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## The party effect: Prediction of future alcohol use based on exposure to specific alcohol advertising content

Matthis Morgenstern, PhD<sup>1,2</sup>, Zhongze Li, MS<sup>3</sup>, Zhigang Li, PhD<sup>3,4</sup>, and James D. Sargent, MD<sup>2,5</sup>

<sup>1</sup>Institute for Therapy and Health Research, Kiel, Germany

<sup>2</sup>Norris Cotton Cancer Center, Geisel School of Medicine at Dartmouth, Dartmouth-Hitchcock Medical Center, Lebanon, NH

<sup>3</sup>Biostatistics Shared Resource, Norris Cotton Cancer Center, Geisel School of Medicine at Dartmouth, Dartmouth-Hitchcock Medical Center, Lebanon, NH

<sup>4</sup>Department of Biomedical Data Science, Geisel School of Medicine at Dartmouth, Lebanon NH

<sup>5</sup>Department of Pediatrics, Geisel School of Medicine at Dartmouth, Hanover, NH

### Abstract

**Aims**—To test whether exposure to party-related alcohol advertising is associated with drinking behavior in a national US sample of adolescents and young adults, independently of exposure to other alcohol advertising.

**Design**—Longitudinal telephone- and web-based surveys conducted in 2011 and 2013.

**Setting**—All regions of the United States, participants selected via mixed-mode random-digital landline and cellphone frames.

**Participants**—A sample of 2541 respondents with a mean age of 18.1 years (51.6% female) of which 1053 (41%) never had a whole drink of alcohol and 1727 (67%) never had six or more drinks during one drinking occasion.

**Measurements**—Outcome measures were onset of alcohol use and binge drinking during the study interval. Primary predictor was exposure to television alcohol advertising, operationalized as contact frequency and brand recall for 20 randomly selected alcohol advertisements. Independent post-hoc analyses classified all ads as “party” or “non-party” ads. Sociodemographics, sensation seeking, alcohol expectancies, and alcohol use of friends and family were assessed as covariates.

**Findings**—Onset rates for having the first whole drink of alcohol and for first binge drinking were 49.2% and 29.5%, respectively. On average, about half ( $M = 10.2$ ) of the 20 alcohol advertisements in each individual survey were “party” ads. If both types of exposures (“party” and “non-party”) were included in the regression model, only “party” exposure remained a significant

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**Corresponding author.** Matthis Morgenstern, PhD, Institute for Therapy and Health Research, IFT-Nord, Harmsstr. 2, 24114 Kiel, Germany, Office phone: +49 431 5702935, FAX: +49 431 5702929, morgenstern@ift-nord.de.

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predictor of alcohol use onset (AOR=19.17; 95% CI 3.72–98.79) and binge drinking onset (AOR=3.87; 95% CI 1.07–13.99) after covariate control.

**Conclusions**—Adolescents and young adults with higher exposure to alcohol advertisements using a partying theme had higher rates of alcohol use and binge drinking onset, even after control of exposure to other types of alcohol advertisements.

### Keywords

alcohol; advertising; content themes; context effects; specificity

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## INTRODUCTION

Alcohol use is a leading cause of death worldwide, responsible for millions of years of potential life lost, and is a significant contributor to the global burden of disease [1,2]. It is also strongly associated with unintentional injury, homicide and suicide [3–5], the three leading causes of death among persons aged 12–20 years. Alcohol use costs US society more than 200 billion dollars each year, with most of these costs are paid for by individuals and government [6].

There is accumulated empirical evidence indicates that young people’s exposure to alcohol advertising is an independent risk factor for initiating early drinking and binge drinking, also for increasing the frequency of drinking as well as teenage alcohol-related problems [7–11]. There is also evidence that engagement in alcohol marketing (e.g., owning alcohol-related merchandise, having a favorite advertised alcohol brand, interacting in online-marketing) increases the likelihood of future risky drinking [12,13]. Nevertheless, alcohol remains a pervasively marketed product, at least in most western societies, with per year advertising expenditures of over 3 billion dollars in the US alone [14].

In the US and many other countries, the alcohol industry is allowed to self-regulate its marketing. Most of the voluntary advertising codes contain language to the effect that alcohol advertising should not be placed in youth venues or be unduly attractive to those under the legal drinking age [15,16]. However, the guidelines are vague with respect to what “unduly attractive” means (beyond that they should not depict Santa Claus). Moreover, the codes are not rigorously enforced: When external raters are asked, regardless of who they are and what country, researchers find that many of the alcohol ads shown violate the self-imposed codes for content [17–21].

One contributor to the lack of specific policies or legal actions in this area may be the paucity of empirical criteria defining how specific advertising content characteristics have differential impact on youth behaviors. Most prior research on alcohol advertising effects has studied the quantity of overall exposure, so little is known about differential thematic impact. Hence, an important step into a more evidence-based regulation of the marketing process might be to understand the themes exploited by advertising companies, and how youth might differentially respond to them.

We recently published a systematic content analysis of the 2009–2011 alcohol ads that had aired on US national television [22]. Using latent class analysis we found that advertisements could best be described using five thematic groups of ads that emphasized “partying”, “sports”, “manliness”, “relaxation”, and “product quality.” The partying class was indicative of ad messages involving partying, love, and sex, and it turned out to be the most prevalent content class, comprising 42% of all alcohol advertisements [22]. This theme was not mentioned in the TV advertising content analyses from the 1980’s [23], and was only tangentially referred to in an analysis of ads in the year 2000 [24], so it appears to be a recent entry in alcohol marketing communications. Moreover, the theme appeared not just in the US but also in a recent content analysis of alcohol radio advertising in the UK, which explicitly mentioned “weekend drinking and partying” as one of five key emerging themes [25]. Theoretically, it is plausible to assume that the party theme -- showing groups of attractive young people drinking in an energetic, sexually charged social setting -- has a specific appeal to youth, given the social context in which alcohol use usually takes place. Empirical evidence indicates that youth prefer or like lifestyle or image-oriented alcohol advertising more than alcohol advertisements that promote only product quality [26,27], and also that lifestyle or image-oriented advertisements result in more favorable attitudes toward alcohol brands and products among young people, compared with strictly product-oriented or informational advertising [28]. However, up to now there have been no attempts to test the effects of alcohol ads with specific contents on youth actual behavior. With the present analysis we tried to approach this research gap by (1) separating exposure to “party” ads from exposure to “non-party” ads, and (2) predicting future alcohol use based on the two types of exposures. The main hypothesis was that high exposure to partying ads is an independent predictor of future alcohol behavior transitions.

## MATERIALS AND METHODS

### Sample Recruitment

Between October 25, 2010, and June 11, 2011, 3342 participants from all regions of the United States were recruited with a mixed-mode random-digit-dial landline and cell phone frame. The survey occurred in two stages: a computer-assisted telephone survey (CATI) followed by a visual cue-reactivity portion that was completed via the web or on paper (for individuals without web access). Recruitment started with a list-assisted sample of 723,802 numbers selected from both landline and cell phone frames. Some 366,119 of the landline numbers were purged before being called due to identification as a business or non-working number. This left 357,683 numbers that were attempted, with 97,394 of these resulting in no contact. Some 60,229 cooperated in the screening interview to determine eligibility. Of households with age-eligible youth, cooperation rate for the CATI portion was 82.5% among those sampled from landline, and 68.9% for those sampled from cell phone. The age range included participants of legal drinking age (21–23 years of age), underage young adults (18–20 years of age), and adolescents (15–17 years of age). Verbal consent was obtained from parent and participant (if age < 18 years) or only from the participant only (if age ≥ 18). Participants under 18 answered sensitive questions using the telephone touch pad to enhance confidentiality protection. The majority of participants (76%, n = 2541) of the telephone interviews also completed the image-based web survey assessing advertising exposure.

Those who completed the baseline image-based surveys were invited to complete a follow-up survey 2 years later, conducted between 10/27/12 and 3/31/13, with 1596 completions (62.8%). The Committee for the Protection of Human Subjects at Dartmouth College in Lebanon, New Hampshire, approved all aspects of the study, also see Tanski et al [11]. For the present analysis, two sub-samples of the longitudinal complete cases were used: Baseline never-drinkers (n = 705) and baseline never-binge drinkers (n = 1036).

## Measures

**Outcome measure**—The primary outcome measures were ever drinking (“*Have you ever had a whole drink of alcohol more than a sip or taste?*” *No, Yes*), and ever binge drinking (“*How often did you have six or more drinks on one occasion?*”) [29,30] at the follow-up assessment, with responses collapsed into “never” and “ever”. These outcomes were also assessed at baseline, used to create the sub-samples of baseline never-drinkers and never-bingers.

**Exposure to party advertising**—Building and expanding on previous studies on advertising effects [31–34], all alcohol ads aired on national television in the year prior to the baseline survey were purchased from a marketing surveillance company ([www.kantarmedia.com](http://www.kantarmedia.com)) and still images from 345 unique alcohol ads from the top 20 beer and the top 20 spirit brands based on sales (The Beverage Information Group, 2009) were selected and digitally edited to remove all brand imagery. From this pool of images, 20 alcohol images were randomly selected for each participant in the baseline survey and respondents were asked if they had ever seen the respective ad (yes vs. no) and if they could name the advertised brand (open format). Based on the results of the aforementioned content analysis [22], all 345 ads were classified into their dominant content theme, which were “partying” (43%), “product quality” (27%), “sports” (16%), “relaxation” (7%), and “manliness”(7%). For the present analysis, all ads that did not belong to the “party” class were combined into the “non-party” class. Given the random assignment of ads to individuals, there was variation in the number of party and non-party ads presented in each individual survey. The number of party ads ranged from 4 to 16 (M=10.20; SD=1.87), the number of non-party ads from 4 to 15 (M=9.47; SD=1.86). To account for this variation, proportions were calculated for each individual indicating the number of party or non-party ads the respondent had seen and correctly recalled divided by the number of party or non-party ads included in the individual survey. Exposure was calculated as the average proportion of seen ads and recalled brands. The correlation between party and non-party exposure in the two samples was  $r = 0.59$  and  $r = 0.58$ , respectively.

**Covariates**—We assessed a number of covariates that could affect both, marketing exposure and drinking outcomes, including age, gender, socio-economic status, race/ethnicity, alcohol-related expectancies, personality and social influences [13,35,36]. Sensation-seeking is associated with greater media exposure and substance use, determined based on six items such as “I like to explore strange places” (Strongly disagree/Disagree/Agree/Strongly Agree, Cronbach’s  $\alpha = 0.72$ ) [37]. Positive alcohol outcome expectancies were assessed with five items, e.g. “Drinking alcohol would make me feel more part of the group” or “Drinking alcohol would make me feel more sure of myself”

(Strongly disagree/Disagree/Agree/Strongly Agree, Cronbach's alpha = 0.89). Alcohol use of friends was assessed by "How many of your friends drink alcohol?" (None/A few/More than a few/Most) and frequency of parental drinking was queried by "Which of the following statements best describes how often your parents drink alcohol?" (Never/Occasionally/Weekly/Daily).

**Statistical Analysis**—Baseline differences on study variables between analyzed (followed) and non-analyzed (lost to follow-up) respondents were tested with chi-squared tests or t-tests, separately for baseline never-drinkers and baseline never-bingers. The correlation between "party" and "non-party" advertisement exposure was calculated using Pearson product-moment correlation coefficients. Univariate associations between exposure and covariates was tested with chi-squared tests or t-tests, with exposure parsed into above and below median. For the multiple prediction of first alcohol use and first binge, a logit model was fit for both samples where the amount of exposure to "party" and "non-party" advertisement was simultaneously included as continuous fixed-effect predictors (scale from 0 to 1), in addition to all covariates. Missing data were handled using listwise deletion.

## RESULTS

### Baseline characteristics of the two analytic samples and attrition analysis

Table 1 summarizes the characteristics of the two analyzed samples of baseline never-drinkers and never-bingers compared to participant lost to follow-up. The mean age of the baseline never-drinkers was 16.9 years (SD = 1.9) and for the baseline never-bingers 17.4 years (SD = 2.33), with slightly more females in both samples (53.3% and 55.8%). There was a significant difference between analyzed and lost participants in both samples regarding race/ethnicity and household income, indicating higher drop-out rates in Black and Hispanic respondents and those with lower income. All other covariates were not related to study drop-out, with the one exemption of higher sensation seeking in baseline never-bingers not reached at follow-up.

### Exposure to party and non-party alcohol advertising

For descriptive purposes, all advertisements included in the web-surveys were aggregated at the brand level and presented by alcohol type (see Appendix Table). The ad sample included 11 beer brands, 14 spirit brands and one alcopop brand. Beer brands had a larger share of the total (69%) than spirit brands. The proportion of ads belonging to the "party" class were higher overall for spirit ads (50.4%) than for beer ads (39.5%), and only four brands failed to use the partying theme in their television advertising.

Respondents generally reported higher exposure to "party" versus "non-party" ads. The average proportion of seen ads and recalled brands for party vs. non-party ads was 17.6% (range 0–83%) vs. 12.5% (range 0–66%) in the sample of baseline never-drinkers ( $t[704] = 10.6$ ;  $p < .001$ ) and 20.3% (range 0–94%) vs. 14.3% (range 0–81%) in the sample of baseline never-bingers ( $t[1030] = 14.1$ ;  $p < .001$ ).

### Association between advertising exposure and covariates

Table 2 shows covariate characteristics dependent on the amount of exposure to “party” and “non-party” advertisements (below vs. above median). Both, “party” and “non-party” exposure was positively associated with male gender, sensation seeking, positive alcohol expectancies, maternal alcohol use, and friend drinking. Differential associations were found for race/ethnicity, which was associated with “party”, but not to “non-party” exposure. Conversely, household income was positively associated with “non-party”, but not to “party” exposure, at least in the sample of baseline never-drinkers.

### Prediction of future alcohol use

Initiation rates during the observation period were 49.2% for the first whole drink of alcohol and 29.5% for the first binge. We tested if inter-individual differences in the amount of “party” and “non-party” alcohol advertising exposure were associated with these initiation rates (see Table 3). Logistic regression analyses with simultaneous inclusion of both types of exposures and full covariate control revealed a significant association between “party” exposure and alcohol use and binge drinking onset, but not for “non-party” exposure.

## DISCUSSION

Although many studies have examined aggregate measures of alcohol advertising exposure and behavior, this study is one of the first to disaggregate the exposure into a type of ad hypothesized to have specific impact on behavior. The study found that exposure to party themed alcohol advertising was positively associated with youth drinking behavior over and above exposure to advertisements with other types of themes. The finding is interesting from a theoretical standpoint because youth drinking, especially binge drinking, often occurs in the context of intense social events promoted by the bar and club industry. It is interesting from a policy standpoint because it implies that thematic restrictions, if applied to alcohol marketing, could have beneficial impact on youth drinking, in addition to where and when the ads are placed, which is the primary focus of contemporary marketing restriction policies.

One of the non-hypothesized findings of the study was that average exposure to party ads was significantly higher than for non-party ads. This is indicative of both, a higher contact frequency based on the different channels and airing times of party versus non-party ads [22], and also potentially attentional processes that lead to easier retrieval of brand information in the context of a party-themed communication. Seeing party ads on the television might be more exciting for the young target group than, for example, seeing ads that focus on the high quality of the alcoholic product. This greater self-relevance of the content might lead to higher levels of cognitive involvement.

The results did not indicate that exposure to non-party ads was not influential. In fact, the two kinds of exposures (party and non-party) were positively correlated, meaning that some TV viewers have high exposure to all kinds of alcohol ads, not just party ads. This poses a clear challenge to a specificity analysis. In both regression models, non-party exposure was a significant predictor of future behavior alone, but lost its predictive power as soon as party-

ad exposure was added, which speaks for the impact of the party ads on adolescent and young adult audiences. It is therefore not surprising and in line with the present results that beer brands that systematically exploit the party theme (e.g. Corona, Heineken) are under the top-three beer brands with a disproportionate underage youth consumption rate [38].

The present study has several limitations which need to be taken into account. First, a number of covariates were included in our analysis, however it is always possible that an unmeasured confounder could explain or change the found associations. Second, the operationalization of exposure is based on a recall measure and exposure could be biased by memory effects other than the ones we controlled for. We tried to approach this by also controlling for positive alcohol-related expectations and by studying only non-users. And even if there is memory bias, the potential to memorize advertisements (in terms of contact and brand recall) should not be completely independent of actual exposure. Third, there was significant study drop-out over the two years, limiting the generalizability of the results, especially regarding race/ethnicity and economic status. Finally, all outcomes are based on self-reports and are therefore only a proxy of the actual behavior. This is not a unique feature of the present study and there is also no likely explanation why those with high alcohol ad exposure should systematically over- or under-report their drinking behavior. Nevertheless, it is a potential source of distortion.

Despite these limitations, the present study is the first to test the behavioral effects of specific alcohol advertising contents. Further context analyses will help to understand how and why advertising influences young people and potential ways to lower the impact on public health.

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## Appendix Table

Proportion of “party” ads by brand

Brand	Type of alcohol	Frequency	% party ads
Bud Light	Beer	58	50.0
Miller	Beer	42	47.6
Budweiser	Beer	37	32.4
Coors	Beer	36	19.4
Sam Adams	Beer	20	0.0
Captain Morgan	Spirit	16	100.0
Corona	Beer	15	86.7
Smirnoff	Spirit, Alcopop	14	50.0
Grey Goose	Spirit	12	0.0
Mike's Hard	Alcopop	12	91.7
Dos Equis	Beer	9	0.0
Jack Daniels	Spirit	7	0.0
Ketel One	Spirit	7	0.0
Bacardi	Spirit	4	50.0
Michelob	Beer	6	66.7
Stella Artois	Beer	6	16.7

<b>Brand</b>	<b>Type of alcohol</b>	<b>Frequency</b>	<b>% party ads</b>
Guinness	Beer	5	40.0
Jim Beam	Spirit	5	100.0
Jose Cuervo Tequila	Spirit	5	60.0
Malibu Rum	Spirit	5	100.0
Patron Tequila	Spirit	5	20.0
Baileys	Spirit	6	66.7
Crown Royal	Spirit	4	25.0
Heineken	Beer	4	75.0
Absolut	Spirit	3	33.3
Stolichnaya	Spirit	2	100.0

Table 1

## Attrition analysis

	Baseline never drinkers			Baseline never bingers		
	Analyzed (n = 705)	Lost to follow-up (n = 348)	p-value	Analyzed (n = 1,036)	Lost to follow-up (n = 646)	p-value
Age	%	%		%	%	
15–17	70.1	67.8	0.455	61.0	58.6	0.320
18–23	29.9	32.2		39.0	41.4	
Gender						
Male	46.7	47.1	0.888	44.2	46.6	0.341
Female	53.3	52.9		55.8	53.5	
Race						
White	72.3	61.1		74.1	61.7	
Black	8.1	13.9	<0.001	6.6	11.8	<0.001
Hispanic	9.2	15.3		9.7	16.3	
Mixed / Other	10.4	9.7		9.6	10.2	
Household income						
< 30,000 USD	18.9	30.7		18.9	32.4	
30,000 – 75,000 USD	34.5	31.4	<0.001	34.9	33.6	<0.001
> 75,000 USD	46.7	38.0		46.2	34.0	
Sensation-seeking						
Mean (SD), range 1–4	2.14 (.48)	2.17 (.52)	0.286	2.19 (.49)	2.24 (.53)	0.044
Positive alcohol expectancies						
Mean (SD), range 1–4	1.50 (.55)	1.48 (.55)	0.618	1.66 (.60)	1.65 (.61)	0.694
Friend drinking						
None	31.1	29.5		21.8	20.6	
A few	47.4	47.4	0.813	44.0	45.5	0.852
More than a few	11.9	13.9		16.7	15.7	
Most	9.6	9.3		17.5	18.2	
Alcohol use of mother						

	Baseline never drinkers		Baseline never bingers	
	Analyzed (n = 705)	Lost to follow-up (n = 348)	Analyzed (n = 1,036)	Lost to follow-up (n = 646)
	%	%	%	%
Never/occasional	93.0	93.7	89.7	90.0
Weekly/Daily	7.0	6.3	10.3	10.0
Alcohol use of father				
Never/occasional	82.4	83.1	76.2	80.2
Weekly/Daily	17.6	16.9	23.8	19.9
Exposure to party ads				
Mean (SD), percent seen	17.6 (15.0)	16.7 (14.8)	20.3 (15.8)	19.2 (15.5)
Exposure to non-party ads				
Mean (SD), percent seen	12.5 (13.2)	12.7 (13.5)	14.3 (13.8)	14.6 (14.2)
				0.716
				0.147

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Table 2

Association between exposure to party vs. non-party alcohol ads and covariates at baseline (row percentages)

	Exposure to party ads						Exposure to non-party ads					
	Baseline never drinkers (n=705)			Baseline never drinkers (n=1,036)			Baseline never drinkers (n=705)			Baseline never drinkers (n=1,036)		
	< Median	> Median	p-value	< Median	> Median	p-value	< Median	> Median	p-value	< Median	> Median	p-value
	%	%		%	%		%	%		%	%	
Age												
15-17	49.6	50.4	0.616	52.9	47.1	0.030	50.6	49.4	0.711	53.3	46.7	0.239
18-23	51.7	48.3		46.0	54.0		52.1	47.9		49.5	50.5	
Gender												
Male	41.0	59.0	<0.001	43.6	56.4	<0.001	41.3	58.7	<0.001	45.2	54.8	<0.001
Female	58.2	41.8		55.5	44.5		59.6	40.4		57.0	43.0	
Race												
White	47.1	52.9		47.5	52.5		49.9	50.1		50.1	49.9	
Black	64.3	35.7	0.030	61.2	38.8	0.002	53.6	46.4	0.795	58.2	41.8	0.241
Hispanic	50.0	50.0		49.5	50.5		54.7	45.3		53.5	46.5	
Mixed / Other	59.7	40.3		65.3	34.7		54.2	45.8		59.2	40.8	
Household income												
< 30,000 USD	55.8	44.2		53.9	46.1		60.2	39.8		58.1	41.9	
30,000 – 75,000 USD	47.6	52.4	0.298	50.0	50.0	0.380	50.5	49.5	0.031	50.3	49.7	0.133
> 75,000 USD	47.7	52.3		47.5	52.5		45.5	54.5		49.0	51.0	
Sensation-seeking												
Mean (SD), range 1-4	2.08 (.49)	2.19 (.46)	0.002	2.13 (.48)	2.25 (.49)	<0.001	2.08 (.48)	2.20 (.47)	0.001	2.13 (.48)	2.26 (.49)	<0.001
Positive alcohol expectancies												
Mean (SD), range 1-4	1.45 (.53)	1.54 (.57)	0.021	1.57 (.58)	1.74 (.62)	<0.001	1.43 (.53)	1.56 (.56)	0.002	1.56 (.58)	1.76 (.62)	<0.001
Friend drinking												
None	61.3	38.7		70.0	30.0		64.1	35.9		68.6	31.4	
A few	46.2	53.8	0.001	49.4	50.6	<0.001	48.3	51.7	<0.001	51.0	49.0	<0.001
More than a few	42.2	57.8		38.6	61.4		36.1	63.9		42.7	57.3	
Most	41.8	58.2		37.4	62.6		35.8	64.2		39.7	60.3	
Alcohol use of mother												
Never/occasional	50.6	49.4	0.295	51.7	48.3	0.002	51.4	48.6	0.382	53.2	46.8	0.004



Prediction of alcohol use and binge drinking onset within 24 months. Simultaneous inclusion of party and non-party exposure and all covariates.

**Table 3**

	Alcohol use onset			Binge drinking onset		
	AOR	95% CI	p	AOR	95% CI	p
Exposure to party alcohol ads	19.17	3.72 98.79	<0.001	3.87	1.07 13.99	0.039
Exposure to non-party alcohol ads	3.20	0.54 19.04	0.201	1.20	0.28 5.04	0.807
Age (0= 15–17 vs. 1= 18–23)	1.13	0.72 1.77	0.597	0.94	0.65 1.37	0.756
Gender (0= male vs. 1= female)	1.57	1.07 2.31	0.020	1.01	0.72 1.41	0.957
Race (Ref. = white)						
black	0.73	0.36 1.50	0.394	0.75	.036 1.59	0.466
hispanic	0.76	0.38 1.52	0.432	1.25	0.72 2.17	0.420
mixed / Other	1.10	0.60 2.01	0.758	1.02	0.58 1.79	0.945
Household income	0.85	0.65 1.11	0.230	1.08	0.86 1.37	0.509
Sensation-seeking	0.98	0.65 1.48	0.925	1.18	0.84 1.68	0.341
Positive alcohol expectancies	1.50	1.06 2.13	0.022	1.81	1.36 2.41	<0.001
Friend drinking	1.84	1.46 2.31	<0.001	1.69	1.41 2.03	<0.001
Alcohol use of mother	1.57	0.70 3.52	0.271	1.45	0.85 2.47	0.168
Alcohol use of father	1.54	0.93 2.53	0.092	1.60	1.09 2.36	0.017

AOR = Adjusted Odds Ratio

CI = Confidence Interval