

# NATIONAL CONSORTIUM ON ALCOHOL & NEURODEVELOPMENT IN ADOLESCENCE (NCANDA): TOWARDS SHAPING THE FUTURE OF ADOLESCENT ALCOHOL AND ADDICTION RESEARCH

- [John Matochik, NIAAA](#) - Introduction
- [Susan Tapert](#) - NCANDA Clinical And Neuropsychological Assessment
- [Adolf Pfefferbaum](#) – Harmonization of Multimodal Neuroimaging to Examine Age, Sex, and Alcohol-Related Changes in Brain Structure through Adolescence and Young Adulthood
- [Ty Brumback](#) - Harnessing Mobile Technology to Monitor Alcohol Use
- [Kilian Pohl](#) - Public Access to NCANDA Data
- [Sandra Brown](#) - Discussant





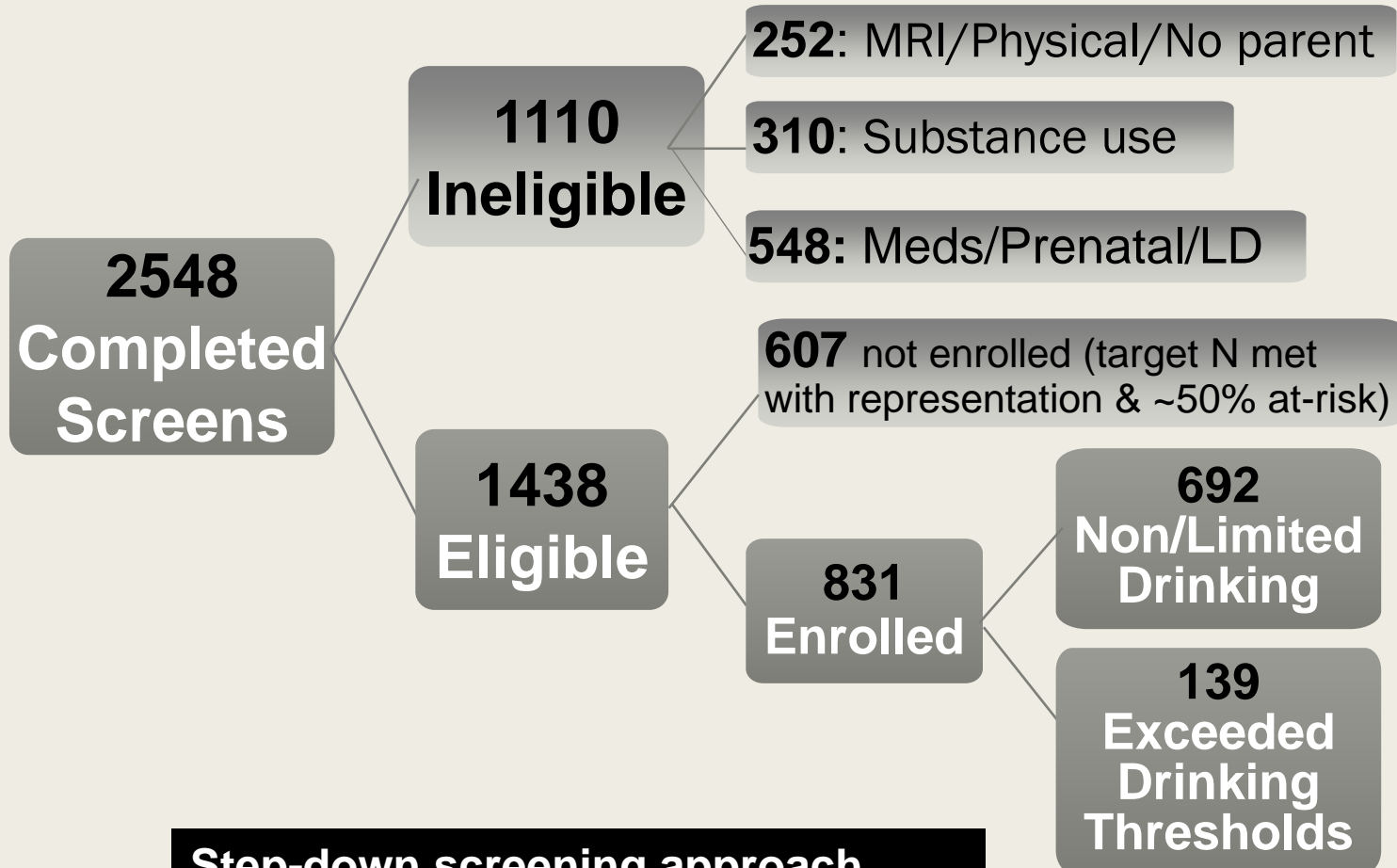
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Edith V. Sullivan  
Michael De Bellis  
Sonja Ebersson

# The National Consortium on Alcohol and Neurodevelopment in Adolescence (NCANDA): Clinical & Neuropsychological Assessment Battery

# NCANDA Overview

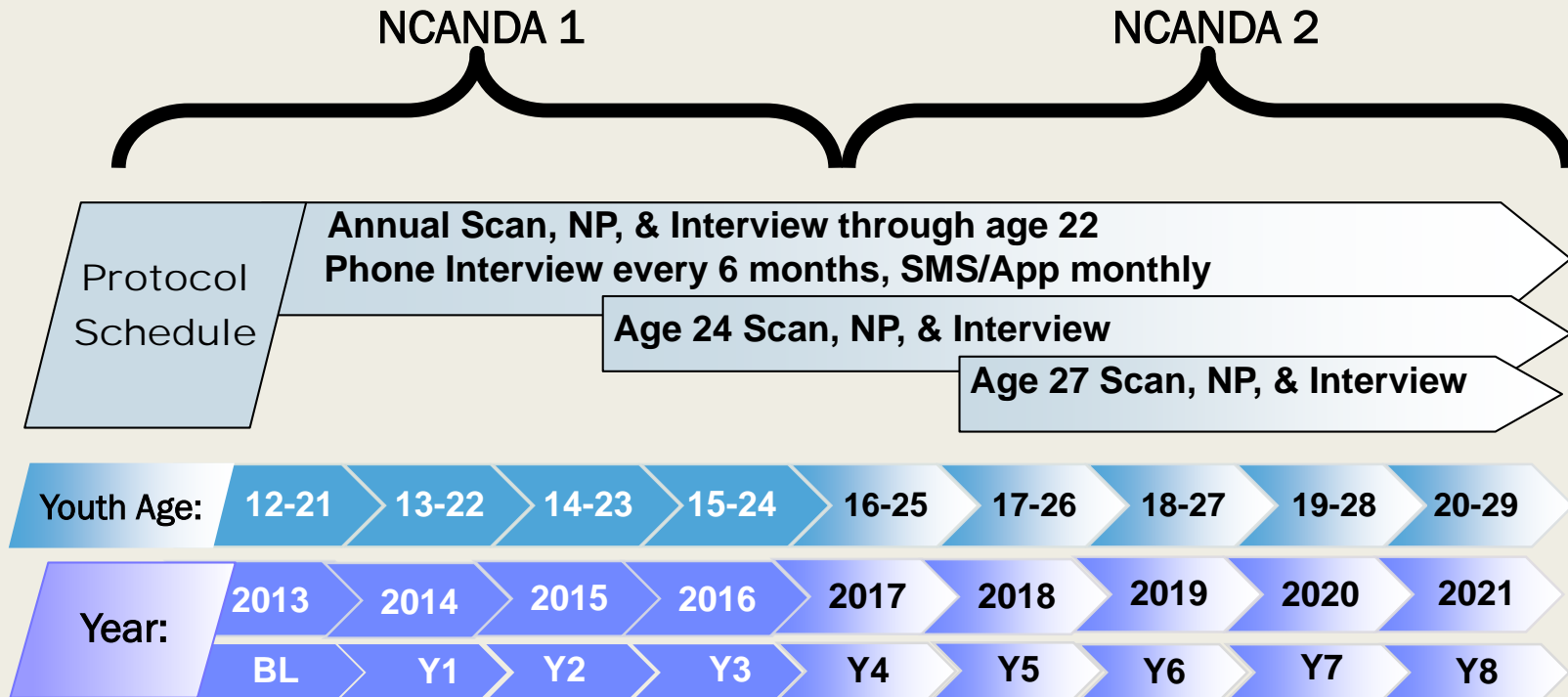
- **Design overview**
- **Measures collected**
- **Sample characteristics**

# NCANDA SCREENING



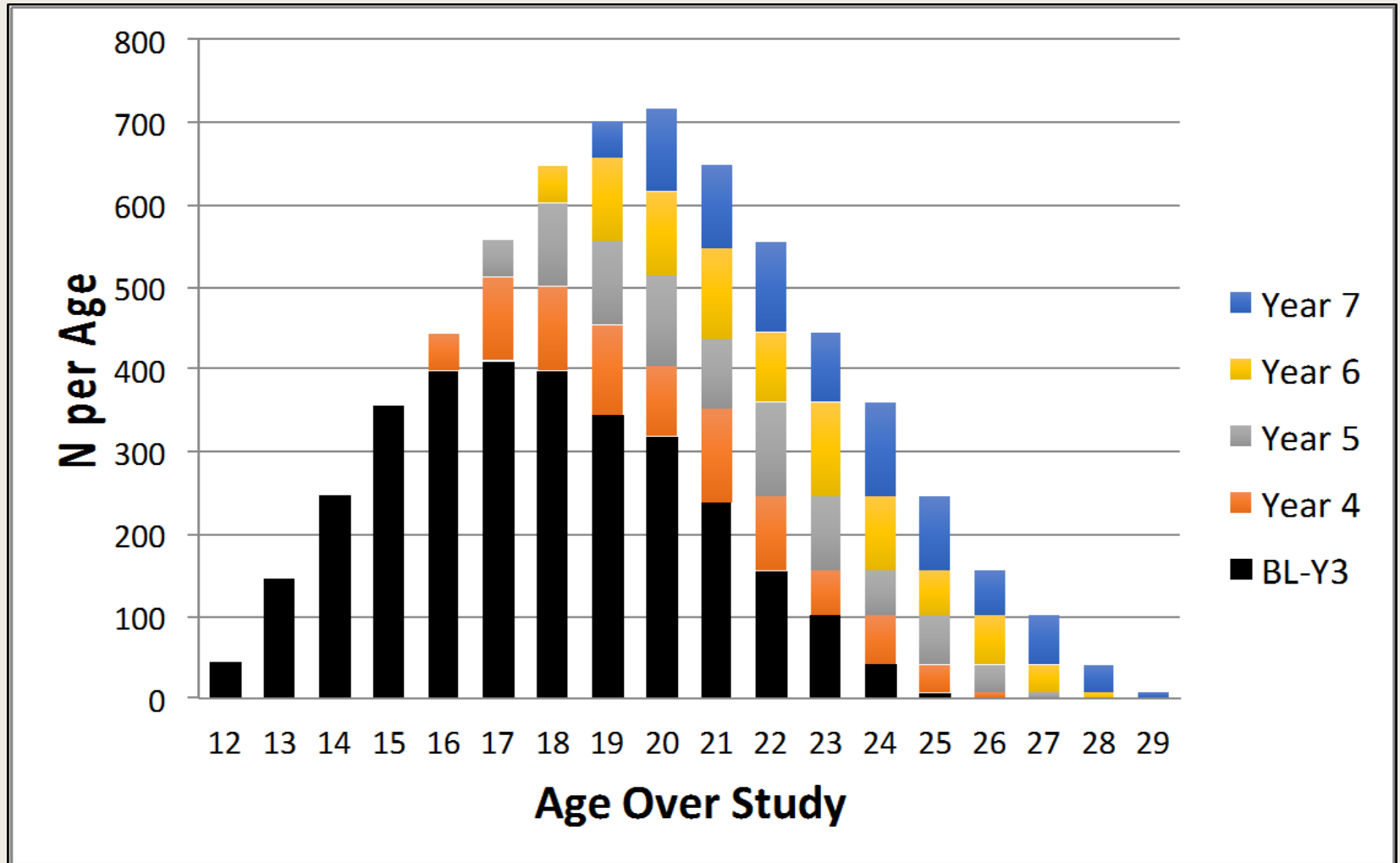
**Step-down screening approach  
>50,000 reached, >7,500 responded**

# Assessment Timeline

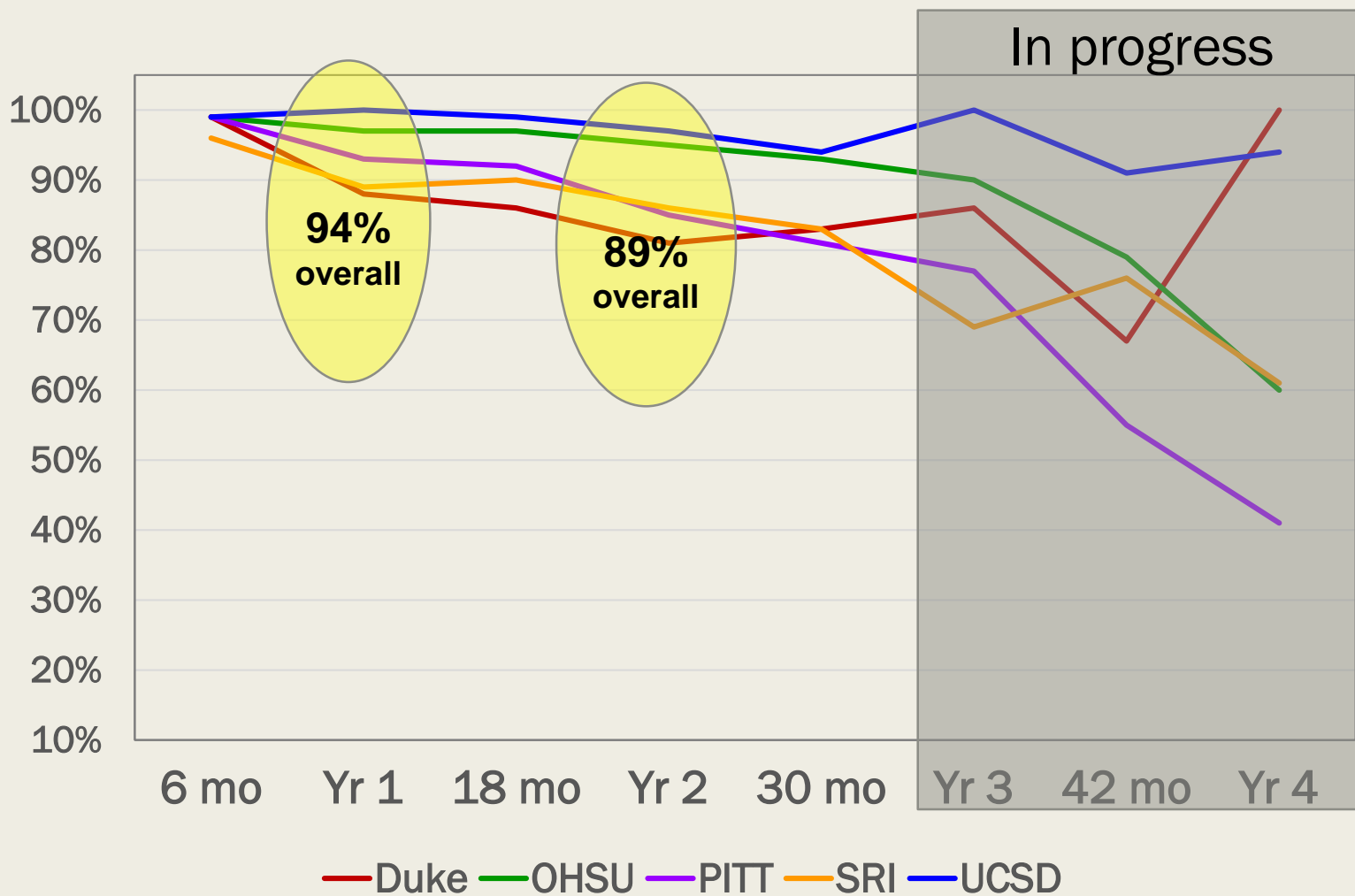


- Annual assessments through age 22
- Age-based assessments at 24 and 27

# Ages Represented per Time Point

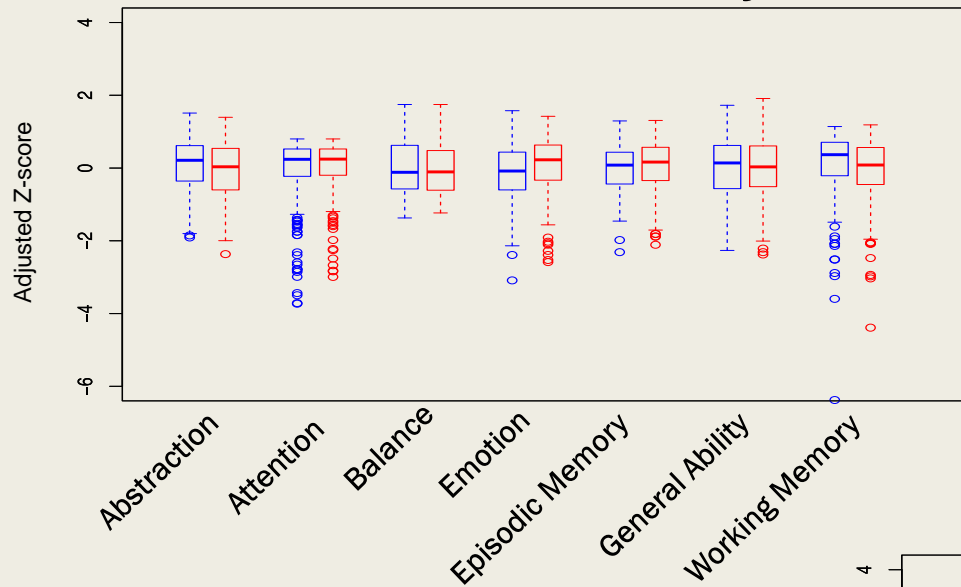


# NCANDA Data Collection at Follow-ups

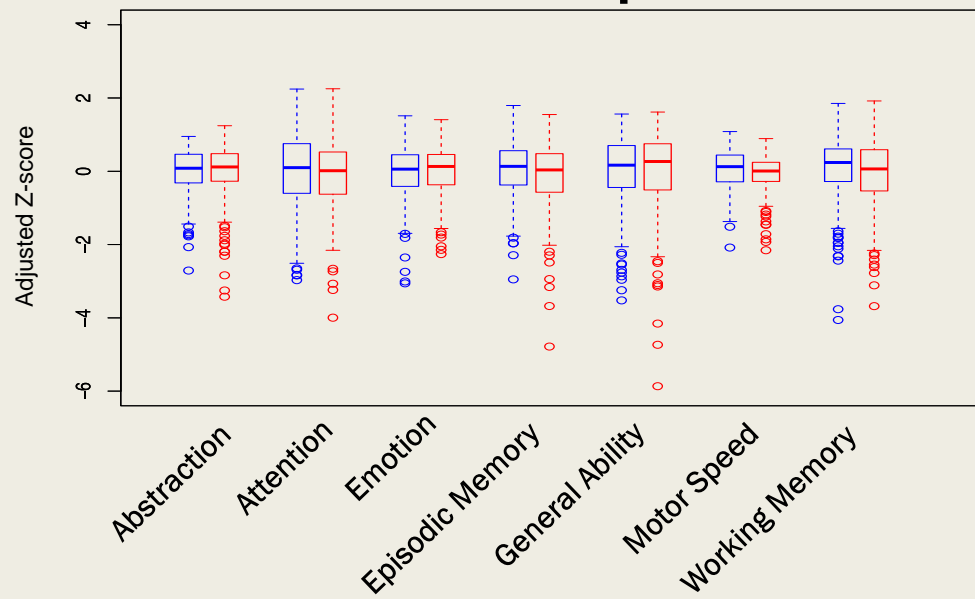


# Neuropsych Composite Scores: Accuracy, Speed

## Total Accuracy



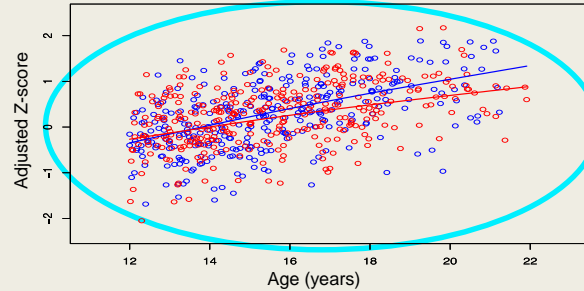
## Total Speed



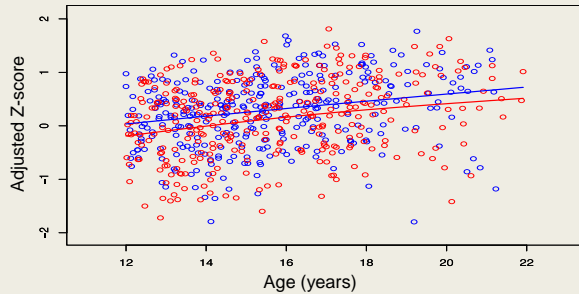


# Accuracy Composites

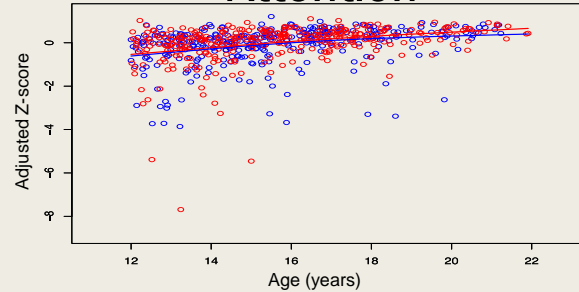
## General Ability



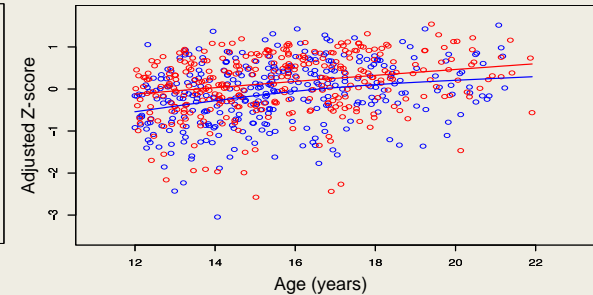
## Abstraction



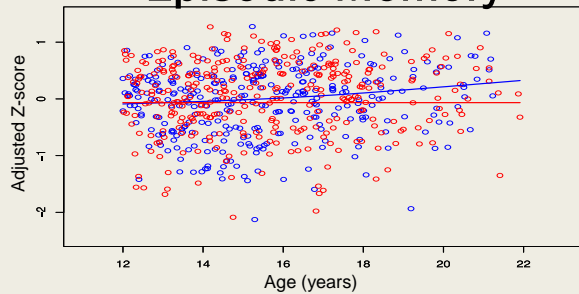
## Attention



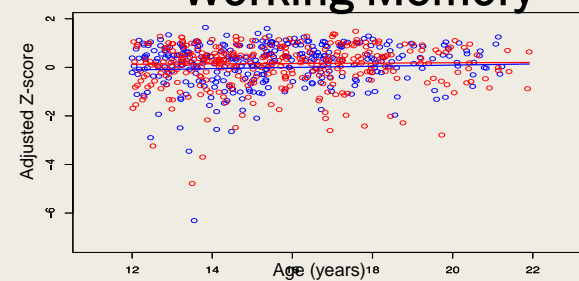
## Emotion



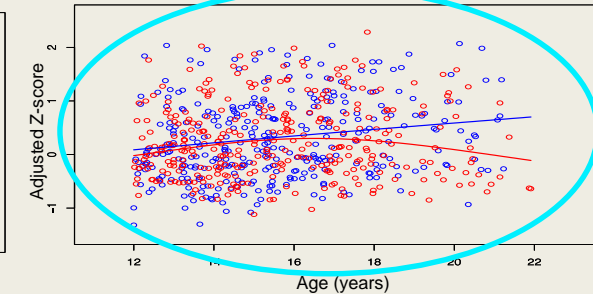
## Episodic Memory



## Working Memory



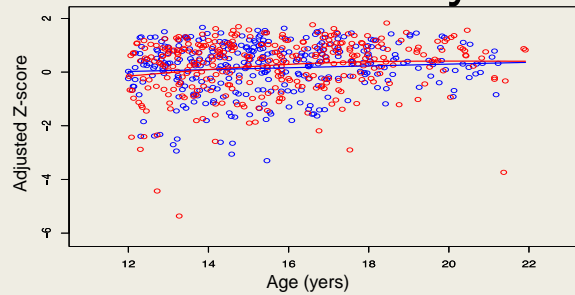
## Balance



Age (Years) →

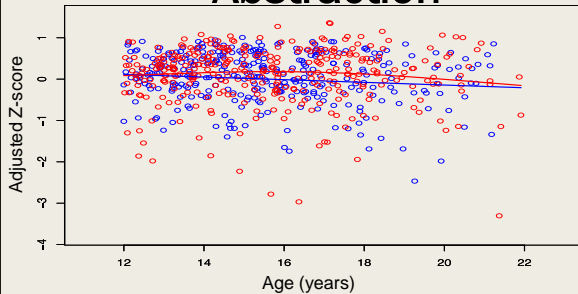
# Speed Composites

## General Ability

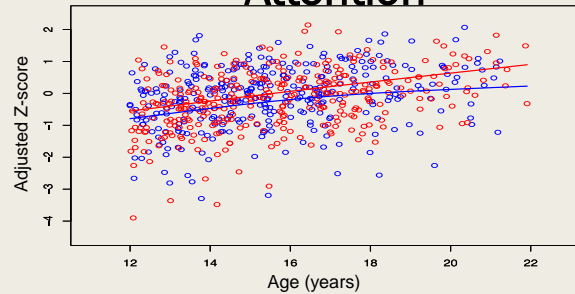


Boys  
Girls

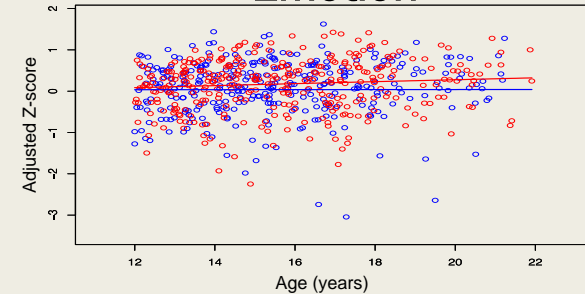
## Abstraction



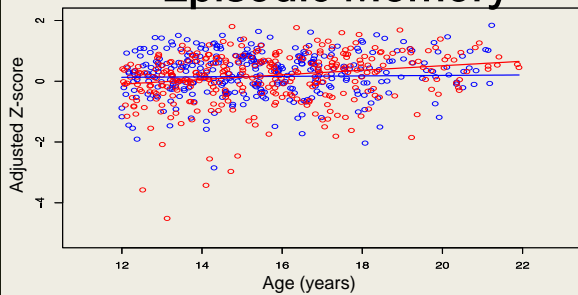
## Attention



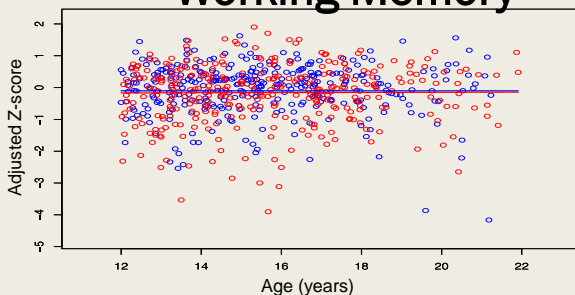
## Emotion



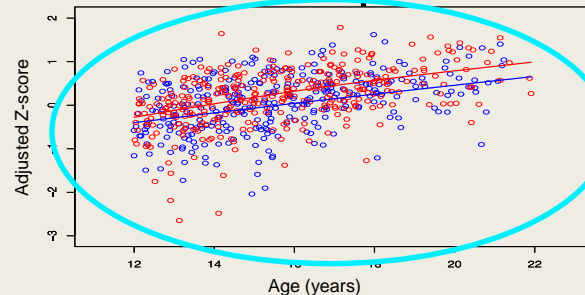
## Episodic Memory



## Working Memory



## Motor Speed



Age (Years) →

# Other NCANDA Data Collected

## All 5 Sites

**MRI: T1, T2, DTI, resting state fMRI**

**Toxicology: Breathalyzer, urine drug screen**

**Saliva: stored for genetic/epigenetic analyses & assayed for pubertal hormones**

## Specialty Projects at 2-3 Sites

**Sleep studies: SRI & Pittsburg**

**Stroop fMRI task: SRI & UCSD**

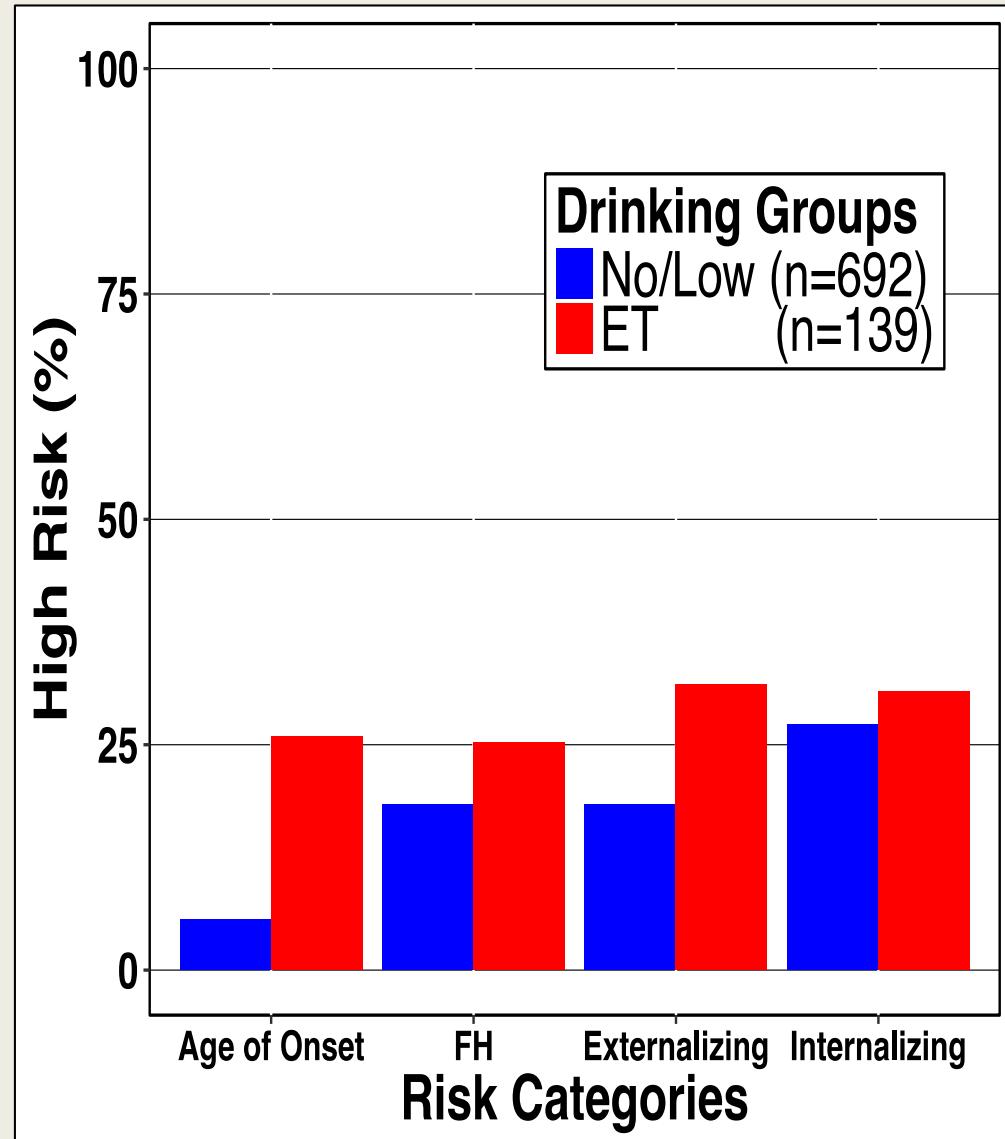
**Anti-saccade fMRI task: Duke & Pittsburgh**

**Recovery protocol: UCSD, OHSU, & Duke**

# Substance Use Risk Characteristics

Sample enriched for substance use risk:

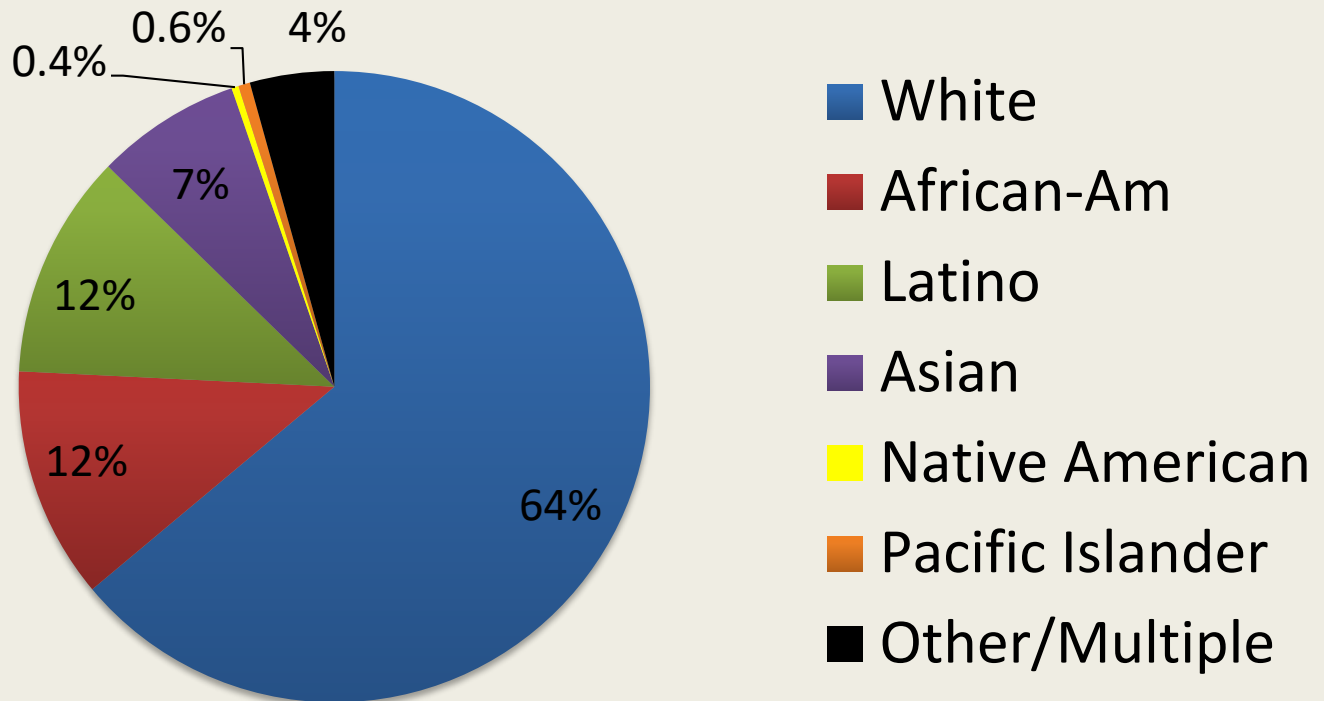
1. Alcohol use onset <15.
2. Family history (FH) of alcohol or drug problems.
3. Endorsement of Externalizing symptoms.
4. Endorsement of Internalizing symptoms.



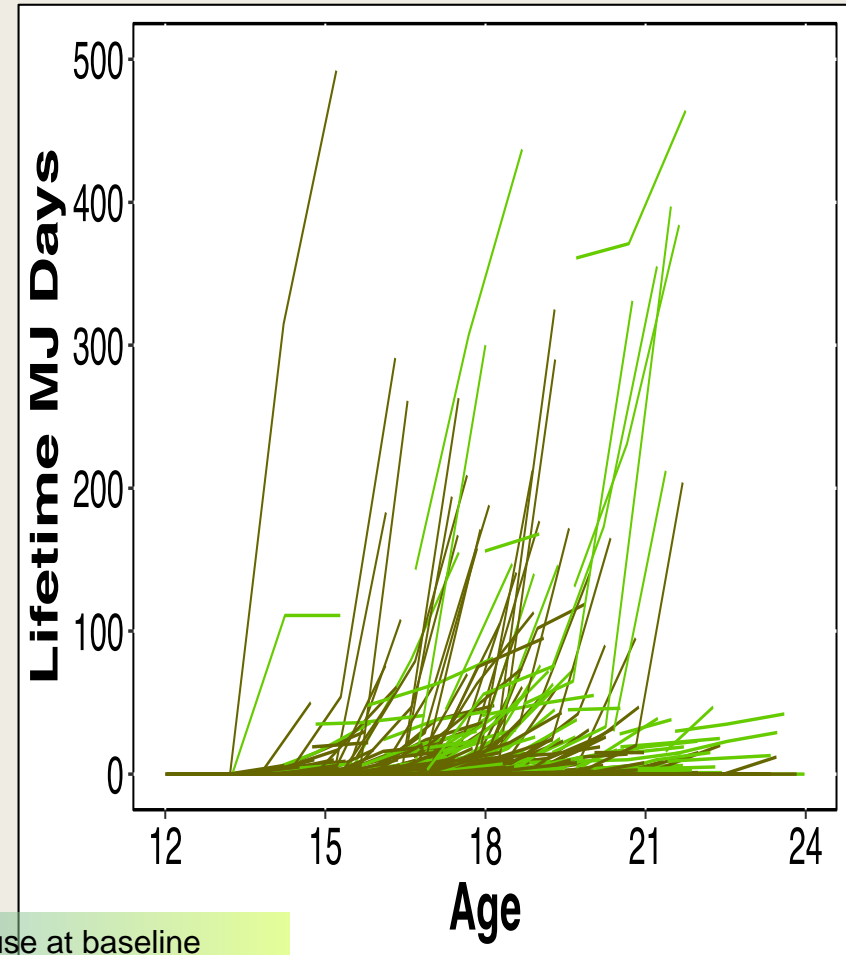
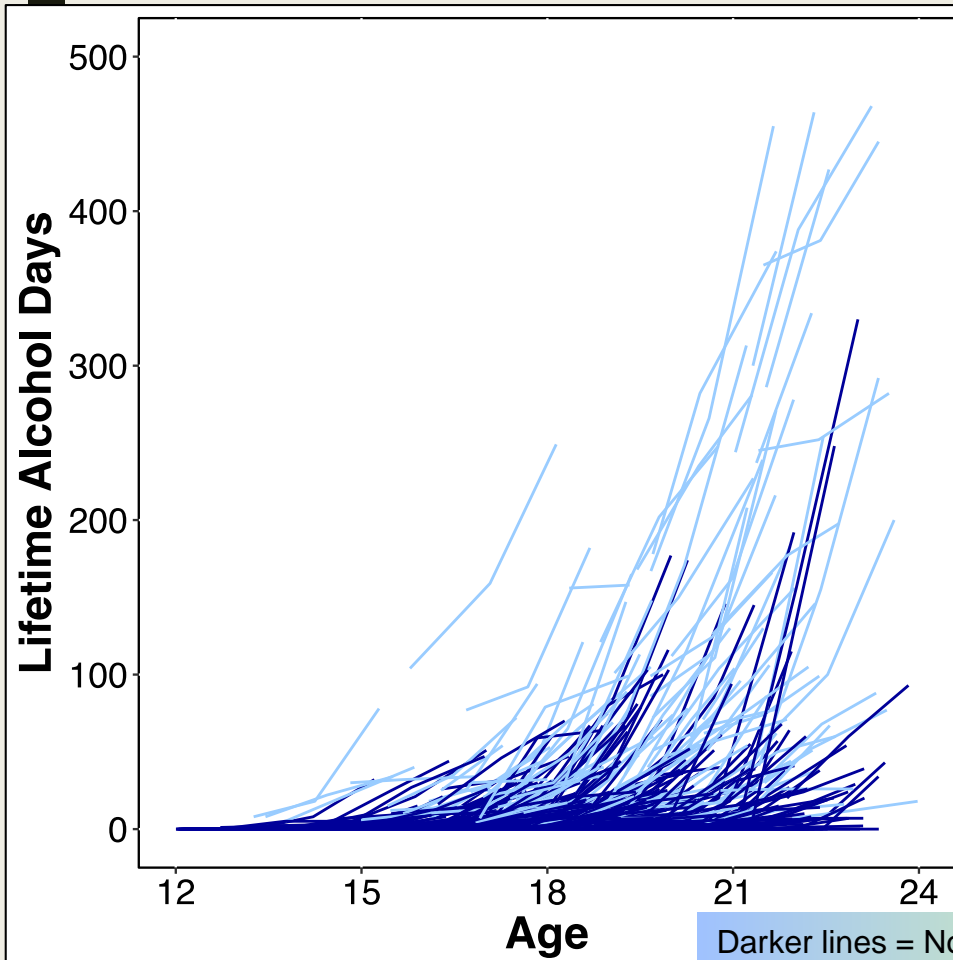
# NCANDA Participant Demographics

**N=831, Age 12-21 at study entry**

<b>Gender</b>	51% Female	49% Male
<b>Substance Use Hx</b>	692 no/low use	139 exceeded use threshold



# Alcohol and Marijuana Use and Escalation



**Substance use increases as anticipated with age, Baseline to Y2:**

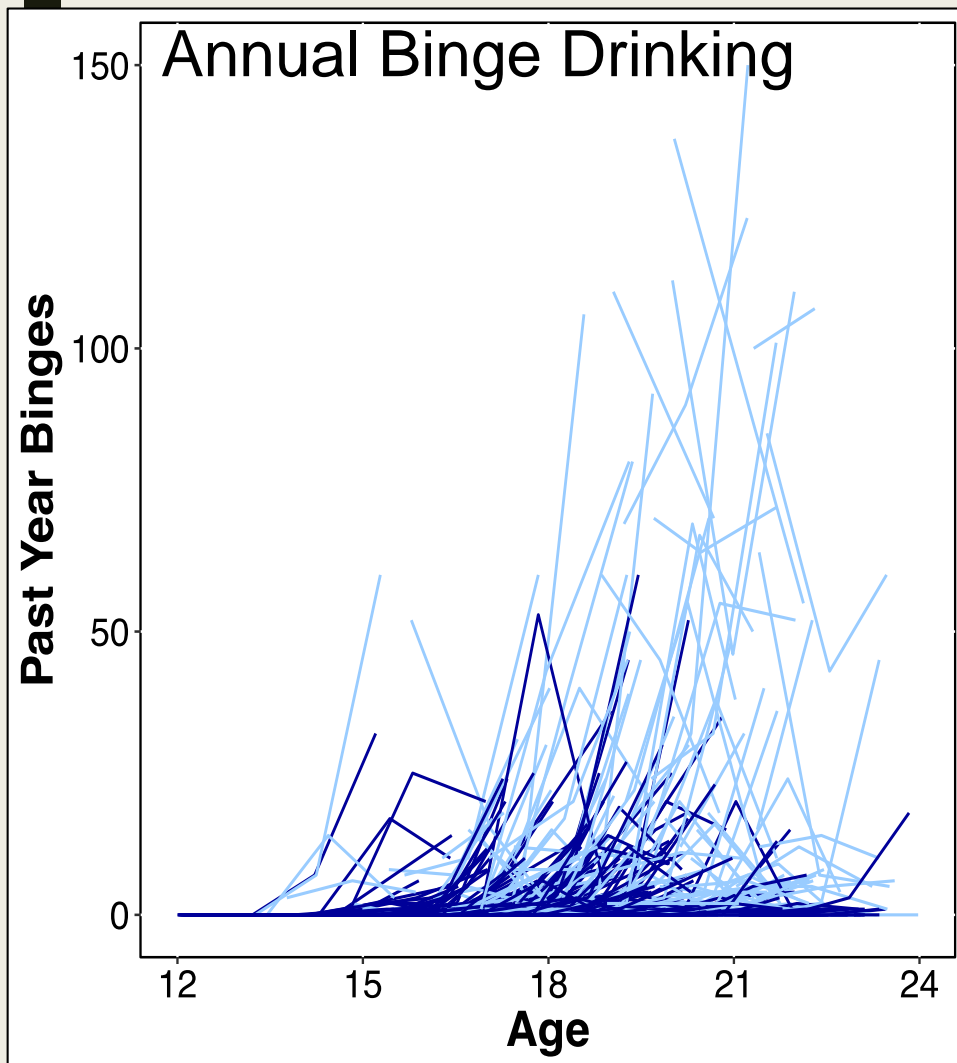
Nicotine: 12% to 22%

MJ: 19% to 38%

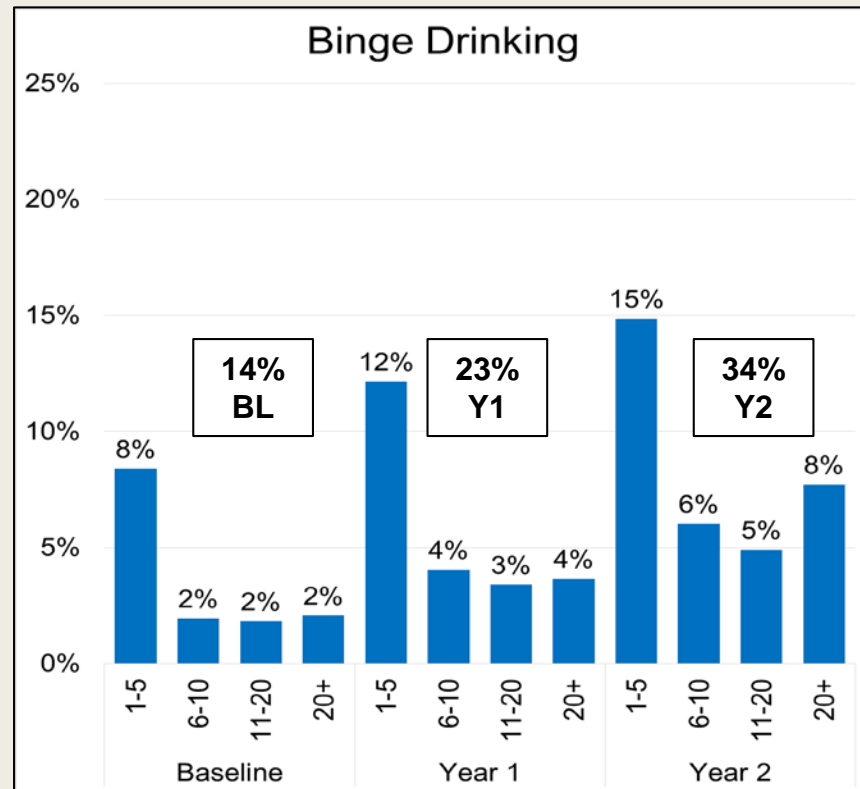
Amphetamines: 1% to 4%

Ecstasy: 1% to 3%

# Binge Drinking Increases with Age & Time

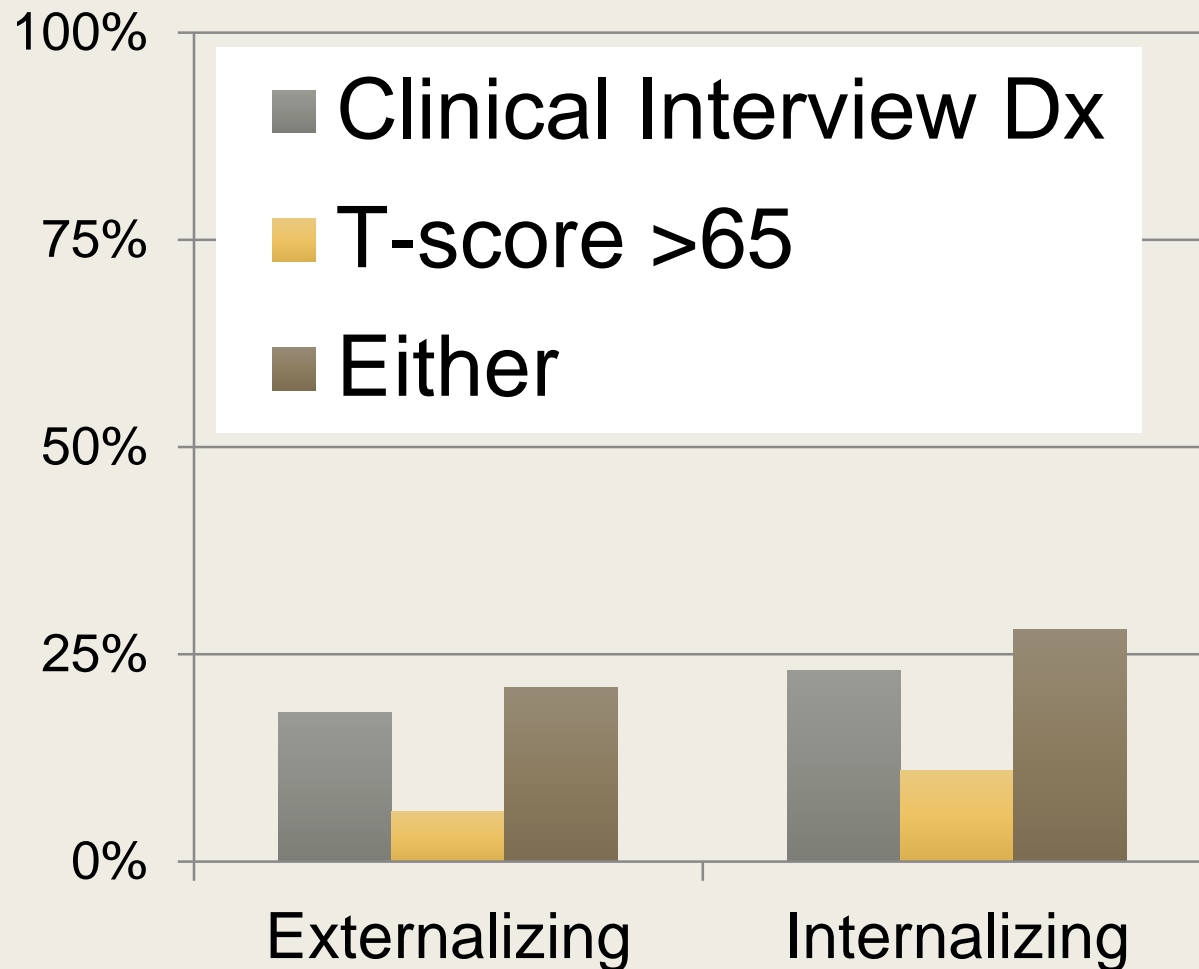


Darker lines = No use at baseline



- 13% had >10 binges at Y2
- Expect >50% with 10+ binges in next 5 years

# Mental Health of Cohort at Baseline





# STRESS & TRAUMA

61% of NCANDA sample experienced 1+ trauma

Stabbed	1	0.2
Mugged or threatened with a weapon, or robbery	37	5%
Sexual abuse by relative	4	1%
Sexual Assault	15	2%
<b>Natural Disasters</b>	<b>82</b>	<b>12%</b>
Life Threatening Accidents	55	8%
Life Threatening Illness	6	1%
<b>Traumatic Death of Family/Friends</b>	<b>217</b>	<b>32%</b>
Witnessing a Violent Death	50	7%
Unexpectedly discovering a Dead Body	7	1%
<b>Hearing about above happening to loved one</b>	<b>148</b>	<b>22%</b>
<b>Other</b>	<b>144</b>	<b>21%</b>

# NCANDA Summary

- **10 year study of 831 12-21 year-olds**
- **Detailed neuropsychological, substance use, and mental health measures**
- **Substance use increasing over time**

# ACKNOWLEDGEMENTS

- NIAAA Program Staff
- NCANDA Scientific Advisory Board
- NCANDA Co-Investigators
- NCANDA Site Staff



U24 AA021695 (Brown/Tapert)

U24 AA021697 (Pohl/Pfefferbaum)

U01 AA021692 (Tapert)

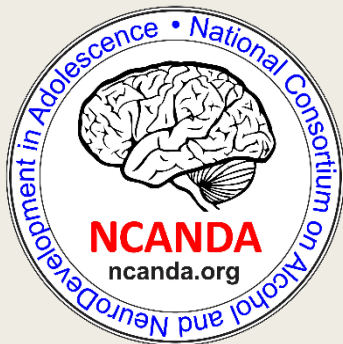
U01 AA021681 (De Bellis)

U01 AA021690 (Clark)

U01 AA021691 (Nagel)

U01 AA021696 (Baker/Colrain)

VA Addictions Fellowship (Brumback)



National Institute  
on Alcohol Abuse  
and Alcoholism