



Racial/ethnic differences in use of alcohol, tobacco, and marijuana: Is there a cross-over from adolescence to adulthood?



Katherine M. Keyes^{a, b, *}, Thomas Vo^a, Melanie M. Wall^{b, c, f}, Raul Caetano^{d, e},
Shakira F. Suglia^a, Silvia S. Martins^a, Sandro Galea^a, Deborah Hasin^{a, b, f}

^a Department of Epidemiology, Columbia University, Mailman School of Public Health, New York, NY, USA

^b Department of Psychiatry, Columbia University, College of Physicians and Surgeons, New York, NY, USA

^c Department of Biostatistics, Columbia University, Mailman School of Public Health, New York, NY, USA

^d University of Texas, Southwestern School of Health Professions, Dallas, TX, USA

^e University of Texas, School of Public Health, Dallas TX, USA

^f New York State Psychiatric Institute, USA

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ABSTRACT

Black adolescents in the US are less likely to use alcohol, marijuana, and tobacco compared with non-Hispanic Whites, but little is known about the consistency of these racial/ethnic differences in substance use across the lifecourse. Understanding lifecourse patterning of substance use is critical to inform prevention and intervention efforts. Data were drawn from four waves of the National Longitudinal Study of Adolescent Health (Add Health; Wave 1 (mean age = 16): $N = 14,101$; Wave 4 (mean age = 29): $N = 11,365$). Outcomes included alcohol (including at-risk drinking, defined as 5+/4+ drinks per drinking occasion or 14+/7+ drinks per week on average for men and women, respectively), cigarette, and marijuana use in 30-day/past-year. Random effects models stratified by gender tested differences-in-differences for wave by race interactions, controlling for age, parents' highest education/income, public assistance, and urbanicity. Results indicate that for alcohol, Whites were more likely to use alcohol and engage in at-risk alcohol use at all waves. By mean age 29.9, for example, White men were 2.1 times as likely to engage in at-risk alcohol use (95% C.I. 1.48–2.94). For cigarettes, Whites were more likely to use cigarettes and smoked more at Waves 1 through 3; there were no differences by Wave 4 for men and a diminished difference for women, and difference-in-difference models indicated evidence of convergence. For marijuana, there were no racial/ethnic differences in use for men at any wave. For women, by Wave 4 there was convergence in marijuana use and a cross-over in frequency of use among users, with Black women using more than White women. In summary, no convergence or cross-over for racial/ethnic differences through early adulthood in alcohol use; convergence for cigarette as well as marijuana use. Lifecourse patterns of health disparities secondary to heavy substance use by race and ethnicity may be, at least in part, due to age-related variation in cigarette and marijuana use.

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1. Introduction

In adolescence and young adulthood, Blacks are less likely to use alcohol and tobacco (Baker et al., 2003; Breslau et al., 2006; Hasin et al., 2007; Pacek et al., 2012; Swendsen et al., 2012; Wu et al., 2011; Zapolski et al., 2014), and equally or less likely to use

marijuana depending on the time frame assessed (Pacek et al., 2012; Wu et al., 2011), compared with non-Hispanic Whites (henceforth referred to as “Whites”). However, among users of the substances, Blacks progress from use to dependence faster than Whites (Alvanzo et al., 2011), have longer duration of use (Caetano and Kaskutas, 1995), and experience more substance-related consequences than other racial/ethnic groups. Specifically, in early adulthood, Blacks are more likely to experience legal and social/interpersonal problems related to use (Witbrodt et al., 2014), arrest/incarceration for marijuana-related offenses (Ramchand et al., 2006), and injury (Keyes et al., 2012a; Witbrodt et al., 2014). At

* Corresponding author. Department of Epidemiology, Columbia University, Mailman School of Public Health, 722 West 168th Street, Suite 503, New York, NY 10032, USA.

E-mail address: kmk2104@columbia.edu (K.M. Keyes).

later stages of adulthood, Blacks have higher rates of lung cancer mortality (Gadgeel and Kalemkerian, 2003), and cardiovascular outcomes (Volkow et al., 2014). The reasons for the contrast in race/ethnic differences in substance use patterns, and in consequences of use, both in young adulthood and as individuals progress through the lifecourse, among users are unknown. Many of these consequences occur later in the lifecourse than adolescence or early adulthood, suggesting potential explanations of the contrast.

Explanations underlying these observations are emerging. While overall rates of alcohol, marijuana, and tobacco use among Blacks are generally lower than among Whites, several large-scale epidemiologic studies show a convergence in use by age, with rates becoming more similar, or ‘crossing-over’ by age (Caetano, 1984; Feigelman and Lee, 1995; Finlay et al., 2012; Kandel et al., 2011; Pampel, 2008; Robins, 1985; Watt, 2008). While studies vary in the age at which this cross-over occurs, generally the late 20s and early to mid 30s are found to be the critical developmental period for cross-over in substance use (Pampel, 2008; Watt, 2008). Therefore, while lower overall prevalence of use among Black compared with White adolescents is driven by patterns in these early life stages, higher use among Blacks compared with Whites in later stages of adulthood may drive the greater burden of substance use consequences among Blacks. Our understanding of the epidemiological patterns of substance use across race/ethnicity over the lifecourse, however, remains inadequate for several reasons.

First, studies of racial/ethnic differences across the lifecourse are predominately comprised of large cross-sectional samples of adolescents (Bachman et al., 1991; Feigelman and Lee, 1995; Kandel, 1995; Kandel et al., 1976; Swendsen et al., 2012; Wallace and Bachman, 1991) or adults (Alvanzo et al., 2014; Dunlop et al., 2003; D. Herd, 1990; Wallace, 1999; Watt, 2008; Witbrodt et al., 2014). Longitudinal studies are largely community and convenience samples with limited variation in age ranges (Brown et al., 2005; Caetano and Kaskutas, 1995, 1996; Cooper et al., 2008; Finlay et al., 2012; Myers et al., 1995; Weaver et al., 2011), with notable exceptions (Chen and Jacobson, 2012; K. M. Harris et al., 2006; Pampel, 2008). These longitudinal samples suggest convergence in tobacco (White et al., 2004) and marijuana use (Finlay et al., 2012), but not for alcohol (Caetano and Kaskutas, 1995, 1996). Data from the National Longitudinal Study of Youth indicated convergence in rates of cigarette smoking over time between White and Black Americans followed into their mid-thirties (Pampel, 2008). Confirmation of these findings and expansion to examine possible gender differences is necessary to fully elucidate lifecourse patterns of substance use.

Second, the effects of socio-economic status on racial/ethnic differences in substance use remain inadequately understood, and some data suggest that racial/ethnic differences in age-related variation could be fully accounted for by socio-economic indicators (Watt, 2008). The extent to which racial/ethnic differences persist despite mean differences in socio-economic status, versus other cultural or social group differences (Zapolski et al., 2014), is important for inferring conclusions from the data on racial and ethnic differences across the lifecourse. For alcohol, available evidence indicates that while income is positively associated with use in general (Keyes and Hasin, 2008), among those in poverty, Black men have higher rates of heavy drinking compared with Whites (Ford et al., 2007; Gilman et al., 2008; Jones-Webb, 1998; Jones-Webb et al., 1997). Examining these relations across other substances with rigorous control for socio-economic factors is critical.

Third, the role of gender in substance use is critically important to understanding its etiology and consequences. While social

norms regarding substance use are changing for women (Goodwin et al., 2009; Keyes et al., 2008a, 2010b), drinking and other substance use remains less acceptable for women than for men (Ahern et al., 2008; Greenfield and Room, 1997; Jones-Webb, 1998; Keyes et al., 2011). Recent evidence indicates that Whites are more susceptible to influence from social norms regarding substance use compared with Blacks (Keyes et al., 2012b) and report more positive attitudes toward drinking (Caetano and Clark, 1999; D. Herd, 1997), suggesting that the intersection of race and gender in trajectories of substance use may shed light on potential emerging disparities. Recent evidence from cross-sectional data indicate, for example, that Black women have higher rates of alcohol-related problems relative to White women at equal levels of alcohol consumption (Witbrodt et al., 2014). In addition, Black men have higher rates of alcohol-related problems among those with low levels of heavy drinking (Witbrodt et al., 2014); higher rates of incident alcohol disorders among Black compared with White women, although not among Black compared with White men over the age of 29 (Grant et al., 2012). Thus, examining the intersection of race and gender when examining patterns of substance use over time may yield important insights about the processes that underlie racial/ethnic differences in substance use across the lifecourse.

Using data from the first three waves of a nationally representative US sample followed from adolescence through the early twenties (National Longitudinal Study of Adolescent Health [Add Health]), Harris et al. (2006) documented increases in alcohol, marijuana, and tobacco use during the transition to adulthood for both White and Black participants, but no evidence of convergence or cross over, though this was not specifically tested (K. M. Harris et al., 2006). More recently, in the same sample followed to early to mid-30s, Chen and Jacobson (2012) documented age-related differences by race and ethnicity in patterns of any substance use. Consistent with prior evidence, Whites had higher prevalence of alcohol, tobacco, and marijuana use in early adulthood. Differences between Black and White young adults either diminished (alcohol) or crossed over (tobacco and marijuana) by the early to mid-30s. However, trajectories of quantity and frequency of use among users may differ in important ways from trajectories of any use. For example, previous research has demonstrated that Black young adults have different drinking patterns compared with Whites, including different beverage preferences and premise utilization patterns (Zapolski et al., 2014). Examination of such variation in quantity and frequency is critical, as adverse physical health outcomes secondary to substance use, both in young adulthood and through the lifecourse, are only exhibited at high and chronic levels of consumption (Connor, 2006). Further, existing studies in these data have not controlled for important socio-economic differences across groups; a full accounting is critical in inferring the extent to which racial/ethnic differences persist over and above socio-economic circumstances.

Informed by previous studies in these data, we tested differences in trajectories of alcohol, marijuana, and tobacco use among Black and White participants in the Add Health sample. We examine differences in quantity and frequency of alcohol, tobacco, and marijuana use between Black and White respondents from adolescence (mean age 16) through adulthood (mean age 29), stratified by gender, robustly testing modification of association with race/ethnicity by survey wave, and fully adjusting for multiple measures of socio-economic position to comprehensively investigate the evidence for convergence and/or cross-over of risk among Black and White participants during the transition to adulthood.

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