Does perceived risk of harm mediate the effects of a primary care alcohol screening and brief advice intervention for adolescents?

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Disclosures / Funding

- **Conflict of interest statement:**
  - I have no commercial relationships to disclose
  - I will not be discussing any unapproved uses of pharmaceuticals or devices
  - My views do not necessarily reflect those of any of these bodies, or my academic institution

Background

- Alcohol remains the most frequently misused substance among youth, and a major contributor to leading causes of their death (unintentional injury, suicide, homicide)
- In 2016, 46.3% of 12th graders reported having been drunk (Monitoring the Future survey)

Source:[1]Pacific Institute for Research and Evaluation. (2002). Drinking in America" Myths, realities, and prevention policy. Washington, DC: U.S. Department of Justice, Office of Juvenile Justice and Delinquency Prevention. [2]Substance Abuse and Mental Health Services Administration. (2103c) [3]Centers for Disease Control and Prevention. (2012). Youth risk behavior surveillance-United States, 2011. Surveillance Summaries. *Morbidity and Mortality Weekly Report, 61, ss-4, 1-162.*

Background

- Screening and brief interventions (SBI) in primary care offices show promising effects for youth
- Computer-facilitated screening and clinician brief advice (cSBA) associated with significantly lower youth alcohol use rates, compared to usual care, at 3-month follow-up (Harris et al., Pediatrics, 2012)
- A hypothesized mechanism of cSBA's effect is increased perceived risk of harm (PRoH) of substance use – hypothesis needed testing

Study Aim

- Examine whether perceived risk of harm was a mediator of the effect of cSBA on adolescent alcohol use
  - Hypotheses:
    - → cSBA would lead to an increase in PRoH
    - → Increased PRoH would lower likelihood of using alcohol

Moderated mediation…

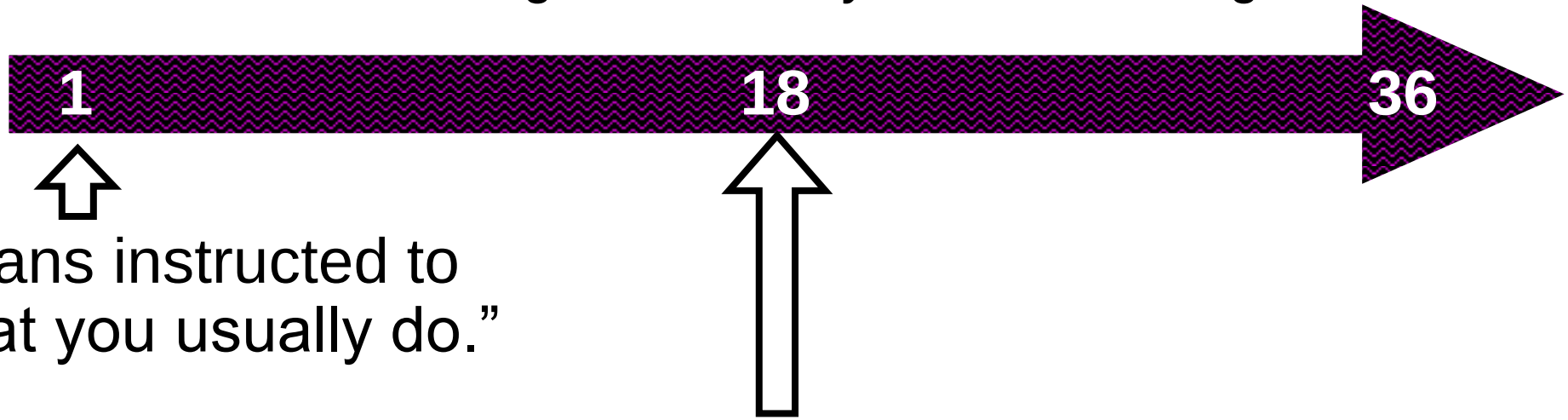
- Mediation effect likely moderated by baseline history of prior alcohol use, and the type of risk examined:

→ "Trying alcohol" may seem risky to those with no prior use, but not to those already using

→ "Binge drinking every weekend" may still seem risky to those with prior use

Study Design (2005-2009)
Before/After Comparative Effectiveness Trial

9 primary care sites in New England; 12-18 year-olds arriving for routine visits



Clinicians instructed to
"Do what you usually do."

Recruit/assess
Treatment as Usual

1-hr Clinician training;
Computer system
initiated at all sites

Recruit/assess cSBA

cSBA Description

Computer-facilitated system included:

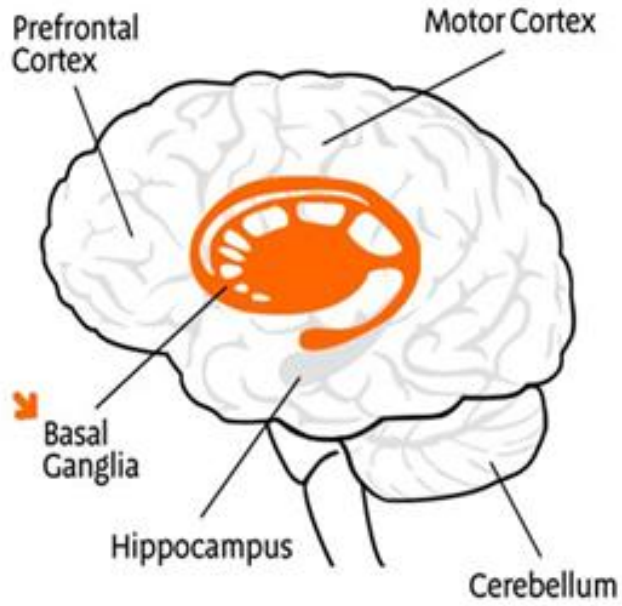
- Computer self-administered CRAFFT screen; immediate feedback about score and risk-level
- 10 interactive pages of science and true-life stories about health risks of substance use
- Clinician brief advice guided by screen results and ‘talking points’ for 2-3 minute discussion with teen

Drugs and alcohol affect your brain and can damage it for life.

Drugs and alcohol can affect memory, coordination, decision making, learning, and cause depression.

Roll over the text below and see what happens to the picture.

Area of Brain	Drug Effect
Prefrontal Cortex	Leads to trouble making wise decisions.
Basal Ganglia	Impairs coordination, slows reflexes.
Hippocampus	Causes short-term memory loss.
Cerebellum	Affects balance and coordination.
Motor Cortex	Increases risk of stroke among young alcohol drinkers and drug users.



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[1]Eldreth DA, Matochik JA, Cadet JL, Bolla KI. Abnormal brain activity in prefrontal brain regions in abstinent marijuana users. NeuroImage. Nov 2004;23(3):914-920.

[2]Moselhy HF, Georgiou G, Kahn A. Frontal lobe changes in alcoholism: a review of the literature. Alcohol Alcohol. Sep-Oct 2001;36(5):357-368.

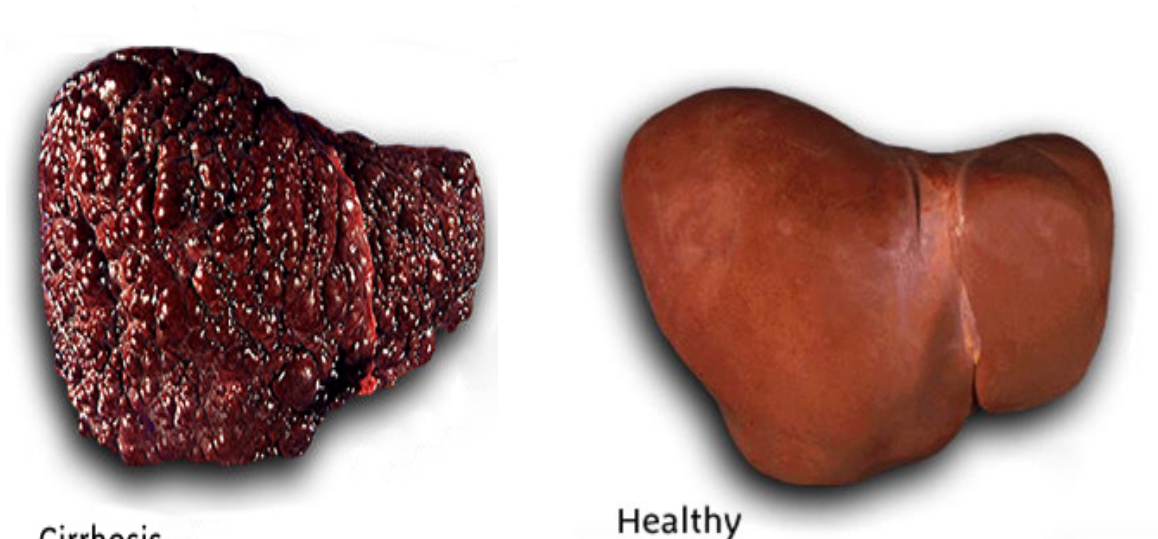
[3]Daumann J, Fischermann T, et al. Memory-related hippocampal dysfunction in poly-drug ecstasy (3,4-methylenedioxymethamphetamine) users. Psychopharmacology (Berl). Aug 2005;180(4):607-611.

[4]National Institute on Drug Abuse. Research Report Series.

Alcohol can hurt your liver.

Drinking can scar your liver, and this can begin during the teen years.

- More than 2 million Americans suffer from alcohol-related liver disease.
- Some drinkers develop alcoholic hepatitis, or inflammation of the liver.
  - This can result in fever, jaundice (abnormal yellowing of the skin, eyeballs, and urine), abdominal pain, death.
- About 10 to 20 percent of heavy drinkers develop alcoholic cirrhosis, or scarring of the liver.
  - This can cause death, even if drinking stops.



Cirrhosis

Healthy

See alcohol-damaged liver

NEXT »

[1]Mann RE, Smart RG, Govoni R. The epidemiology of alcoholic liver disease. Alcohol Res Health. 2003;27(3):209-219.

Data Collection and Measures

- Baseline and 3-months follow-up
- PRoH questions from Monitoring the Future:
  - "How much do you think people risk harming themselves (physically or in other ways) if they…"
    - Try 1 or 2 drinks of an alcoholic beverage (beer, wine, or liquor)?
    - Have 5 or more drinks once or twice each weekend?
  - Responses: no risk, slight risk, moderate risk, great risk

Measures cont'd.

- Modified Timeline Follow-Back (TLFB) interview: past 90-day alcohol use days and number of drinks per day
- Demographics, substance use history, other risk factors (use by peers, siblings, parents)

Data Analysis

- Simple and moderated mediation analyses using PROCESS macro (Hayes, 2013) in SPSS v. 23
- Stratified by baseline past-12-month alcohol use
  - No use: PRoH of trying alcohol
  - Prior use: PRoH of HED every weekend
- Outcome: any past-3-month alcohol use at 3 months
- Models controlled for clinic site, demographics, use by peers, family members

Mediator Variables

- Created PRoH trajectory variables (baseline to 3-months) for “trying any alcohol” and “HED every weekend”
- Response options at each timepoint collapsed into:
  - “High” PRoH (“Moderate” or “Great” risk)
  - “Low” PRoH (“No” or “Low” risk)
- 3 Trajectory groups: (3) Stayed high, (2) Increased from low to high, (1) Decreased from high to low, (1) Stayed low

Baseline Characteristics (N=2096)

	N (%)
Age (mean ±SD)	**15.8 ± 2.0**
Females	1220 (58.2)
White non-Hispanic	1353 (64.6)
Parent with ≥ college degree	973 (46.4)
Two parents at home	1424 (67.9)
Past-12-mo alcohol use	597 (28.5)
Peer substance use	1265 (60.4)

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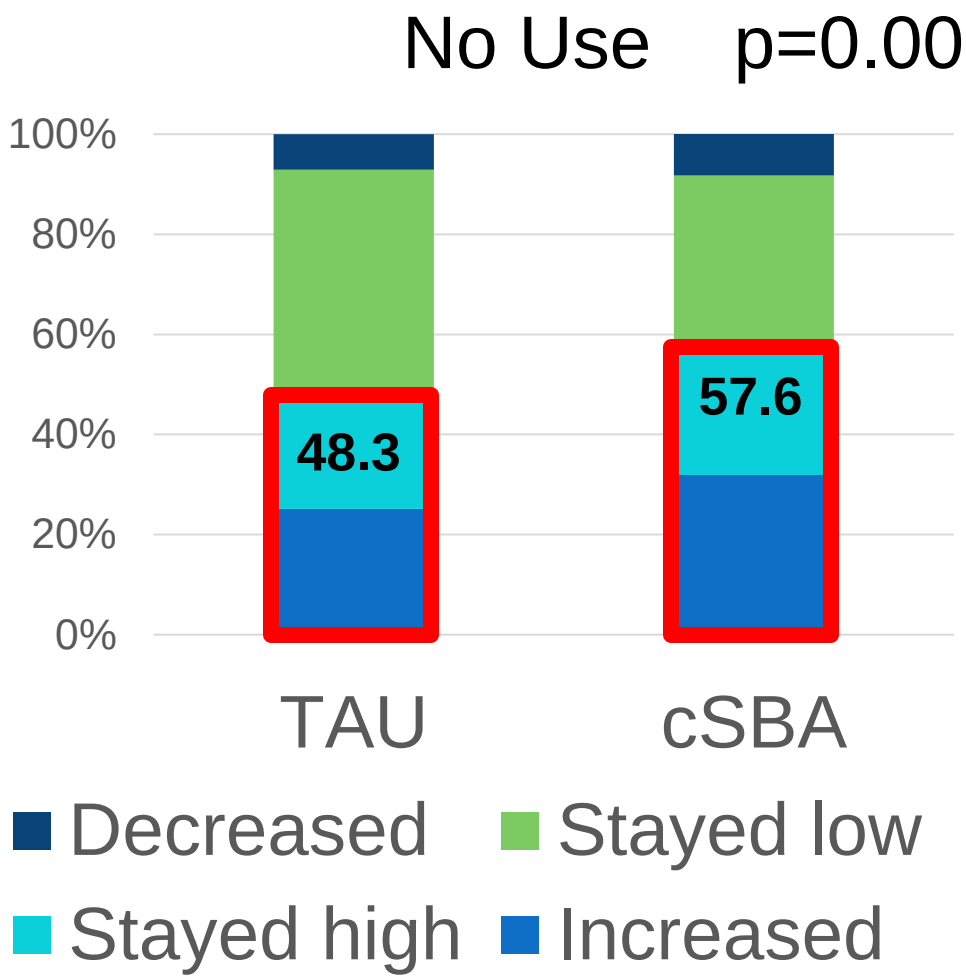
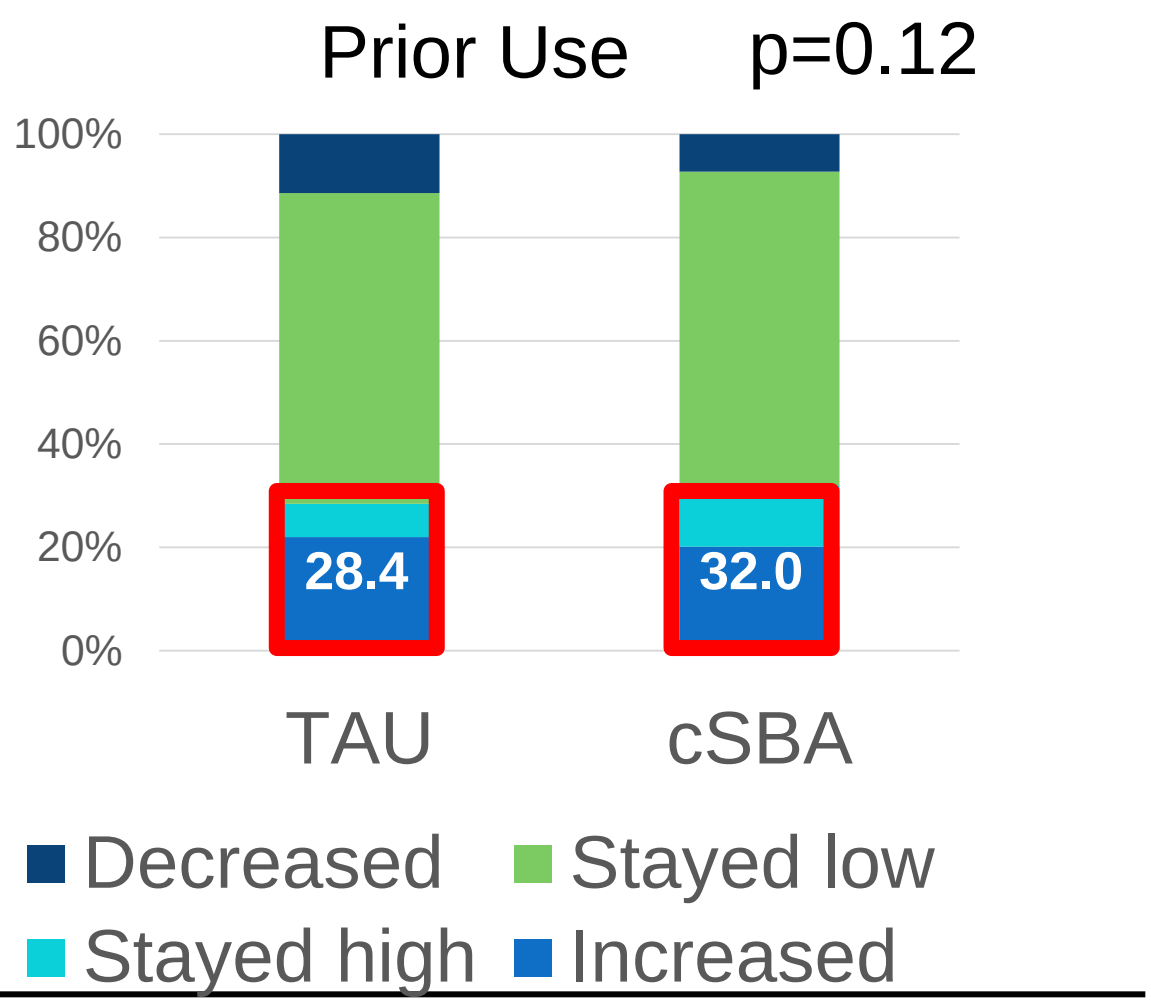
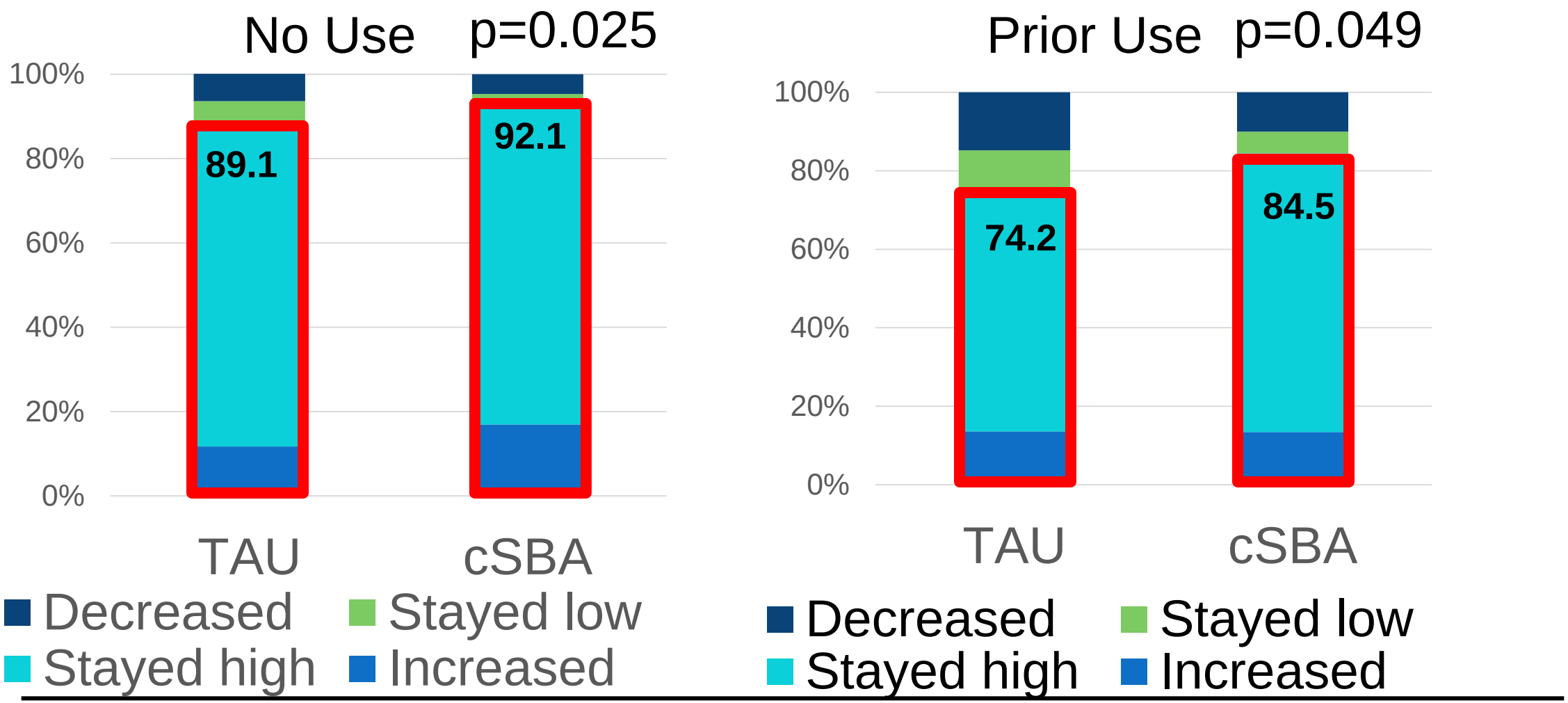
Perceived Risk of Harm (Trying alcohol)

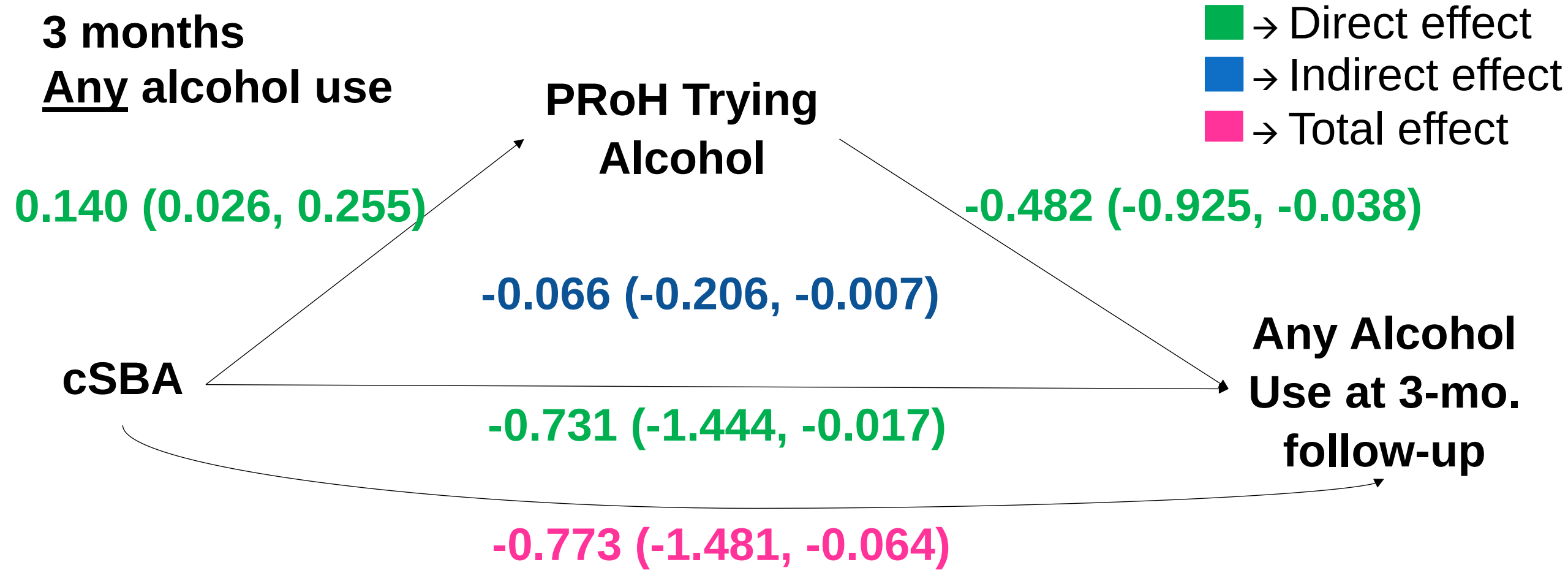




Perceived Risk of Harm (HED every weekend)



Mediation Results: *No Use – PRoH of Trying Alcohol*



Mediation Results: *Prior Use – Risk of HED Every Wknd*

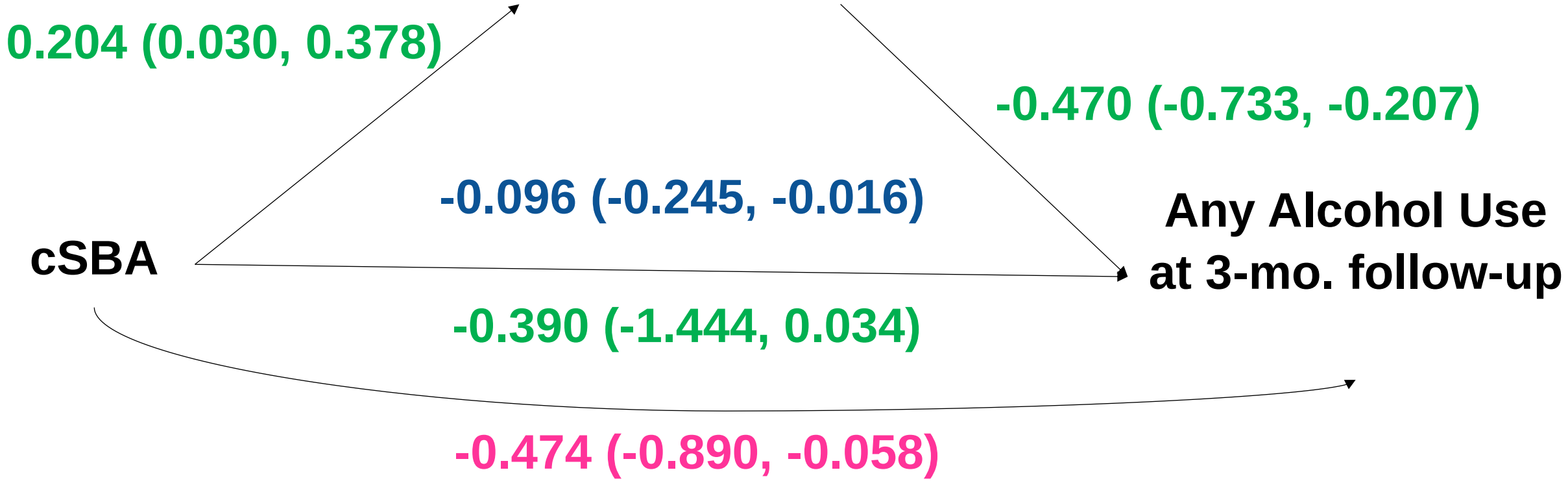
3 months

Any alcohol use

→ Direct effect

→ Indirect effect

→ Total effect



Summary of Findings

- Perceived risk of harm from alcohol use significantly mediated cSBA's effect on adolescent alcohol use
  - cSBA →→ HIGHER perceived risk
  - Higher perceived risk →→ LOWER likelihood of alcohol use
- The mediation effect differed by baseline history of alcohol use, as hypothesized
  - Among those without prior use, PRoH <u>partially</u> mediated cSBA effect
  - Among those with prior use, PRoH <u>fully</u> mediated cSBA effect

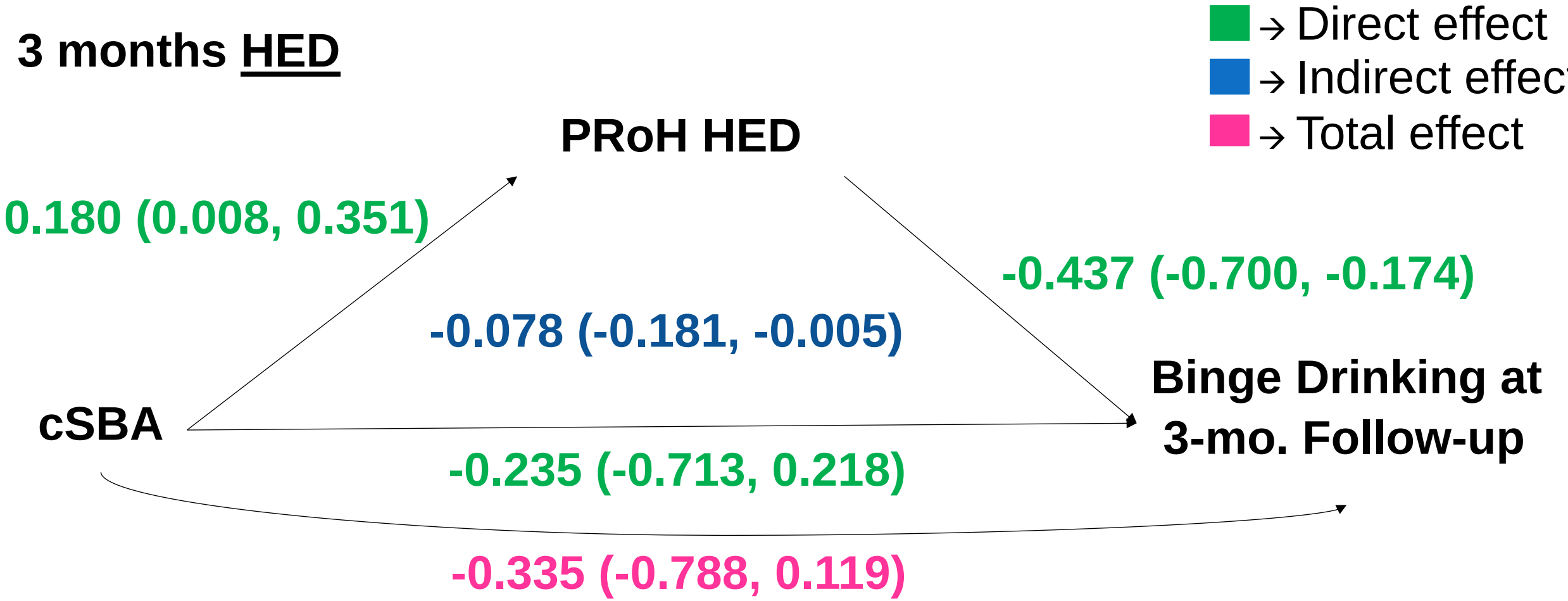
Study Limitations

- Asynchronous control group – potential historical confounding
- All study sites were in New England; generalizability of findings may be limited
- Self-report

Conclusions

- A brief primary care screening and brief intervention system can influence adolescents' PRoH from alcohol use, contributing to lower rates of use at short-term follow-up

Mediation Results: *Prior Use – Risk of HED*



Mediation Results: *Prior Use – Risk of HED*

Perceived risk of harm of **HED** mediated the effect of the cSBA on past 90-day *HED* at 3-month follow-up among those with ***prior use at baseline***.