

The role of alcohol behavioral research in the design of HIV prevention interventions targeting sexual minorities

Brian Mustanski, Ph.D.
(and Michael Newcomb, PhD)

NIAAA Meeting on Alcohol Behavioral Research and its Integration into the Creation and Enhancement of Multilevel HIV Prevention Interventions in the Era of ART. Bethesda, 2017

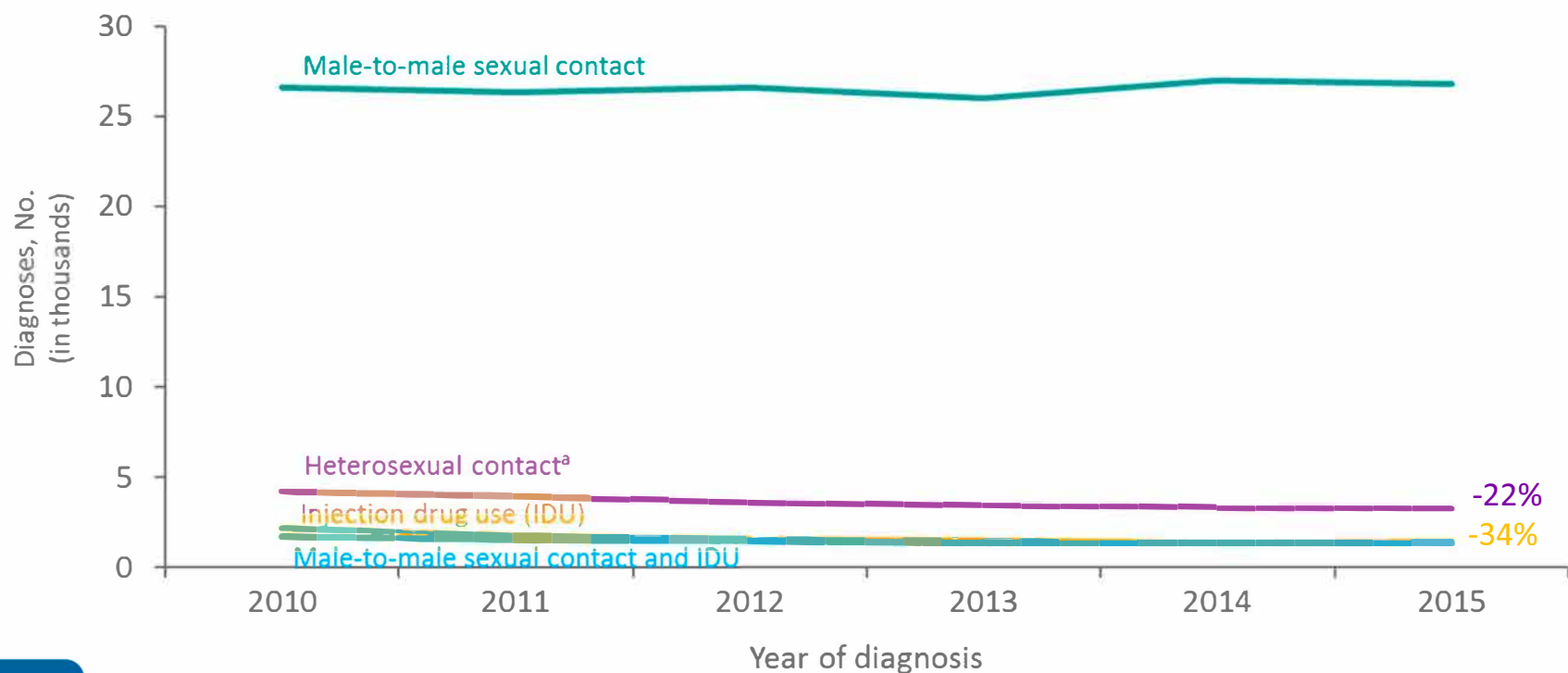
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Health and Wellbeing



Diagnoses of HIV Infection among Male Adults and Adolescents, by Transmission Category, 2010–2015—United States and 6 Dependent Areas

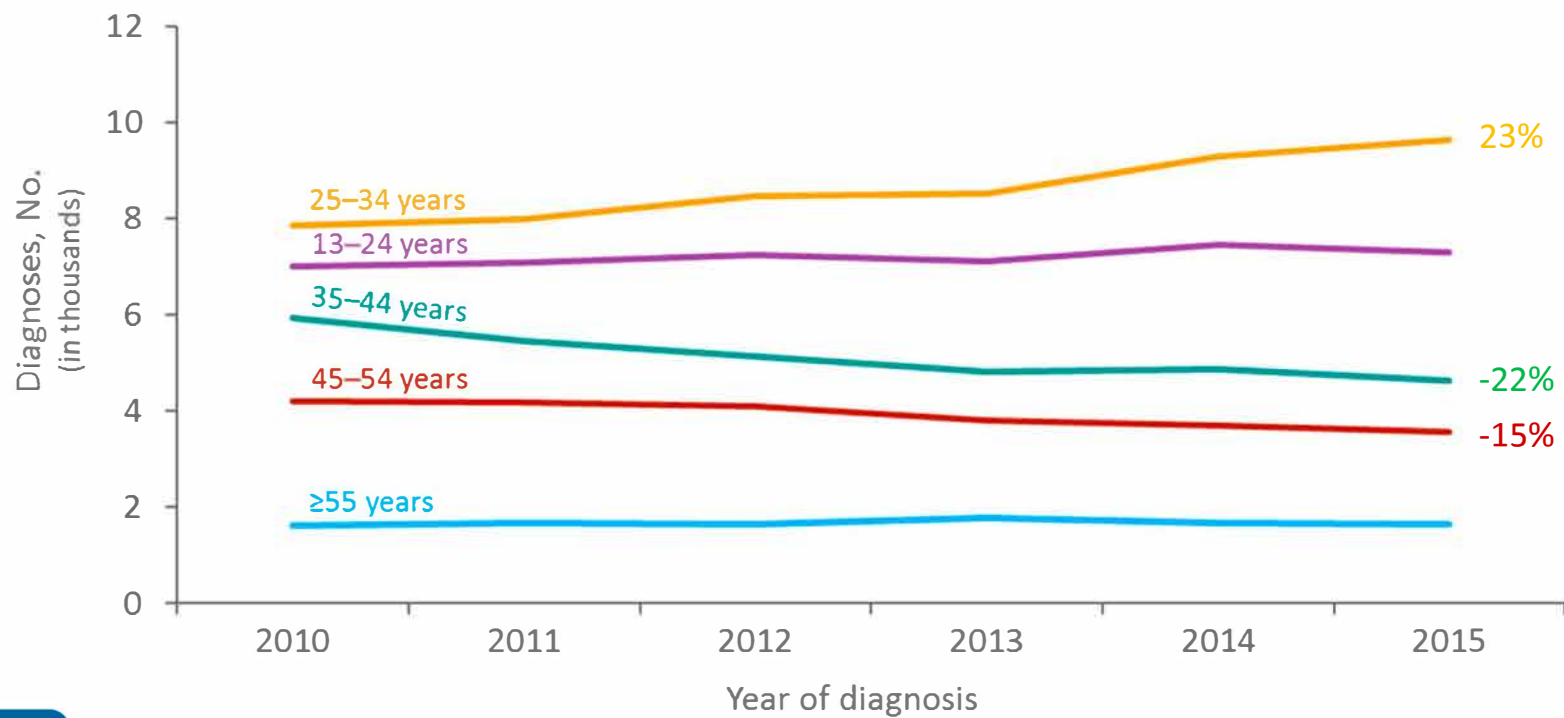


Note. Data have been statistically adjusted to account for missing transmission category. "Other" transmission category not displayed as it comprises less than 1% of cases.

^a Heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

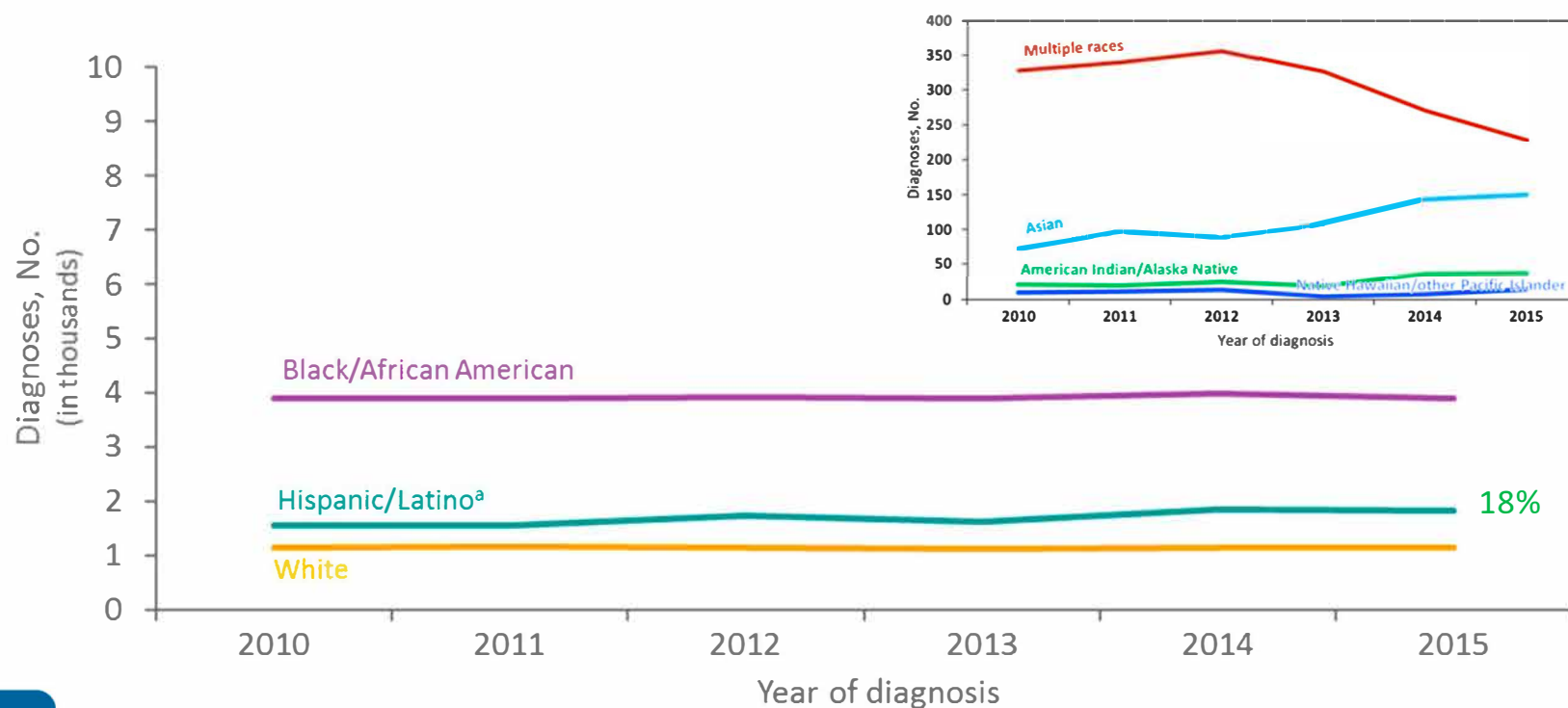


Diagnoses of HIV Infection among Men Who Have Sex with Men, by Age at Diagnosis, 2010–2015—United States and 6 Dependent Areas



Note: Data have been statistically adjusted to account for missing transmission category. Data on men who have sex with men do not include men with HIV infection attributed to male-to-male sexual contact *and* injection drug use.

Diagnoses of HIV Infection among Young (Aged 13–24 Years) Men Who Have Sex with Men, by Race/Ethnicity, 2010–2015—United States and 6 Dependent Areas



Note. Data have been statistically adjusted to account for missing transmission category. Data on men who have sex with men do not include men with HIV infection attributed to male-to-male sexual contact *and* injection drug use.

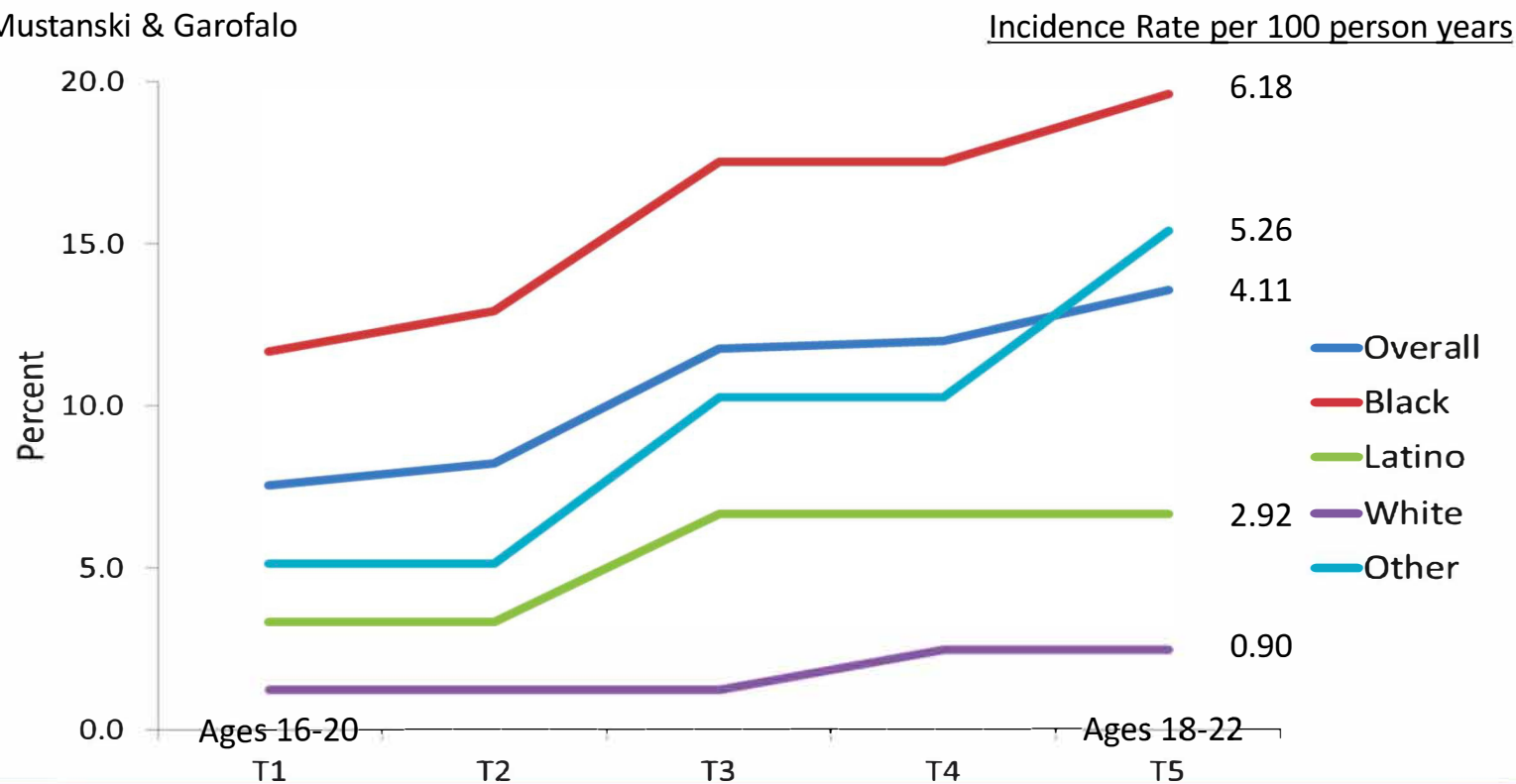
^a Hispanics/Latinos can be of any race.



NIDA R01 DA025548

PIs: Mustanski & Garofalo

% of HIV positive participants at each time point (n=450)

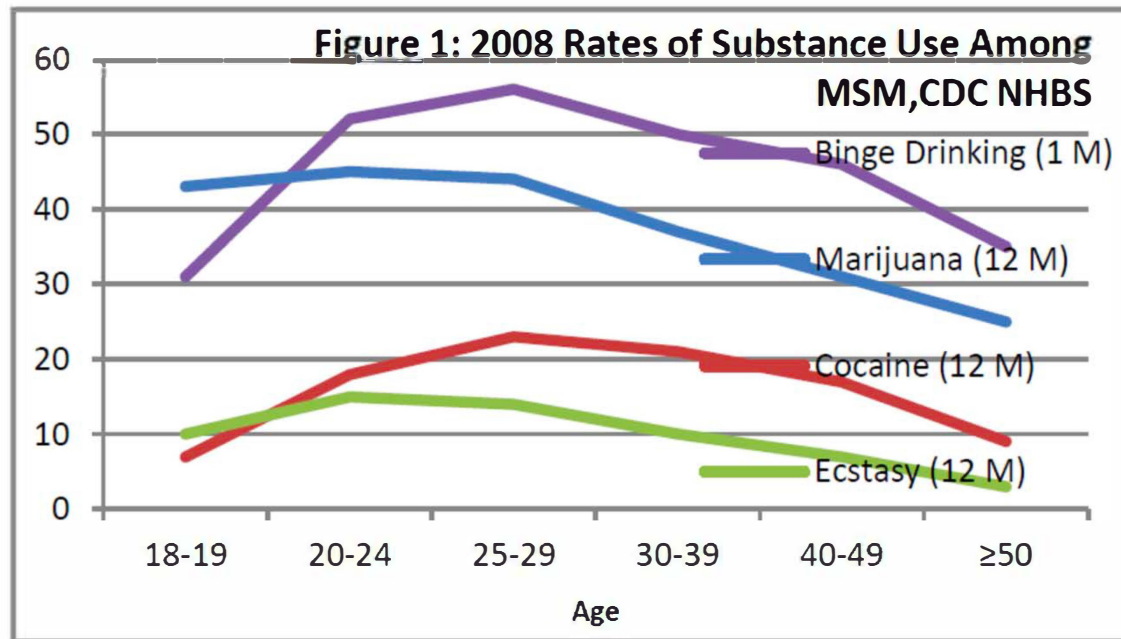


Time Point

Garofalo et al. (2016) *JAIDS*

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Period of high HIV incidence overlaps with ages with highest rates of AOD use



Role of Alcohol Disparities in HIV Risk among Sexual Minority Youth

R01 AA024409 (PI: Gregory Phillips II, PhD, MS)

- **Aim 1:** Elucidate **trends over time in alcohol use disparities between SMY and heterosexual peers** using multi-year, multi-site data.

- YRBS jurisdictional data pooled from 2005-2015
- Current dataset contains 544,185 individuals

- **Aim 2:** Given high incidence of HIV among YMSM and therefore the salience of condomless sex, we will use national data to report on the **determinants of the event-level association between substance use before sex and condomless sex** among YMSM and compare the effects to sexually active heterosexual males.

- **Aim 3:** Identify the impact that state policies (both LGB-specific and non-specific) and social climates (e.g., attitudes about homosexuality) have on the alcohol use behaviors and negative health outcomes of SMY.

Co-Investigators

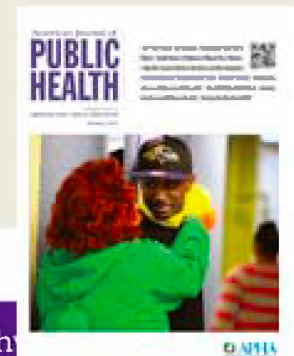
- Michelle Birkett
- Brian Mustanski
- Mark Hatzenbuehler
- Michael Newcomb

Team Members

- Lauren Beach
- Dylan Felt
- Rachel Marro
- Paul Salamanca
- Blair Turner

Consultants

- Joseph Robinson-Cimpian
- Heather Hoffman



Alcohol use and abuse: Heterosexual vs. SMY

YRBS Pooled Dataset 2005-2015 (n= 544,185)

Ever drank alcohol

Heterosexual	59.0%
Gay or lesbian	68.1%
Bisexual	75.7%
Not sure	53.5%

Binge drank (5+ drinks) in last 30 days

Heterosexual	16.8%
Gay or lesbian	22.8%
Bisexual	24.7%
Not sure	18.2%

- Percentages (%) reflect adjusted sampling weights
- Bold indicates significantly different from heterosexual, $p < 0.05$

Risk behaviors at last sex: Heterosexual vs. SMY

YRBS Pooled Dataset 2005-2015 (n= 544,185)

Used drugs/alcohol before last sex

Heterosexual	18.6%
Gay or lesbian	27.0%
Bisexual	23.9%
Not sure	35.3%

Did not use a condom at last sex

Heterosexual	34.1%
Gay or lesbian	63.3%
Bisexual	48.2%
Not sure	54.0%

- Percentages (%) reflect adjusted sampling weights
- Bold indicates significantly different from heterosexual, $p < 0.05$

Association between alcohol and HIV risk in MSM

AIDS Behav (2016) 20:S158–S172
DOI 10.1007/s10461-015-1220-x



ORIGINAL PAPER

Research on the Effects of Alcohol and Sexual Arousal on Sexual Risk in Men who have Sex with Men: Implications for HIV Prevention Interventions

Stephen A. Maisto¹ · Jeffrey S. Simons²

“There is a long-standing interest in clarifying the association between alcohol use and sexual risk, which stems from findings that heavier drinkers tend to engage in sexual risk behaviors more frequently. However, event level studies focusing on the association of alcohol use on specific occasions with high-risk sex have yielded inconsistent results (e.g., [6, 7]). Furthermore, recent findings suggest that **the association of alcohol use with risky sexual behavior is best considered a function of the interplay of situational and person variables at the level of the sexual event [6, 8, 9].**”

Situational factors associated with alcohol's impact on HIV risk behaviors

Use of other substances

Drug and Alcohol Dependence 178 (2017) 231–242

Contents lists available at ScienceDirect

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdep

Full length article

Trajectories of alcohol, marijuana, and illicit drug use in a diverse sample of young men who have sex with men

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ABSTRACT

Introduction: Cross-sectional research has found that young men who have sex with men (YMSM) are more likely to engage in heavy drinking and to have higher rates of marijuana and other illicit drug use compared to their heterosexual peers, but considerably less is known about their patterns of substance use over time.

Methods: In this study, we combined two longitudinal samples of nationally-representative YMSM (N = 552) and modeled their substance use trajectories from late adolescence to young adulthood, including their frequency of alcohol use, frequency of marijuana use, and poly drug use, using piecewise latent curve growth modeling to model change from ages 17–21 and change from ages 22–24.

Results: We found that all three substance use behaviors increased linearly over the adulthood-to-adult transition. The trajectories for all three substance use behaviors were significantly correlated from ages 17–21. Black YMSM had significantly lower growth from ages 17–21 in alcohol, marijuana, and poly drug use compared to White YMSM. Hispanic/Latino YMSM had significantly higher growth from ages 22–24 in alcohol use but significantly lower growth in poly drug use compared to White YMSM. YMSM with higher alcohol frequency slopes and YMSM with higher marijuana use slopes were more likely to have alcohol-related and marijuana-related problems, respectively, at the last wave of the study.

Conclusions: The results of the present study suggest that the transition from adolescence to adulthood for YMSM is a time of increasing and co-varying substance use and may be a critical period for substance use behaviors to grow into substance use problems.

Measured alcohol, marijuana, and illicit drug (cocaine, methamphetamines, and ecstasy) use in 552 YMSM measured for up to 9 waves between ages 17–24.

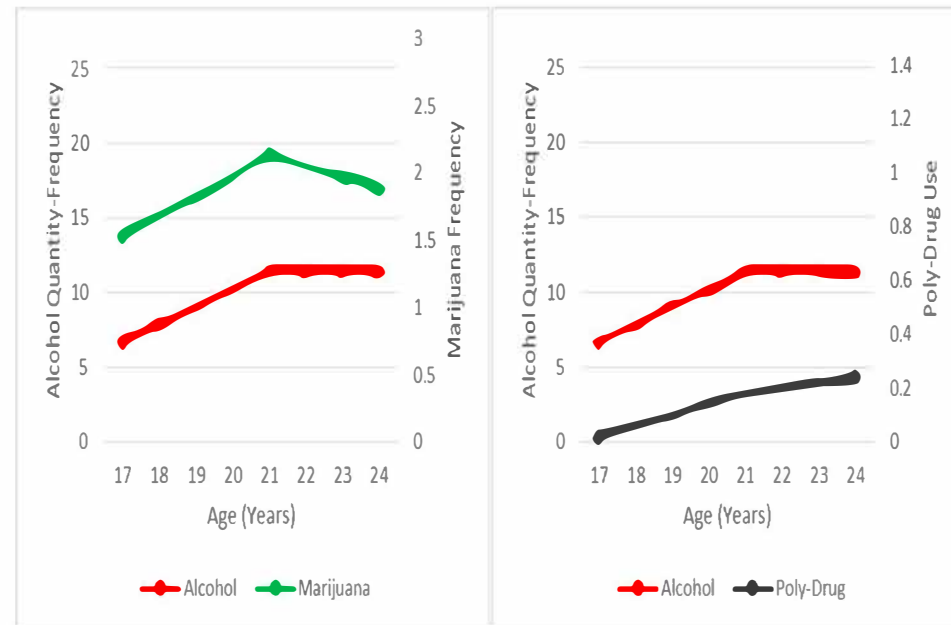
- 51.5% Black
- 18.8% Latino/Hispanic
- 11.2% White
- 71.9% gay
- 21.8% bisexual



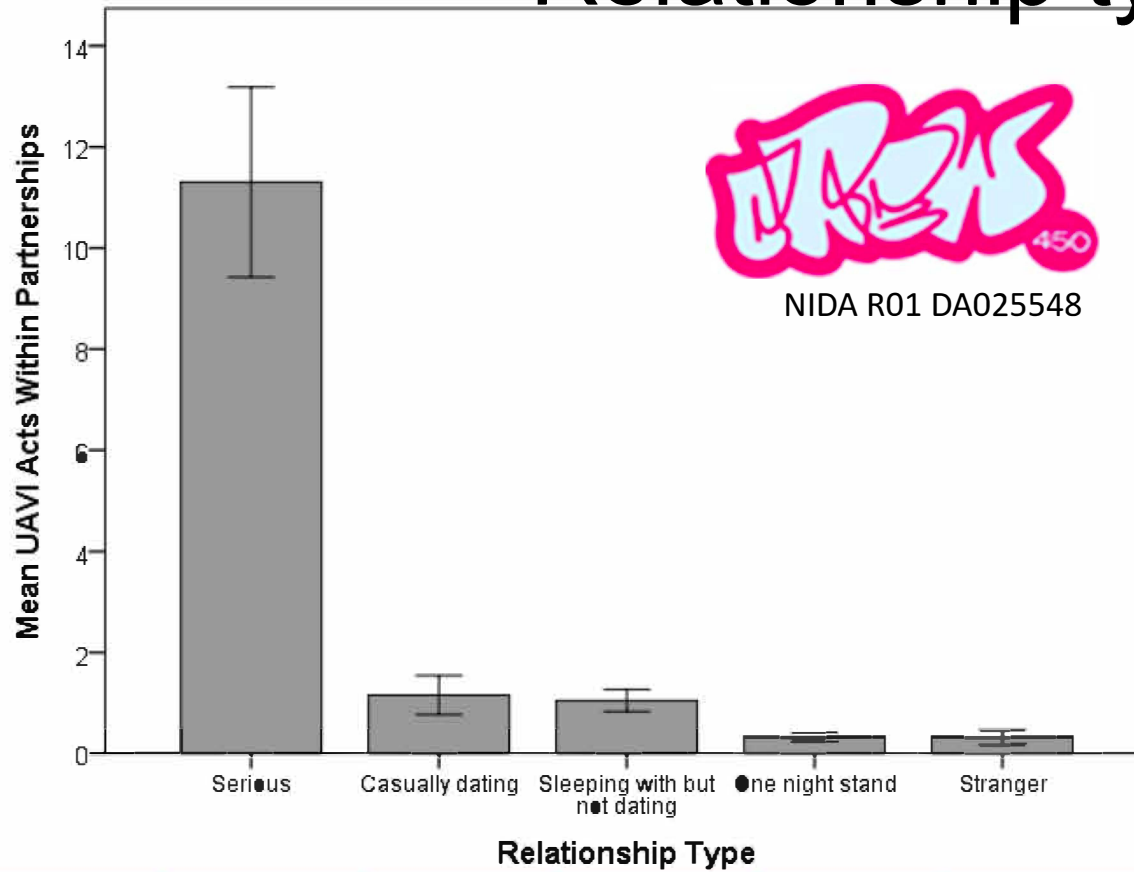
Parallel process piecewise latent curve growth modeling was used to model changes in all 3 substance use behaviors from ages 17–21 and 22–24.

Trajectories of Substance Use

- All three substance use behaviors increased linearly over the adolescent-to-adult transition.
- Only illicit drug use increased significantly from ages 22-24.
- The trajectories for all three substance use behaviors were significantly correlated from ages 17–21.
- From ages 22-24, increases in marijuana use were correlated with increases in alcohol use and increases in illicit drug use.
- YMSM with higher alcohol slopes and YMSM with higher marijuana slopes were more likely to have alcohol-related and marijuana-related problems, respectively.



Relationship types



AIDS Behav
DOI 10.1007/s10461-015-1046-6



ORIGINAL PAPER

Developmental Change in the Effects of Sexual Partner and Relationship Characteristics on Sexual Risk Behavior in Young Men Who Have Sex with Men

Michael E. Newcomb¹ · Brian Mustanski¹ R21MH095413

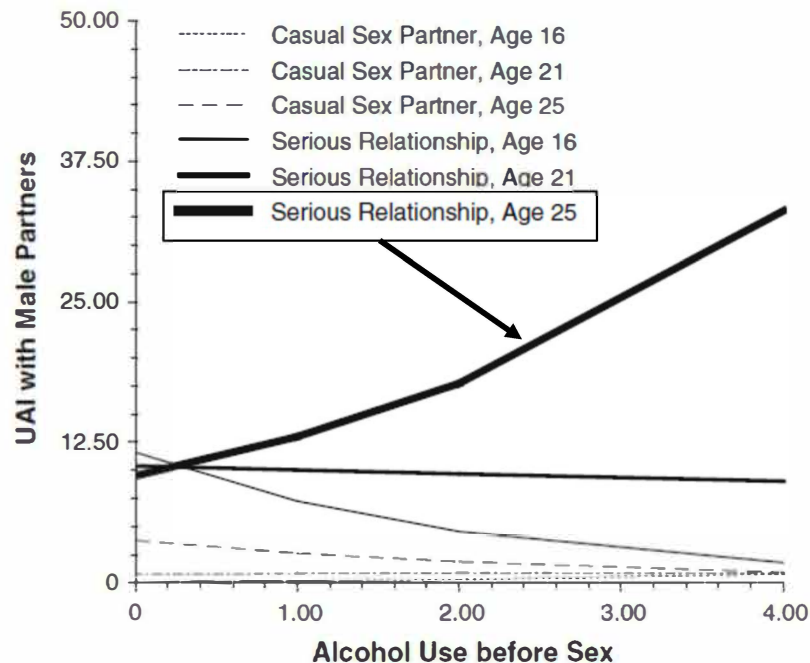
Effects of considering a relationship “serious” decrease across development from ages 16-24.

Newcomb et al.,
2014.
Arch Sex Behav

Relationship Type	% of partners
Serious	31%
Casually dating	21%
Sleeping with but not dating	24%
one night stand	20%
Stranger	3%

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Substance Use, Relationships and HIV Risk



- Replicated in samples of YMSM with broader age range
 - Drug use predicted HIV risk in serious relationships only, compared to 3 other types of casual partners
- Janulis et al., 2016, *Arch Sex Behav*

Other situational factors

- Mood (including sexual activation)
- Intentions for engagement in protective behaviors
- Quantity of alcohol and time since drinking (ascending versus descending BAC).

Person characteristics

Age effects: 2 daily diary studies

AIDS Behav (2008) 12:118–126
DOI 10.1007/s10461-007-9335-3

ORIGINAL PAPER

Moderating Effects of Age on the Alcohol and Sexual Risk Taking Association: An Online Daily Diary Study of Men Who have Sex with Men

Brian Mustanski

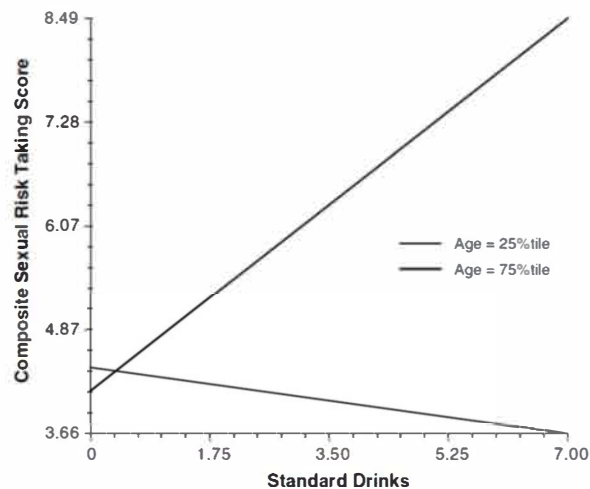


Fig. 1 Age moderates the association between alcohol consumption and risky sexual behavior. Note: Main effect of alcohol ($p < 0.01$) and moderating effect of age ($p < 0.001$)

AIDS Behav (2013) 17:1746–1754
DOI 10.1007/s10461-013-0470-8

ORIGINAL PAPER

Moderating Effect of Age on the Association Between Alcohol Use and Sexual Risk in MSM: Evidence for Elevated Risk Among Younger MSM

Michael E. Newcomb

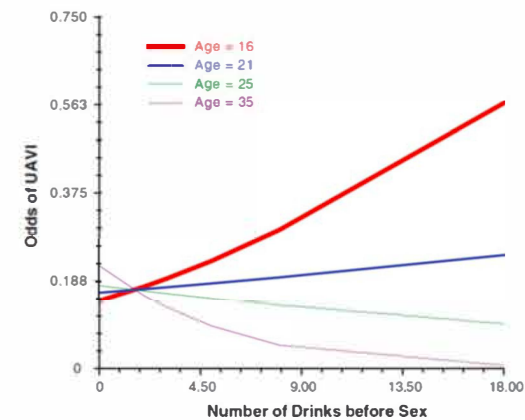


Fig. 2 Moderating effect of age on the association between alcohol use before sex and sexual risk. Participant age was measured as a continuous variable. This figure estimates the association between alcohol use before sex and sexual risk at several key ages across the age range of the sample. This is done solely for illustrative purposes. *UAVI* unprotected anal or vaginal intercourse

Developmental Change in the Relationship Between Alcohol and Drug Use Before Sex and Sexual Risk Behavior in Young Men Who Have Sex with Men

Michael E. Newcomb · Brian Mustanski

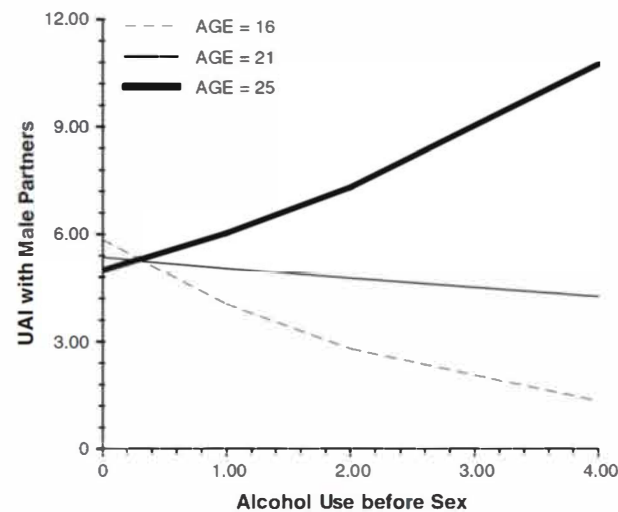


Fig. 1 Developmental change in the association between alcohol use before sex and UAI with male partners. *Note* this figure illustrates developmental change by showing the association between the independent and dependent variable at age 16, 21, and 25. This is done solely for illustrative purposes. UAI unprotected anal intercourse

Other person characteristics

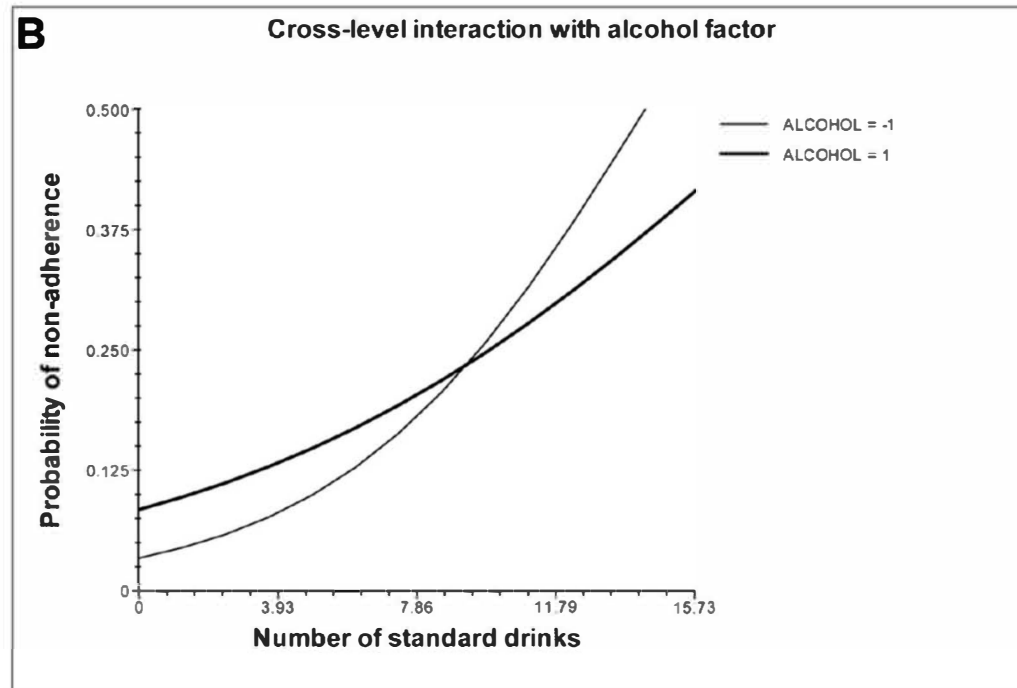
- Frequency of drinking and drinking history.
- History of sexual experience and condom use.
- Personality

The Temporal Relationship Between Alcohol Consumption and HIV-Medication Adherence: A Multilevel Model of Direct and Moderating Effects

Jeffrey T. Parsons
Hunter College and the Graduate Center of the City University
of New York, Center for HIV/AIDS Educational Studies
and Training

Elana Rosof
Medical and Health Research Association of New York
City, Inc.

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PrEP

Lower rates of PrEP adherence may leave youth more impacted by an effect of alcohol consumption on adherence.

Safety and Feasibility of Antiretroviral Preexposure Prophylaxis for Adolescent Men Who Have Sex With Men Aged 15 to 17 Years in the United States

Sybil G. Hosek, PhD; Raphael J. Landovitz, MD; Bill Kapogiannis, MD; George K. Siberry, MD; Bret Rudy, MD; Brandy Rutledge, PhD; Nancy Liu, MPH; D. Robert Harris, PhD; Kathleen Mulligan, PhD; Gregory Zimet, PhD; Kenneth H. Mayer, MD; Peter Anderson, PharmD; Jennifer J. Kiser, PharmD; Michelle Lally, MD; Jennifer Brothers, MPH; Kelly Bojan, DNP; Jim Rooney, MD; Craig M. Wilson, MD

- ATN 113 Project PrEPare demonstration project evaluating the safety, tolerability, and acceptability of TDF/FTC and patterns of use, rates of adherence, and patterns of sexual risk behavior among healthy young MSM aged 15 to 17 years.
- Among 2864 individuals screened (from August 2013 to September 2014), 260 were eligible and 78 were enrolled (mean [SD] age, 16.5 [0.73] years).
- In the month before baseline, 49 participants (67%) reported that they drank alcohol and 47 (64%) reported smoking marijuana.
- The HIV seroconversion rate was 6.4 (95%CI: 1.3-18.7) per 100 person-years.
- Tenofovir diphosphate levels consistent with a high degree of anti-HIV protection (>700 fmol/punch) were found in 42 (54%), 37 (47%), 38 (49%), **22 (28%), 13 (17%), and 17 (22%)** participants at weeks 4, 8, 12, **24, 36, and 48**, respectively.

Interventions

2GETHER

4 session hybrid group/individual intervention

- 2 groups, 2 individual couple sessions
 - Format requested by YMSM
- Relationship functioning
 - Effective communication
 - Dyadic coping skills
- Sexual health intervention
 - Primary & secondary prevention, behavioral & biomedical strategies
 - Relationship sexual agreement
- Substance use
 - Alternative coping strategies, partner monitoring
 - Substance effects on relationship sexual agreement



2GETHER

R01 AA024065

PI: M. Newcomb

2GETHER Pilot

- Pre-/post-test design, 99.1% completed 2-week post-test
 - 57 couples ($N=114$)
 - 11.4% HIV+, 48.2% racial/ethnic minorities
- Promising evidence of feasibility & acceptability
- Significant reduction in HIV risk behavior, improvement in relationship investment, and marginal decrease in alcohol problems

HAVE FUN. STAY SAFE.

KEEP IT UP 2.0

- Virtual bar/club game that addresses
 - Pros/cons of condom use
 - Steps to correct condom use
 - Issues with presuming HIV status in others
 - Effects of sexual arousal on decision making
 - Consequences of excessive alcohol consumption or drug use



Module 4: Bar/Club

How To Play

Interact: Click objects and people to interact with them.

Look Around: Use the left and right arrows to turn.

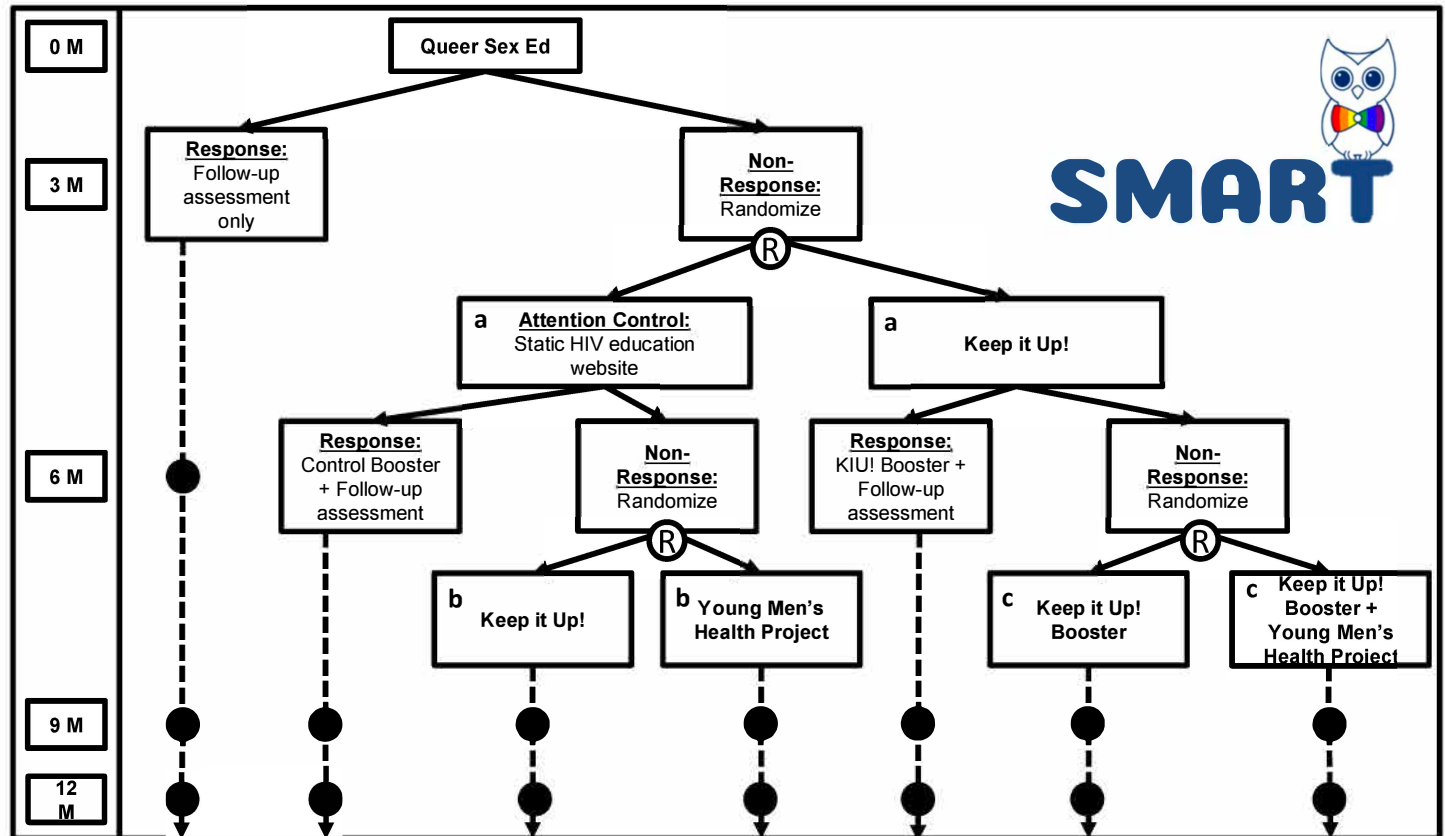
Move: Click the green circles on the map to change rooms. You're the blue circle.

A screenshot of the game interface. The top part shows a 3D-rendered bar scene with a character behind the bar and another person sitting at the bar. Below the scene is a control panel with a map showing green circles and a blue circle. To the right of the map are icons for 'Drinks' (a glass), 'Points' (a coin), and 'Tasks' (a list of icons). At the bottom are 'Back' and 'Start' buttons. White arrows point from the text instructions to the corresponding elements in the screenshot.



HAVE FUN. STAY SAFE.
KEEP IT UP 2.0

YOUNG MEN'S HEALTH PROJECT



Research gaps

- No experimental research on alcohol and young MSM under age 21.
- Breaking down alcohol's effect at each step in a sequence that leads to condom(less) sex: desire for sex, partner engagement...
- Alcohol and PrEP
- Disparities perspective
- Intervention research

Thank you funders and Institutional Support



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