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 racially diverse 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 adolescent-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.

1. Introduction

The transition from adolescence to young adulthood is a critical period for understanding patterns of alcohol, marijuana, and illicit drug use (Schulenberg et al., 2001; Schulenberg and Maggs, 2002). This is especially true for young men who have sex with men (YMSM), who initiate alcohol use at younger ages (Corliss et al., 2008), have a higher prevalence of heavy drinking (Hughes and Eliason, 2002; Talley et al., 2014), and have higher rates of illicit drug use compared to their heterosexual peers (Marshal et al., 2008; Newcomb et al., 2014a).

The prevalence of substance use behaviors among YMSM varies depending on one's racial/ethnic background and sexual orientation. Evidence suggests that Black YMSM are less likely to binge drink (Newcomb et al., 2012; Newcomb et al., 2014b; Wong et al., 2008) and engage in illicit drug use compared to White YMSM (Clatts et al., 2005; Kipke et al., 2007; Newcomb et al., 2014a,b; Wong et al., 2010). There

is similar evidence to suggest that YMSM that identify as Latino/Hispanic engage in less illicit drug use compared to non-Latino Whites (Newcomb et al., 2014a,b; Warren et al., 2008). Young people who identify as bisexual have also been found to have higher rates of illicit drug use compared to those identifying as gay or heterosexual (Greenwood et al., 2001; Marshal et al., 2008; Newcomb et al., 2014a).

Cross-sectional prevalence rates are informative in illustrating the increased risks faced by YMSM and subgroups within the YMSM population, but they do not inform how substance use behaviors develop and change during the transition from adolescence to adulthood. Lesbian, gay, and bisexual (LGB) adolescents have been found to escalate their alcohol use more rapidly during the transition to adulthood compared to their heterosexual counterparts (Marshal et al., 2009). YMSM, specifically, have been shown to have a greater increase in alcohol consumption during this transition compared to their heterosexual male peers (Dermody et al., 2014; Hatzenbuehler et al., 2008;

Talley et al., 2010) and sexual minority women (Dermody et al., 2014; Newcomb et al., 2012).

Research on longitudinal change in marijuana and illicit drug use with YMSM has been sparse compared to the number of studies addressing change in alcohol use. Halkitis et al. (2014) followed YMSM at ages 18–19 for eighteen months and found that not only did YMSM increase in alcohol use over time, but that they also increased in marijuana and illicit drug use (defined in this study as cocaine, ecstasy, GHB, ketamine, heroin, rohypnol, and methamphetamine use) as well. These findings are in line with what has typically been found with heterosexual male populations (Chen and Kandel, 1995; Kandel and Logan, 1984). Given the general lack of research on substance use trajectories among YMSM, there is a need for additional studies that address trajectories of marijuana and illicit drug use.

Equally unexplored in YMSM communities are the prevalence rates of problematic substance use, such as an inability to discontinue using a substance or an inability to maintain work or social roles because of alcohol or marijuana use. Substance use problems indicate the degree to which substance use is negatively impacting someone's life, as opposed to the quantity and frequency of use. Research on alcohol-related problems with adult men have at times found higher rates of problems for adult MSM compared to heterosexual men (Knowlton et al., 1994) but at other times found no differences (Drabble et al., 2005; Mackesy-Amiti et al., 2009). Similar results have been found for marijuana-related problems with some studies finding higher rates of problems for MSM (Cochran et al., 2004) and other studies finding no differences (Mackesy-Amiti et al., 2009). Further, research on alcohol problems in MSM has not found evidence of racial differences (Knowlton et al., 1994; Stall et al., 2001) but there is some evidence that marijuana-related problems may be higher in non-White participants (Mackesy-Amiti et al., 2009).

It is also important to consider the developmental context in which these behaviors occur when examining trajectories of change. Young adulthood is characterized not only by notably high rates of substance use, but also identity exploration, instability and transitional life events (Arnett, 2005; Wong et al., 2013). Research on contextual changes and substance use behavior in YMSM has shown that moving away from home is associated with increased substance use, while employment functions as a protective factor as YMSM age (Wong et al., 2013). Studies with heterosexuals are consistent with YMSM findings that living with parents protects against increased substance use in young adulthood (Bachman et al., 1997; White et al., 2008). Furthermore, reaching age 21 (i.e., the legal age to purchase alcoholic beverages and enter drinking venues) represents an important transition that may impact trajectories of alcohol and drug use by exposing YMSM to social environments (e.g., bars, clubs) in which alcohol and drug use are more common.

1.1. Current study

The purpose of the present study was to examine trajectories of alcohol and substance use in a racially diverse sample of YMSM in order to more fully understand how these behaviors change across the transition from late adolescence to young adulthood. We hypothesize that alcohol, marijuana, and illicit drug use would increase over this period, would co-vary with one another over time, and predict higher levels of alcohol-related and marijuana related problem behaviors at a later time point. We also predict that trajectories of substance use behaviors will be different from ages 17–21 and 22–24, specifically that growth in use will be higher during the 17–21 age period.

2. Methods

2.1. Participants and procedures

Participants came from RADAR, an ongoing longitudinal cohort

study of YMSM that aims to understand multilevel influences on HIV risk and substance use. This large cohort is being formed by merging three existing studies of YMSM: two longitudinal studies of YMSM (Project Q2 and Crew 450) and a cross-sectional adolescent-extension of CDC's National HIV Behavioral Surveillance, called ChiGuys. Because the aims of the current analyses were to understand developmental trajectories of alcohol and drug use, we utilized an analytic sample of only those YMSM from Project Q2 and Crew 450. These participants had up to 8 waves of longitudinal data and completed the baseline visit for the RADAR study (up to 9 waves of data total).

Project Q2 was a longitudinal study of the health and development of LGBT youth that included 117 YMSM (Mustanski et al., 2010). YMSM in Project Q2 included individuals who were assigned male at birth, between 16 and 20 years old at baseline interview, and identified as gay, bisexual, questioning, or endorsed same-sex attraction. Data collection began in 2007 and continued with 8 waves at 6–18 month intervals depending on the wave. Crew 450 (N = 450) was a longitudinal study examining a syndemic of psychosocial conditions associated with HIV among YMSM (Garofalo et al., 2016; Newcomb et al., 2014b). Crew 450 eligibility criteria included being born male, English speaking, between 16 and 20 years old, and had a previous sexual encounter with a man or identified as gay or bisexual. Data collection began in December 2009 and participants were followed for up to 8 waves of data collection at 6 month intervals. There were 15 participants who were enrolled in both Project Q2 and Crew 450. For those participants, data was taken from the study where the participant completed the most waves (final analytic N = 552). Baseline visits for the RADAR study (i.e., the final time point for the current analyses) occurred between 2015 and 2016. Each study protocol was approved by the Institutional Review Boards (IRBs) with a waiver of parental permission for participants under 18 years under 45 CFR 46, 408(c) (Mustanski, 2011). Participants provided written informed consent/assent, and mechanisms to protect participant confidentiality were utilized (i.e., a federal certificate of confidentiality).

2.2. Measures

2.2.1. Demographics

The demographics questionnaire at each time point assessed participant age, birth sex, race/ethnicity, self-reported sexual orientation, employment status, student status, and living situation.

2.2.2. Alcohol use

In Project Q2, participants were asked to report the number of days in the last 6 months that they had consumed alcohol (one item, range: 0–180). In Crew 450, participants were given the same question but were given the response options "Never", "1 or 2 times in the past 6 months", "3–5 times in the past 6 months", "Once a month", "2–3 times a month", "Once a week", "Twice a week", "3–4 times a week", "5–6 times a week" and "Everyday" (range: 0–9). Project Q2 responses were recoded to fit within the Crew 450 response options. We chose to recode the Project Q2 data in this manner because 1) Crew 450 represented over 80% of the full sample and 2) the Crew 450 response options, which each represented a broad range of possible values, did not lend themselves to a straightforward numeric transformation. In order to transform the Project Q2 data, we assumed that number of days participants consumed alcohol was evenly distributed over the six month period. For instance, if a participant responded that they consumed alcohol on 6 days in the last six months, we coded that person as "Once a month" on the Crew 450 scale. The distribution of values for Project Q2 participants was similar to the Crew 450 distribution after the recode (see Fig. 1). In both studies participants were asked, "When you drank, how many drinks did you have?" with the response options "0 drinks", "1 drink", "2 drinks", "3 drinks", "4 drinks", "5 drinks", and "6 or more drinks" (range: 0–6). Alcohol quantity-frequency was created at each wave by multiplying response on the 0–9 ordinal scale