

**Binge Drinking and the Prevalence of
Violence:
The Relationship among College Students**

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Motivation

There is serious concern about excessive drinking by college students → AMA poll.

Alcohol consumption rates for college students, 1999:

- annual prevalence: 83.6%
- thirty-day prevalence: 69.6%
- binge drinking: 44.1%
- frequent binge drinking: 22.7%

The excessive use of alcohol by youths and young adults leads to a variety of negative outcomes both short- and long-term, including violence.

Previous research

Aggregate level studies:

- Chaloupka and Saffer(1992)
- Cook and Moore(1993)

Individual level studies:

- child abuse (Markowitz and Grossman, 1998)
- spousal abuse (Markowitz, 2001)
- violence on college campuses (Grossman and Markowitz, 1999)

This is the first study to examine binge drinking and violence.

Purpose of Study

To examine the relationship between binge and frequent binge drinking and violence-related outcomes.

A key goal is to control for endogeneity to establish a causal link between our alcohol and violence measures.

To draw on the policy implications of our results to reduce both excessive drinking behavior and violence among college students.

Alcohol/Violence Model

We examine the relationship between binge and frequent binge drinking and 4 violence-related outcomes:

- arguing
- damaging property
- trouble with police
- injury to oneself

Probability of engaging in a violence-related outcome:

$$V_i = \beta_B B_i + \beta'_X X_i + \epsilon_i \quad (1)$$

Probability that an individual is a binge (or frequent binge) drinker:

$$B_i = \beta_P P_i + \beta'_C C_i + \beta'_S S_i + \beta'_X X_i + u_i \quad (2)$$

Issue of Endogeneity

We estimate a bivariate probit model to control for the potential endogeneity between excessive drinking behavior and violence → it is likely that the error terms ϵ_i and u_i are correlated.

- estimating equation (1) directly based on a single-equation probit may result in a biased estimate of the parameter β_B

Data

Harvard College Alcohol Study (HCAS)

Survey Objective: to examine binge drinking behavior across US college campuses. Also includes questions on other risky behaviors. We draw on the 1997 and 1999 waves.

- 1997: 15,685 students from 130 colleges
- 1999: 14,907 students from 128 colleges
- estimation sample 16,599 observations

Student questionnaires

Administrator questionnaires

State level policies

- violence and alcohol measures
- cost of alcohol
- student demographics
- parental information
- college characteristics

Data con't

Violence-related outcomes include 0-1 dichotomous measures for:

- arguing (26%)
- damaging property (12%)
- trouble with police (6%)
- injury to oneself (14%)

Binge drinking variables include 0-1 measures for:

- binge drinking (64%): defined for males(females) as those individuals who report having 5(4) or more drinks in a row on at least one occasion during the last two weeks
- frequent binge drinking (36%): defined as an individual who engaged in binge drinking three or more times in the past two weeks

Data con't

Full cost of binge drinking:

Two college level prices measures:

- the average college price paid per alcoholic drink
- proportion of students who pay a fixed fee for all they can drink → zero marginal cost

Availability of alcohol:

- bar on campus
- one or more outlets licensed to sell alcoholic beverages located within one mile of the campus

State level alcohol restrictions:

- happy hour restrictions
- dram shop laws

Table 3: The Effects of the Excluded Variables on the Probability of Binge and Frequent Binge Drinking Behavior based on the Bivariate Probit Models

	Argue	Damage	Police	Injured
<i>Results from Binge Model:</i>				
Average College Price	-0.003 [‡]	-0.003 [‡]	-0.003 [‡]	-0.003 [‡]
Fraction pay fixed sum for drinks	0.827 [‡]	0.799 [‡]	0.781 [‡]	0.914 [‡]
Pub on Campus	-0.038	-0.045*	-0.045 [†]	-0.036
Bar within 1 mile	0.074*	0.073*	0.070	0.053
Happy hour restrictions	-0.054 [†]	-0.629 [‡]	-0.060 [†]	-0.055 [†]
Dram law restrictions	-0.111	-0.019	-0.020	-0.013
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	Argue	Damage	Police	Injured
<i>Results from Frequent Binge Model:</i>				
Average College Price	-0.004 [‡]	-0.004 [‡]	-0.003 [‡]	-0.004 [‡]
Fraction pay fixed sum for drinks	0.089	0.225	0.114	0.198
Pub on Campus	-0.669	-0.022	-0.028	-0.027
Bar within 1 mile	0.055	0.059	0.060	0.061
Happy hour restrictions	-0.000	-0.006	0.002	0.003
Dram law restrictions	0.087 [†]	-0.084 [‡]	-0.084 [‡]	-0.084 [‡]

Notes: The binge bivariate probit model for police did not converge. The symbols *, †, and ‡ represent statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Table 4: The Effects of Binge and Frequent Binge Drinking on Violence-related Outcomes

	Argue	Damage	Police	Injured
<i>Results from Binge Models:</i>				
Bivariate Probit Model:	0.016	0.096*	0.045	0.121 [‡]
Rho	0.386*	-0.261	0.004	-0.674 [‡]
2SLS Model:	0.271 [‡]	0.365 [‡]	0.055	0.481 [‡]
Test of overidentifying restrictions	7.418	1.766	8.379	6.321
Test of exogeneity	0.253	7.805 [†]	0.003	12.122 [‡]
Probit Model:	0.211 [‡]	0.102 [‡]	0.055 [‡]	0.132 [‡]
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	Argue	Damage	Police	Injured
<i>Results from Frequent Binge Models:</i>				
Bivariate Probit Model:	0.060 [‡]	0.059 [‡]	0.018*	0.042 [‡]
Rho	-0.134	-0.513 [‡]	0.033	-0.212*
2SLS Model:	0.534 [†]	0.494 [‡]	0.079	0.589 [‡]
Test of overidentifying restrictions	4.608	5.662	8.56	13.703 [†]
Test of exogeneity	2.108	4.246 [†]	0.020	7.434 [†]
Probit Model:	0.241 [‡]	0.159 [‡]	0.076 [‡]	0.152 [‡]

Notes: Marginal effects are presented for the bivariate probit and probit model. Controls for age, sex, race, ethnicity, religious affiliation, year in school, parents education, parents drinking patterns, living arrangements, type of college, region, and year were include but are not shown in the table. The binge bivariate probit model for police did not converge. The symbols *, †, and ‡ represent statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Conclusions / Policy Implications

Our estimation results show that:

- it is important to account for endogeneity
- policies that reduce binge drinking → reduce vandalism and injury to oneself
- reducing frequent binge drinking → reduce all 4 violence outcomes

Policy implications for reducing binge drinking:

- prohibit the sale of alcohol on a flat fee basis
- increase the price of alcohol via higher taxes
- fully implement state level price restrictions on happy hours and dram shop laws