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Age-related changes in the relationship between alcohol use and violence from early adolescence to young adulthood☆

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ABSTRACT

Background: Despite the accumulation of studies examining the link between alcohol use and violence, no studies to our knowledge have systematically set out to detect age-related differences in these relationships. This limitation inhibits important insights into the stability of the relationship between alcohol use and violence among youth across varying ages.
Method: Study findings are based on repeated, cross-sectional data collected annually as part of the National Survey on Drug Use and Health between 2002 and 2013. We combined a series of nationally representative cross-sections to provide a multi-year string of data that, in effect, reflects a nationally representative non-traditional cohort. We conducted logistic regression analyses to examine the cross-sectional association between non-binge and binge drinking and violent attacks among youth between ages 12 (2002) and 24/25 (2013).
Results: With respect to the association between non-binge alcohol use and violence, the only significant relationship identified—while controlling for sociodemographic and drug use factors—was for youth at age 13 (2003; OR = 1.97, 95% CI = 1.04–3.72). For binge drinking, we identified a distinct pattern of results. Controlling for sociodemographic, drug use factors, and school enrollment, binge drinking was significantly associated with violence between ages 13 (2003) and 20 (2010) with the largest odds ratios observed during the early adolescent period.
Conclusions: Non-binge drinking is associated with violent behavior at age 13. Binge drinking was found to be associated with violence among youth through age 20; however, the relationship dissipates when youth arrive at the legal drinking age of 21.

1. Introduction

A vast body of research has documented the relationship between alcohol consumption and interpersonal violence, including individual and group fighting, handgun use, violent attacks, intimate partner violence, arrest for aggravated assault, forcible rape, and homicide (Cunningham et al., 2014; DeLisi, Vaughn, & Salas-Wright, 2015; DeLisi, Vaughn, Salas-Wright, & Jennings, 2015; Reyes, Foshee, Bauer, & Ennett, 2012; Salas-Wright, Hernandez, Maynard, Saltzman, & Vaughn, 2014; Salas-Wright, Olate, & Vaughn, 2015; Shook, Vaughn, & Salas-Wright, 2013; Stoddard et al., 2014; Vaughn, Salas-Wright, Cooper-Sadlo, Maynard, & Larson, 2015). Evidence from prospective studies suggests that alcohol use during adolescence increases risk for violence during adolescence and into young adulthood (Craig, Morris, Piquero, & Farrington, 2015; Maldonado-Molina, Reingle, & Jennings, 2010; Odgers et al., 2008; Reingle, Jennings, & Maldonado-Molina, 2011; Reingle et al., 2012). Simply stated, it is well established that alcohol use and violence are strongly interrelated risk-taking behaviors that tend to peak during the adolescent years (Jennings & Reingle, 2012; Olate, Salas-Wright, & Vaughn, 2011; Schulenberg & Maggs, 2002).

Despite the accumulation of studies examining the relationship between alcohol use and violence, important research gaps nevertheless persist. For instance, although prior research has examined the concurrent and longitudinal links between alcohol use and violence, existing studies on age and alcohol use have not examined the stability of the observed relationships by individual – level age (Bye & Rossow, 2010; Maldonado-Molina et al., 2010). This is noteworthy as this inhibits important insights into the stability of the relationship between alcohol

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use and violence among youth across varying ages. Further, there is a critical need for investigating cross-sectional links between varying types of alcohol use (e.g., any drinking versus binge drinking) and violence during adolescence and into young adulthood (Salas-Wright, Vaughn, & Reingle Gonzalez, 2016). Such data could inform the development and applicability of prevention and intervention programs designed to target both alcohol use and violence among youth in the United States.

1.1. The present study

We sought to address the aforementioned gaps by systematically examining the relationship between alcohol consumption and violence using data from the National Survey on Drug Use and Health (NSDUH) collected between 2002 and 2013. Specifically, we made use of repeated cross-sectional data to construct an analytic sample that reflects a nationally representative non-traditional cohort of American youth who were 12 years old in 2002 and 24/25 in 2013. With this unique sample, we conducted a fine-grained analysis of the concurrent association between non-binge and binge alcohol use and violence for each age group between ages 12 and 24/25 while controlling for sociodemographic, drug-related, and school enrollment confounding variables. In effect, the present study provides a nuanced portrait of the relationship between alcohol use and violence in the lives of a cohort of American youth across the spectrum of adolescence and young adulthood between 2002 and 2013.

2. Method

2.1. Sample and procedures

Study findings are based on repeated, cross-sectional data collected annually as part of the NSDUH between 2002 and 2013. Each year the NSDUH provides population estimates of substance use and health-related behaviors in the U.S. general population on the basis of a new, non-overlapping national sample. To improve the precision of drug use estimates, adolescents (age 12–17) and young adults (ages 18–25) are oversampled. Since 2002, a total of 668,012 respondents (including 216,852 adolescents and 221,976 young adults) have completed the NSDUH survey. The NSDUH design/methods are summarized briefly here; however, a detailed description of the study procedures is available elsewhere (see SAHMSA, 2014).

In the current study, in order to approximate a longitudinal cohort study design, we utilized the "mutoscope" approach to analyzing repeated, cross-sectional data constructed as a panel (see Frost, 1939; Seedall & Anthony, 2015). Specifically, we combined a series of nationally representative cross-sections of youth to provide a multi-year string of data that, in effect, reflects a nationally representative cohort. To be clear, the data analyzed are not repeated annuals assessments of the same individuals between the ages of 12 and 25. Rather, we have utilized an approach in which we began with a nationally representative sample of 12-year-olds in 2002 and, with each subsequent year, selected a refreshed and non-overlapping subsample of youth that corresponded in age to the original nationally representative sample from 2002 (e.g., 13-year-olds in 2003, 14-year-olds in 2004, 15-year-olds in 2005, and so on up to 24–25 year olds in 2013). Such an approach to repeated, cross-sectional data is a highly efficient manner of creating a sample that is conceptually akin to a longitudinal cohort while obviating challenges related to attrition, respondent interdependence, and measurement reactivity (Anthony, 2010). Although the cohort is not perfectly selected—most notably because the NSDUH combines youth ages 22–23 and 24–25—we believe it nevertheless provides a meaningful approximation of the cohort of youth born in 1990. Our final analytic sample is comprised of 38,233 respondents ages 12–25 who constitute the equivalent to a nationally representative cohort of youth in the United States between the years of 2002 (age 12) and 2013 (age 24/25).

2.2. Measures

2.2.1. Alcohol use

We examined both binge and non-binge alcohol use. Respondents were classified as having taken part in *binge alcohol use* if they reported consumption of "five or more drinks on the same occasion on at least one day in the past 30 days". The NSDUH interview guide clarifies that "occasion" refers specifically to "at the same time or within a couple of hours of each other". Respondents were classified as having taken part in *non-binge alcohol use* if they reported having one or more drinks in the past 30 days but no binge alcohol use. Youth who reported no alcohol use in the previous 30 days were deemed not current users (i.e., "no use"). While there are some subtleties with respect to the private consumption of alcohol in a handful of states, the National Minimum Drinking Age Act of 1984 prohibits the purchase and public possession of alcoholic beverages under the age of 21.

2.2.2. Violence

Involvement in violence was examined on the basis of the following question: "During the past 12 months, how many times have you attacked someone with the intent to seriously hurt them?" Consistent with recent NSDUH-based studies, youth reporting one or more instances of violent behavior were coded as 1 and all other youth coded as 0 (Salas-Wright, Vaughn, & Maynard, 2013; Vaughn, Salas-Wright, DeLisi, & Maynard, 2014). This measure of violence is the only violence-related question that is administered to both the adolescent and young adult subsamples in the NSDUH. The NSDUH does not include past 30-day measures of violence.

2.2.3. Control variables

The following variables were used as sociodemographic controls: gender (female, male), race/ethnicity (i.e., non-Hispanic white, African-American, American Indian/Alaskan native, Asian, persons reporting more than one race, and Hispanic), and total annual family income (i.e., less than $20,000; $20,000–$49,999; $50,000–$74,999; $75,000 or greater). We also controlled for past year use of illicit drugs (e.g., marijuana, cocaine/crack, hallucinogens, and other stimulants). Further, school enrollment was dichotomized and included in multivariate models from ages 17 (2007) onwards to serve as a proxy of deviant behavior. School enrollment variability was too small for children less than 17 years old.

2.3. Statistical Analyses

Descriptive analysis accounted for the complex sampling design and observations were weighted due to the unequal probability of selection of each primary sampling unit using Stata survey procedures (Table 1). After, we analyzed and reported the prevalence estimates for non-binge/binge alcohol use, as well as violent attacks for each year and corresponding age (i.e., 12 year olds in 2002, 13 year olds in 2003, and so on) between 2002 and 2013 (see Fig. 1). Next, we conducted 24 separate logistic regression analyses—controlling for sociodemographic factors and drug use—to examine the cross-sectional association between non-binge and binge (see Table 2) alcohol use and violent behavior among youth in the sample between ages 12 (2002) and 24/25 (2013). Notably, all statistical analyses are cross-sectional as we do not have data to allow for intrapersonal comparisons over time. Odds ratios (ORs) and 95% confidence intervals (CIs) are presented to reflect association strength. Multiplicative interaction terms were added to the main effect multivariate model to determine whether the relationship between alcohol use and violence varied by gender. Weighted prevalence estimates and standard errors are computed using Stata 15.1 MP software (StataCorp, 2015).