motives for Abstaining from Alcohol Questionnaire

Parent Warmth, Monitoring, Knowledge, Control & Relationship (12-18)

Parental Monitoring (12-18)

Peer & Romantic Relationships

Peer Group Deviance

Prosocial Tendencies

Pubertal Development Scale

Responses to Stress Questionnaire

Sexual Behavior Questionnaire

Single-Item Self-Esteem Scale

Sleep: self-reported sleep problems, total sleep, chronicity, and weekday-weekend sleep difference

Social Support Questionnaire

Ten Item Personality Inventory

UPPS-P Impulsive Behavior Scale

Exit interview



Other Data Collected:

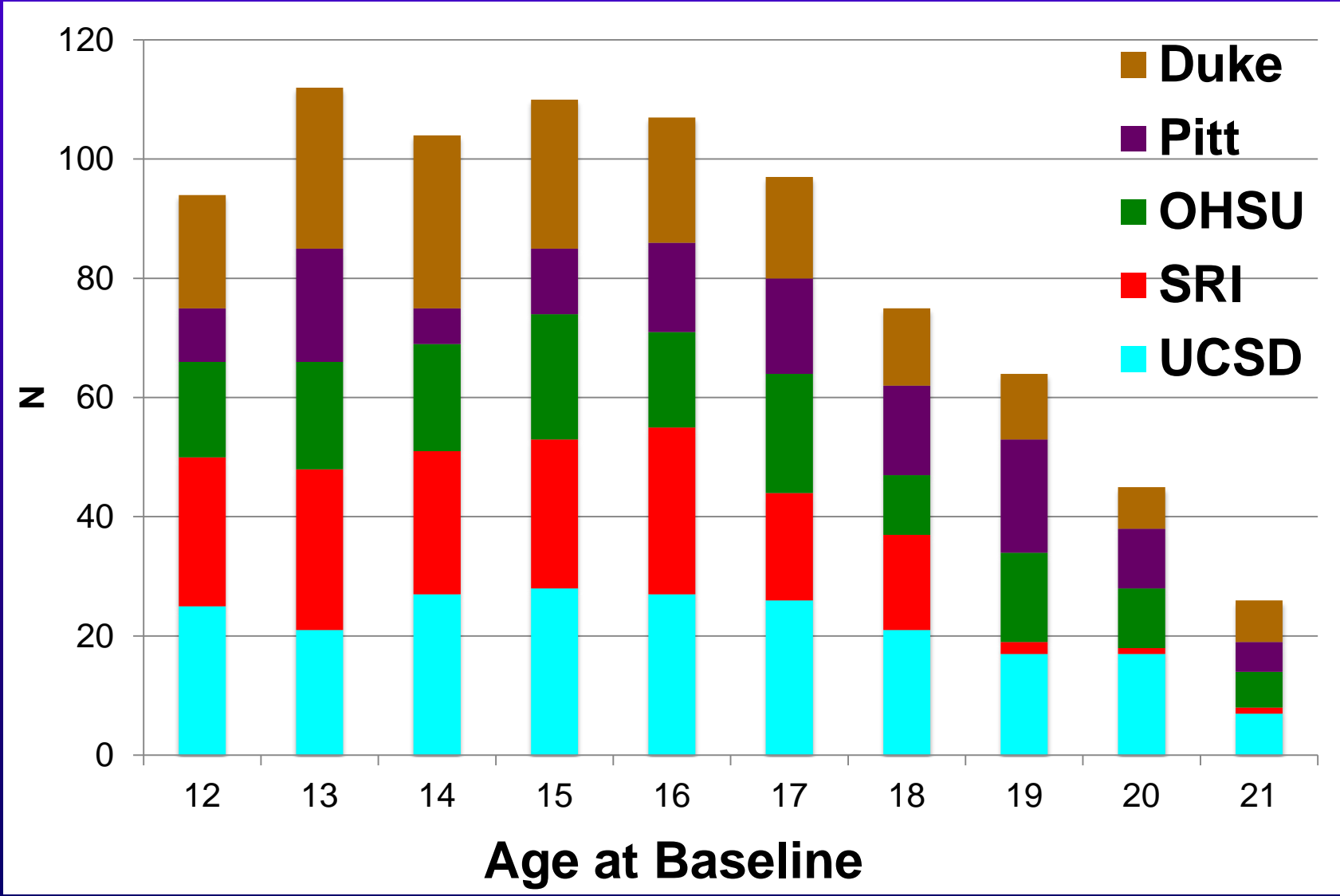
All Sites	MRI: T1, T2, DTI, & resting state fMRI
	Neuropsychological assessment
	Samples for genetic and epigenetic analyses, pubertal hormones, and drug screening
Specialty Projects at 2 Sites	Sleep studies – SRI & Pittsburg
	Stroop fMRI task – SRI & UCSD
	Anti-saccade fMRI task – Duke & Pittsburg
	Recovery protocol – UCSD & Duke



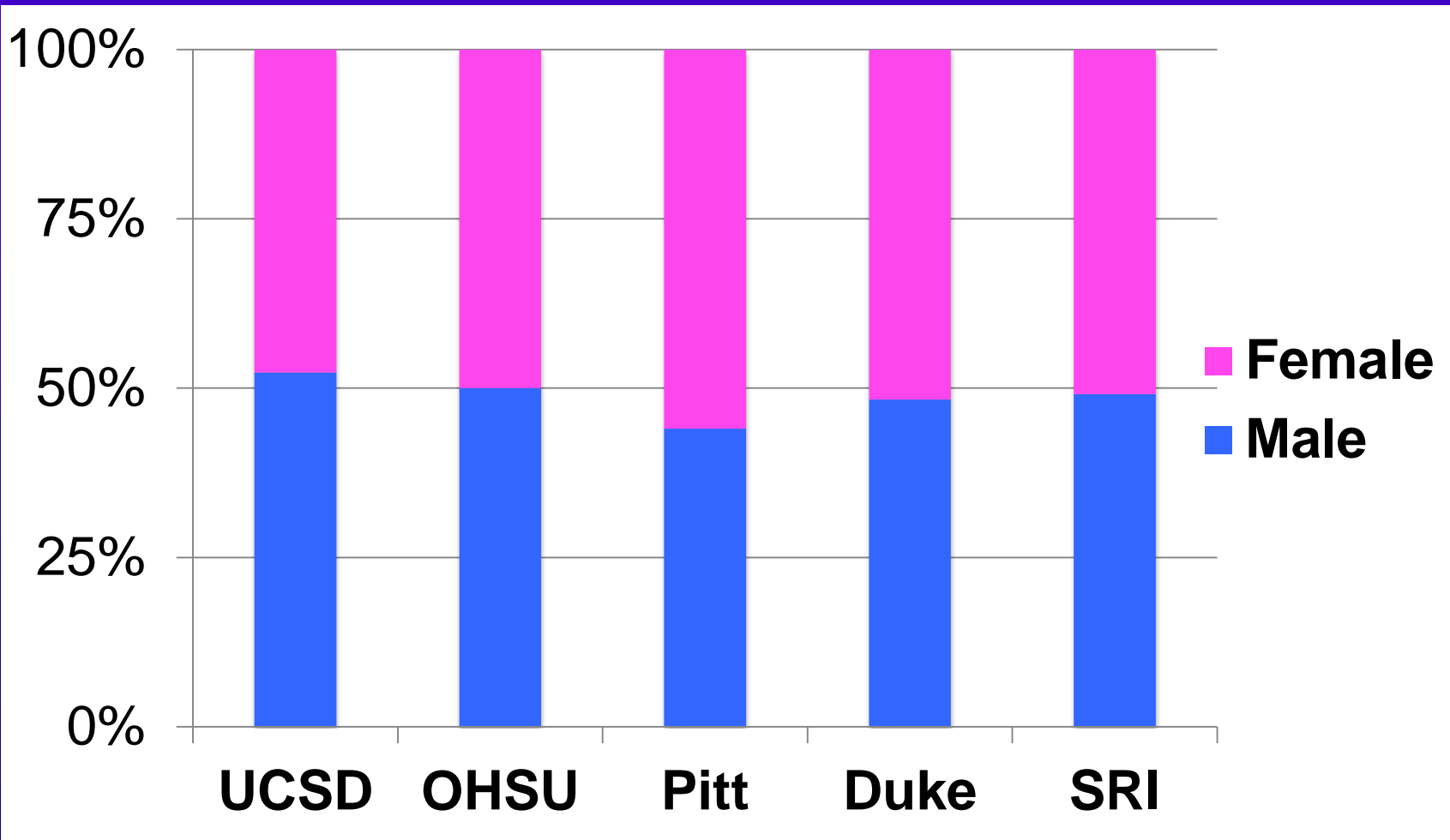
Staff Training & QA

- ◆ Senior staff at each site
- ◆ Training process:
 1. Readings and observation
 2. Repeat mock sessions observed by senior staff with feedback
 3. Mock session approved by senior-level staff member
 4. Observed assessment with real subjects
- ◆ QA:
 - Annual calibration at each site
 - Check for interviewer drift and confirm training of new staff
- ◆ Additional in-person and Skype training and reliability checks
 - Dr. Schuckit provided video-recorded training on SSAGA
- ◆ Manuals: clinical, neuropsych, MRI, and data management

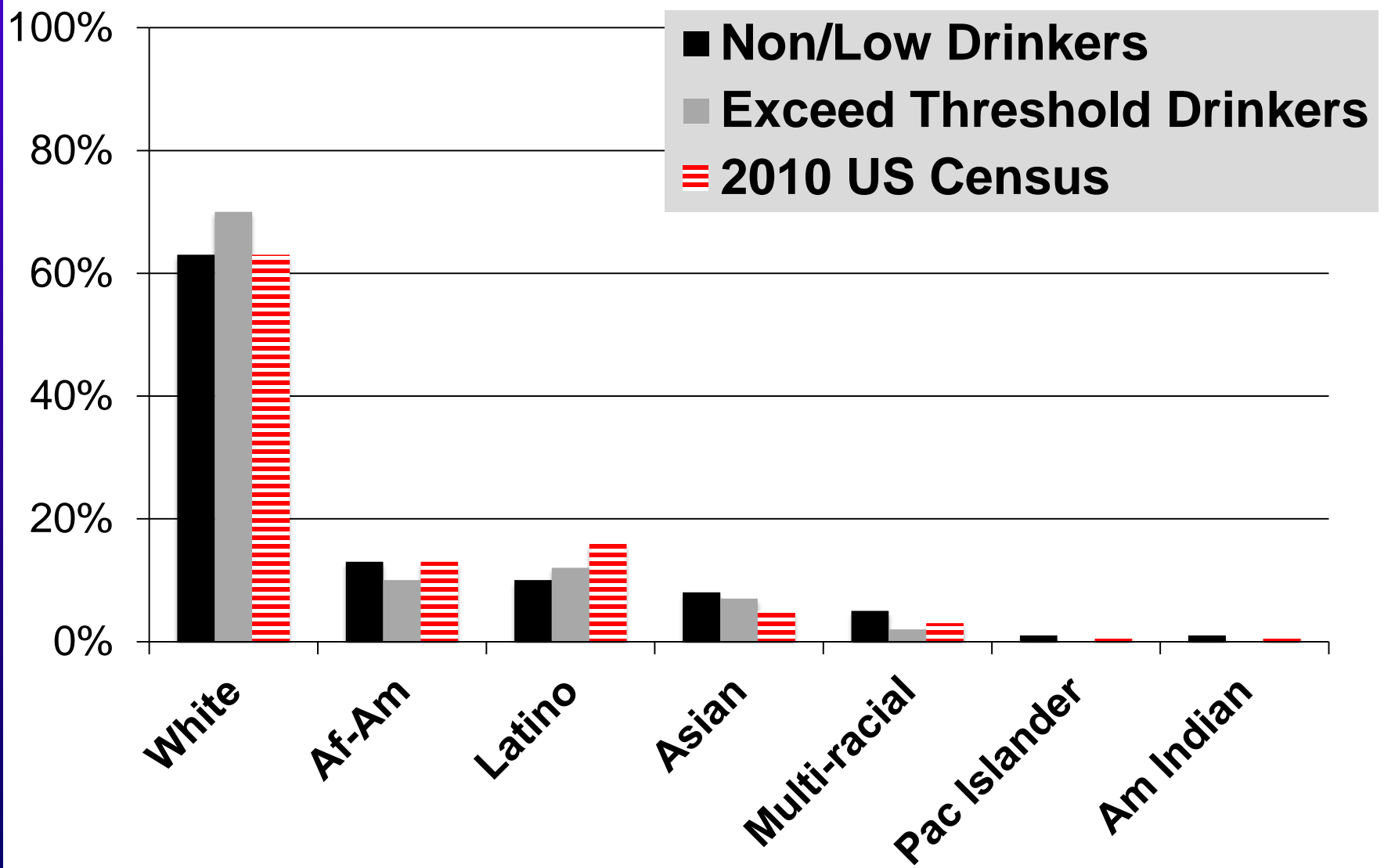
NCANDA Sample: Age Distribution

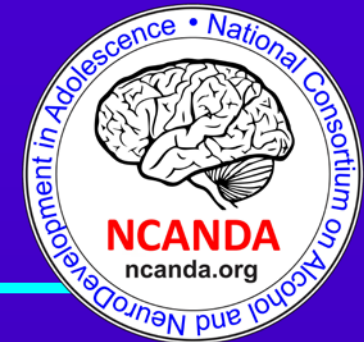


Balanced Female : Male Ratio



Ethnicity: Nationally Representative





Sample Characteristics

N = 831, age = 12-21 years

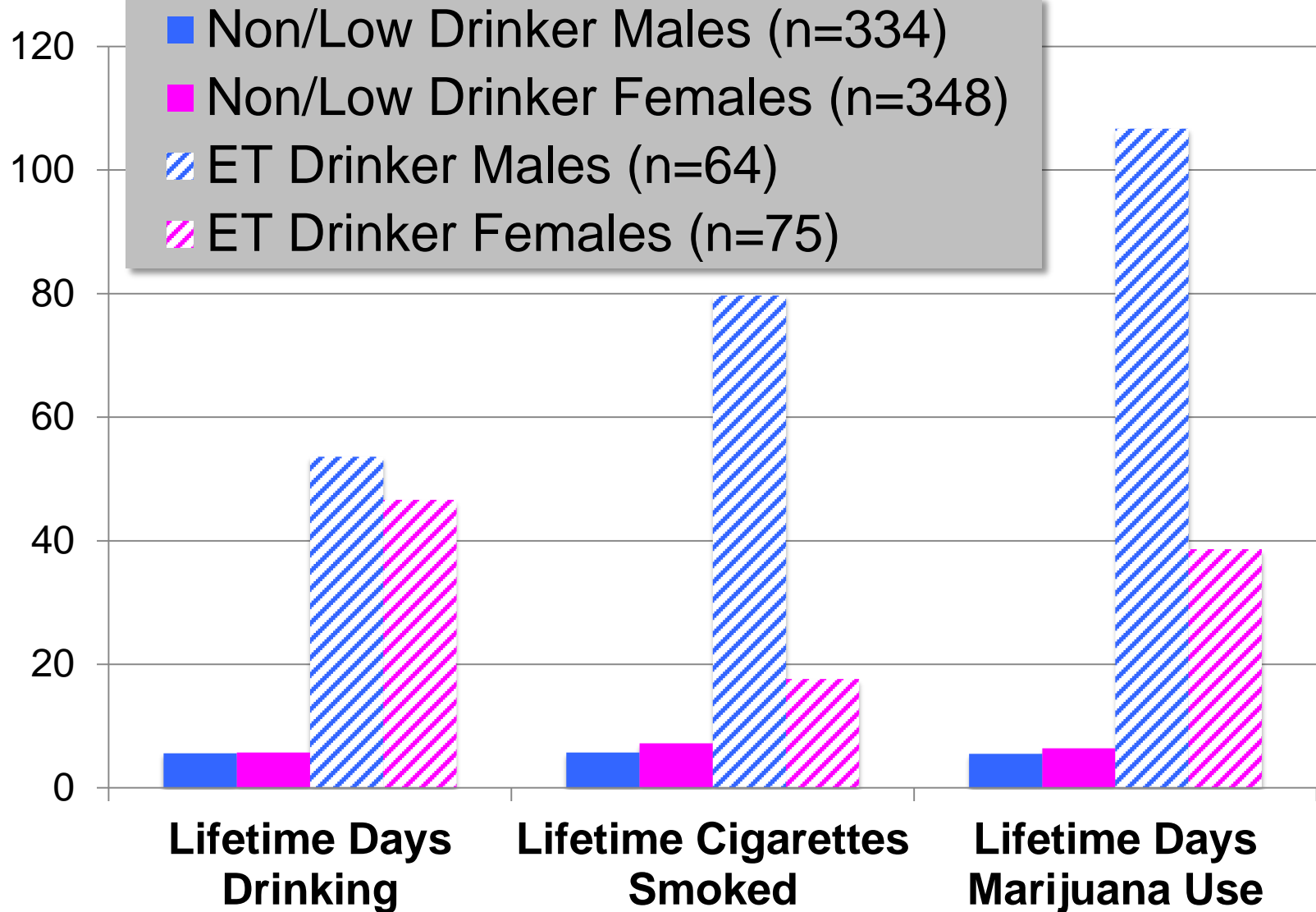
	Non/Low Drinker (N=692)		Exceeded Threshold (N=139)	
	Male	Female	Male	Female
	(n=334)	(n=348)	(n=64)	(n=75)
Age (mean years)	15.6	15.8	18.4	18.5
Pubertal Development Scale (median)	3.0	3.6	3.6	4.0
Socioeconomic status (mean)	17.0	16.6	17.1	17.3
% Right-handed	76%	83%	83%	81%

Sample Description

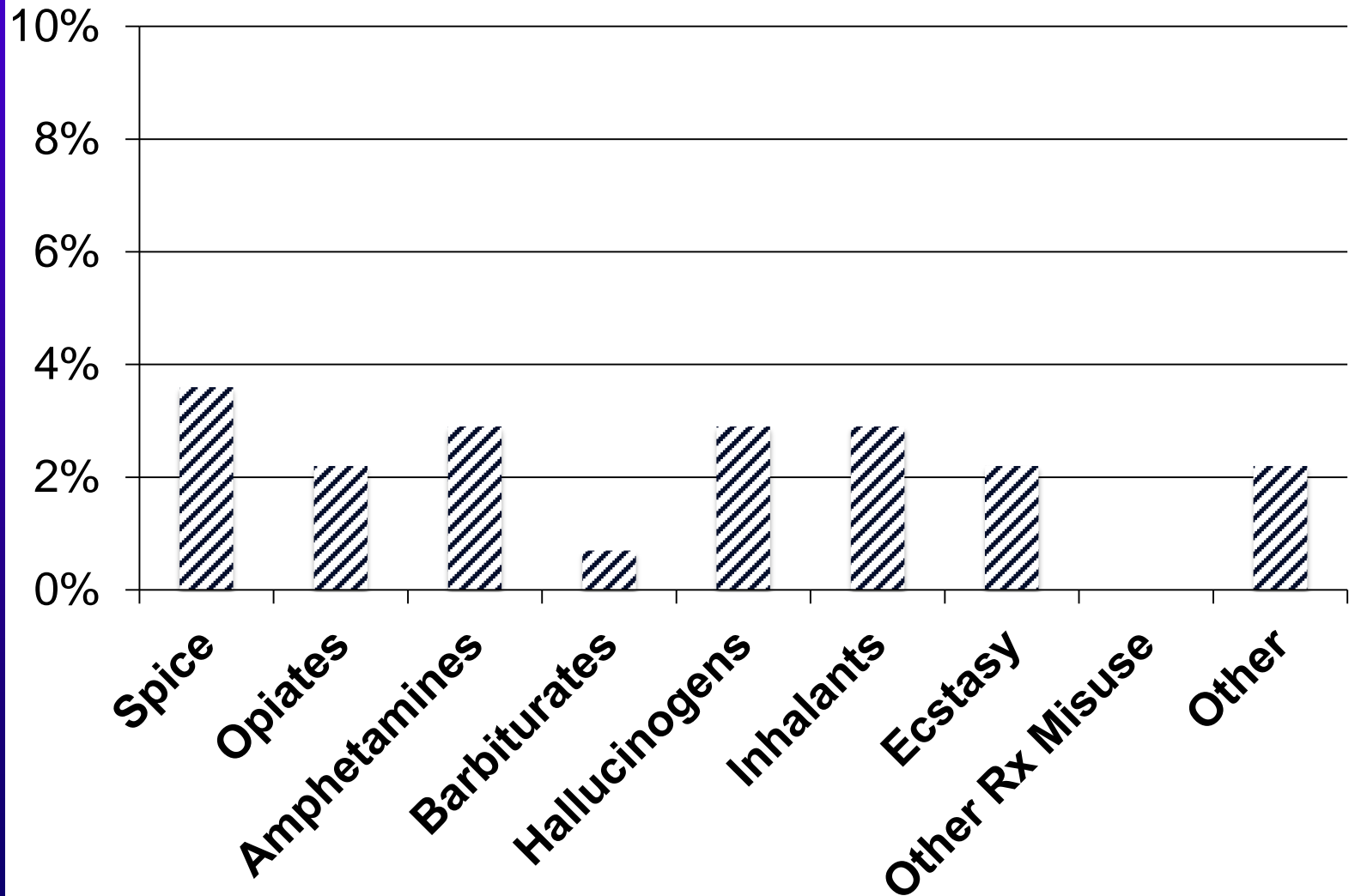
- ◆ 88% reside with one or both parents
- ◆ 27% parents divorced/separated/single
- ◆ 20% below college degree
- ◆ 18% household income <\$50k/yr*
- ◆ 85% normal BMI (13% above, 2% under)

*higher in ET Drinkers ($p < .05$)

Substance Use at Baseline



Lifetime Other Drug Use: ET at Baseline (% of 139)



Risk Criteria: Target 50%

1. 1st full drink <age 15

(Grant & Dawson, 1997)

2. Family history of substance use disorder

(Edenberg et al., 1998; Schuckit & Smith, 1996)

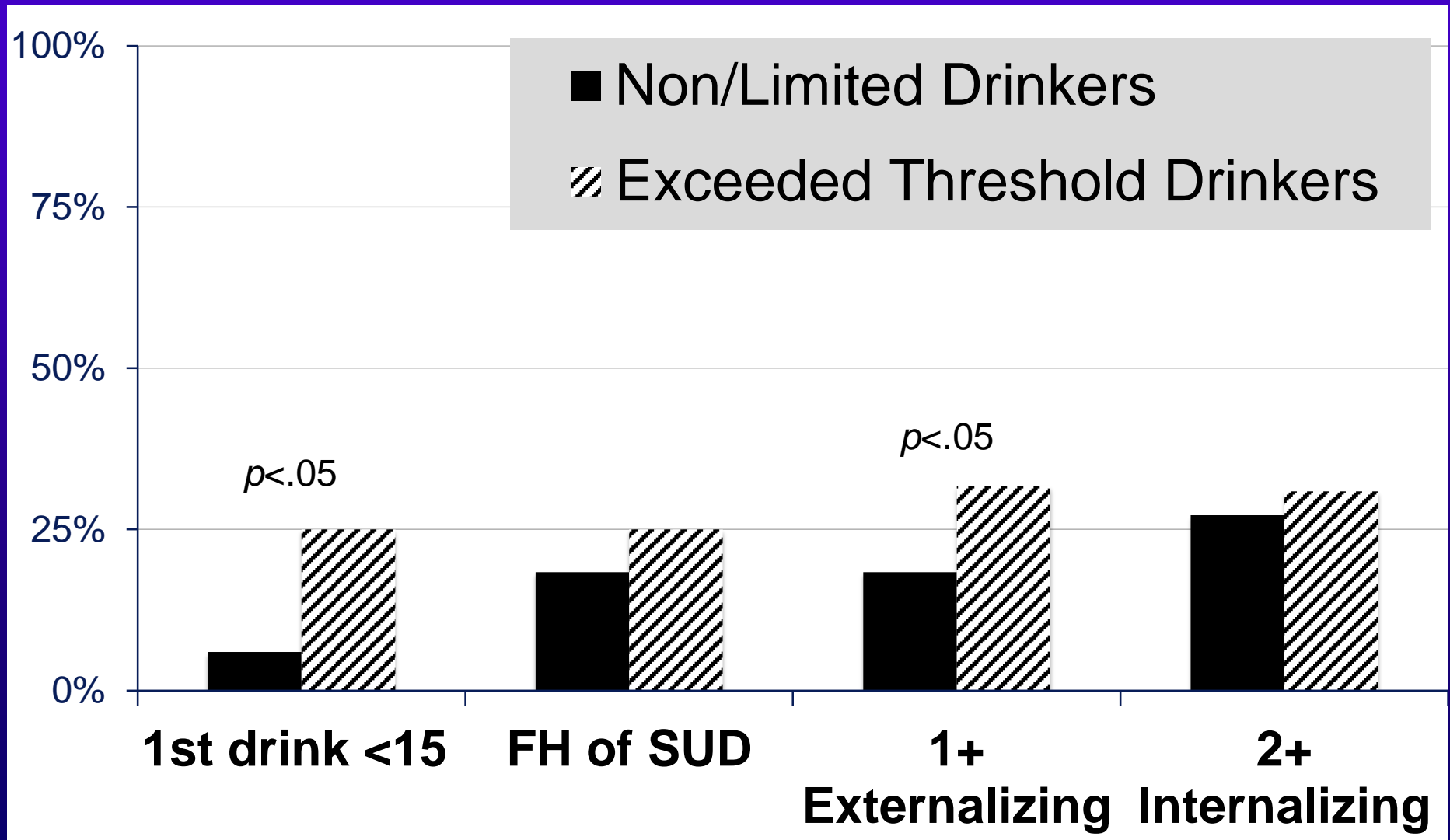
3. 1+ externalizing symptoms

(Brown et al., 1996; Myers et al., 1995; Slutske et al., 1998)

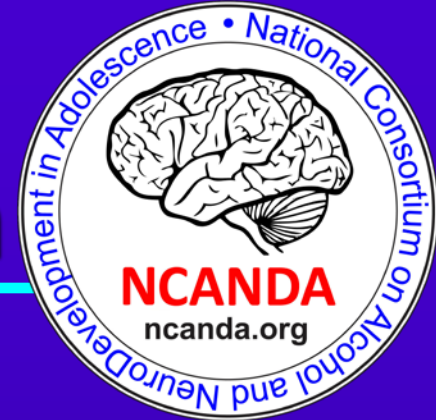
4. 2+ internalizing symptom

(Chassin, et al., 2002; Hussong et al., 2011)

47% with 1+ Risk Factor for Heavy Drinking



NCANDA Follow-up Design



Baseline



2013

1-year
follow-up



2014

2-year
follow-up



2016

3-year
follow-up



2017

- 4 assessments with imaging + Half-yearly telephone interviews
- 6-month: 98% of 831 done.
- 1-year: in progress, >90% complete.

Next Directions



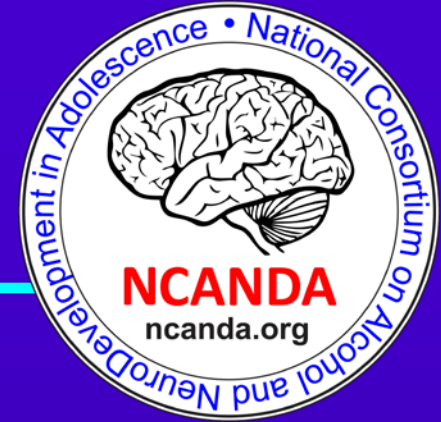
- ◆ **Begin to test Aims 1 and 5:**
 - **Effects of adolescent drinking on trajectory of adolescent brain development**
 - **Neural, cognitive, and affective markers predicting addiction & psychopathology**

NCANDA Summary



- ◆ Exceeded recruitment goals on time
 - ◆ Nationally representative sample
 - ◆ Procedures and protocol set a standard
 - ◆ High follow-up rates
 - ◆ 47% with risk factors
- Suggests aims can be tested

Acknowledgements



- ◆ U01 AA021695 (SAB+SFT)
- ◆ U01 AA021697 (AP+KMP)
- ◆ U01 AA021692 (SFT)
- ◆ U01 AA021681 (MDDDB)
- ◆ U01 AA021690 (DBC)
- ◆ U01 AA021691 (BN)
- ◆ U01 AA021696 (IMC+FCB)
- ◆ T32 AA013525 (TB)



National Institute
on Alcohol Abuse
and Alcoholism

- ◆ NIAAA Program Staff
- ◆ NCANDA Scientific Advisory Board
- ◆ NCANDA Co-Investigators
- ◆ NCANDA Research Associates

