Published in final edited form as:

Subst Abus. 2016 ; 37(1): 222–229. doi:10.1080/08897077.2015.1023485.

Do Alcohol Advertisements for Brands Popular among Underage Drinkers Have Greater Appeal among Youth and Young Adults?

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Abstract

Background—No previous study has determined whether there are differences in the youth appeal of alcohol advertisements for popular versus unpopular brands among underage drinkers.

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All authors contributed towards the research conception and design, interpretation of results, writing, and revision of the manuscript. Michael Siegel and Daryl Cioffi collected and compiled the data. Michael Siegel, Daryl Cioffi, and Lucero Leon-Chi analyzed the data.

This paper provides a systematic investigation of the differential appeal of brand-level alcohol advertisements among underage youth and young adults in the U.S.

Methods—We examined three issues of eight magazines popular among underage youth. From the advertised alcohol brands, we selected the ads for the top 10 and bottom 10 brands by prevalence of underage youth consumption, based on the results of a previous national survey. We assessed the ads' appeal using a sample of 211 students recruited from one graduate and two undergraduate courses at Boston University. Respondents rated the appeal of each advertisement on four dimensions: *physical and social appeal*, *appeal to underage youth*, *perceived effectiveness*, and *liking*. Using random effects linear regression, we compared the appeal of advertisements for popular versus unpopular brands.

Results—On each dimension, the ads for popular youth alcohol brands were rated as significantly more appealing than the ads for unpopular brands. The magnitude of this difference was 0.26 standard deviations for the physical and social appeal score, 0.25 for the appeal to underage youth score, 0.21 for the perceived effectiveness score, and 0.16 for the liking score.

Conclusions—Advertising for alcohol brands that are popular among youth contain elements that are more likely to appeal to underage youth and young adults than ads for brands that are relatively unpopular among young drinkers.

Keywords

Alcohol; advertising; brand; marketing; youth

INTRODUCTION

Alcohol, the leading drug among youth,¹ greatly increases the risk of harm to self and others, including school-related problems, unwanted sex, motor vehicle crashes, damage to physical and mental health, and death.² Exposure to alcohol advertising is one factor that has been suggested as a potential influence on youth drinking.³ In 2011, 14 alcohol companies, representing 79% of the market, spent \$3.5 billion on marketing in the U.S., of which more than a quarter, or nearly \$880 million, was spent on television advertising.⁴ In comparison, \$83.5 million was spent on magazine advertising, but a study by the Center on Alcohol Marketing and Youth (CAMY) found that the percentage of alcohol ads which overexpose a youth audience (i.e., reach a percentage of youth that is greater than the percentage of youth in the population) is higher for magazines than television.⁵

Two major lines of research have examined the impact of alcohol advertising on youth drinking: (1) longitudinal studies have investigated the quantitative relationship between level of alcohol advertising exposure and the prevalence and amounts of youth brand-specific alcohol consumption;³ and (2) several studies have assessed which specific elements in alcohol ads appeal to youth.^{6–24}

The qualitative studies have documented that many of the content elements in alcohol advertising are appealing to youth.^{6–24} In one study, for example, sexualized images, portrayals of risky behavior, and health claims based on low-calorie content were found in a large percentage of 1,795 magazine advertisements studied.¹⁷ Another study showed that

more than 25% of 1,261 magazine advertisements associated alcohol use with taking risks, sexual activity, and sexism, and the younger the magazine's audience, the more likely it was to contain ads with this type of content.¹⁸ Other research has shown that how much youth reported liking television alcohol advertisements largely depended on their liking for specific elements in those ads, including music, animal and human characters, humor, and storylines.¹⁹ Finally, across five studies, a panel of expert reviewers who assessed the content of televised alcohol ads identified numerous advertising elements that would boost youth appeal, many of which were in violation of the industry's self-regulatory advertising codes.^{20–24} Findings from these qualitative studies are troubling, as research has shown that the models and situations depicted in alcohol advertisements positively influence youth expectations about how they will feel when they drink.¹⁸

While previous qualitative research assessed a wide range of alcohol advertisements, we are aware of no prior studies that have examined the question of whether such advertising has differential youth appeal depending on the specific brand of alcohol being advertised. Of particular concern is whether ads for alcohol brands that are popular among youth are more often employing advertising elements that appeal effectively to young people. Answering this question is critical because youth primarily drink a relatively small number of advertised brands.²⁵

Different types of alcoholic beverages have been found to be associated with differential alcohol expectancies among young adults, leading to the conclusion that “targeting general alcohol expectancies may miss important between-beverage differences in perceived effects and subjective evaluations regarding alcohol's effects.”^{26, p. 925} The logical extension of this statement is that research should likewise examine the particular effects of brand-specific alcohol advertisements. By looking at aggregated results involving ads for several brands, previous research may have overlooked the extent to which the ads for the most popular youth brands are appealing to youth.

This paper represents a first attempt to examine whether magazine advertisements for different subsets of alcohol brands—specifically, brands known to be popular among underage drinkers versus brands less popular among youth—are differentially appealing to underage youth and young adults in the United States on the basis of their content.

METHODS

Design Overview

We examined the December 2011, April 2012, and May 2012 issues of eight magazines popular among underage youth based on audience data obtained from Nielsen (New York). These months were selected because they coincide with the period of a previous national survey in which we estimated the prevalence of consumption of 898 alcohol brands among a national sample of underage drinkers.²⁵ We selected the ads for the top 10 and bottom 10 brands by prevalence of underage youth consumption, based on the results of this previous national survey.²⁵ We assessed the ads' appeal using a sample of 211 students recruited from one graduate and two undergraduate courses at Boston University. Using an anonymous data collection form administered online through SurveyGizmo (Boulder, CO),

respondents rated the appeal of each advertisement on four dimensions: *physical and social appeal*, *appeal to underage youth*, *perceived effectiveness*, and *liking*. Using a random effects linear regression model, we compared the appeal of advertisements for the popular versus the unpopular brands.

The study protocol was approved by the Institutional Review Board at the Boston University Medical Center.

Selection of Alcohol Brands and Advertisements

A previous study identified the past 30-day consumption prevalence for each of 898 alcohol brands among a national sample of 1,031 underage drinkers in the United States surveyed from December 2011 through May 2012.²⁵ We identified all of the alcohol advertising that appeared in eight national magazines during the months of December 2011, April 2012, and May 2012. These magazines, all popular among underage youth,²⁷ were *Cosmopolitan*, *ESPN*, *InStyle*, *People*, *Rolling Stone*, *Sports Illustrated*, *Us*, and *Vogue*. These magazines were chosen because they contained a large volume of alcohol advertising that would provide a sufficient sample of different alcohol brand advertisements, and because they are readily accessible at major public libraries so that we could take digital pictures of the ads.

A total of 35 alcohol brands had ads in these magazines during the selected time period. We ranked these brands in order of their past 30-day consumption prevalence among underage youth drinkers (Table 1). We classified the top 10 brands as “popular youth brands” and the bottom 10 brands as “unpopular youth brands”. Consumption prevalence for the popular brands ranged from 3.6% to 27.9% and from 0.0% to 0.4% for the unpopular brands.

We took digital pictures of the advertisements for these 20 brands. When there was more than one advertisement for a given brand, we randomly chose a single ad. Thus, our final sample consisted of 20 ads, 10 for popular youth brands and 10 for unpopular brands (Table 1).

Young Adult Sample

We recruited a sample of students enrolled in one of three courses at Boston University to participate in an internet-based assessment of the 20 ads: (1) an undergraduate epidemiology course (enrollment = 118); (2) an undergraduate introductory public health course (enrollment = 99); and (3) a graduate-level course on the application of the social and behavioral sciences in public health (enrollment = 93).

Students accessed the online study site using a secure link. An informed consent script noted that their responses would be anonymous, that no personal identifiers would be collected, and that their participation was voluntary and not tied to course credit or grading.

The study participation rates were 49.2% for HS300, 61.6% for PH510, and 97.8% for SB721, for an overall participation rate of 68.1% (211/310). Most of the non-participation was due to absenteeism, not to a refusal to participate.

The final sample consisted of 211 students: 32.5% (174) were female, and 28.0% (59) were under 21 years of age. Of those 21 and older, 75.0% were ages 21–24, and an additional 23.0% were ages 25–29.

Questionnaire Description

We used SurveyGizmo (Boulder, CO) to administer the questionnaire. It showed a picture of each magazine advertisement in turn, followed by a series of 12 questions for each ad. The 20 advertisements appeared one at a time in randomized order for every rater.

Constructs, Measures, and Scores

Based on published content analyses of alcohol ads,^{6–19} plus a review of industry standards and previous work on measuring advertising features that appeal to youth,^{20–24} we developed a questionnaire with 12 items used in previous studies to assess the degree to which alcohol advertisements appeal to underage youth.

In the order asked, these items were: (1) whether the ad used symbols or other features that appeal primarily to underage youth; (2) whether the images in the ad appeal primarily to underage youth; (3–7) whether the ad shows that using the product will make people popular, cool, successful, sexy, and attractive (five separate questions); (8) how much attention the respondent paid to the ad; (9) a rating for how effective the ad is; (10) whether the ad was aimed primarily at underage youth, (11) whether the ad would make the respondent want to drink that brand of alcohol; and (12) an overall rating for how much the respondent liked the ad.

The overall liking rating was assessed on a scale of one to 10. The other 11 items were measured using a categorical scale. The scale for each of these items is shown in Table 2.

We then conducted an exploratory factor analysis to identify basic constructs and to determine which items mapped to each construct. Because the rating of overall liking was measured differently, and because this item most directly assessed youth ad appeal, we decided to analyze this variable as its own construct: *liking*. We entered the other 11 items into the factor analysis. The eigenvalues of the reduced correlation matrix showed that there were three constructs, with items mapped as follows:

1. *Physical and social appeal* (five items)—the extent to which an ad suggests that the product will make people look (a) popular, (b) cool, (c) successful, (d) sexy, and (e) attractive;
2. *Appeal to underage youth* (three items)—the extent to which the ad's (a) images and (b) symbols and other features appeal primarily to underage youth, and (c) whether the ad is aimed primarily at underage youth; and
3. *Perceived effectiveness* (three items)—(a) how much attention was paid to the ad, (b) the rated effectiveness of the ad, and (c) how much the ad made the respondent want to buy the product. On a conceptual level, the amount of attention a respondent paid to the ad fits logically within a construct of ad effectiveness because attention to an ad is a pre-requisite for the ad being effective.

In total, we analyzed four constructs. We used different scoring ranges for each construct scale since the constructs had varying numbers of items and the response scales for these items differed.

The component measures for each construct are shown in Table 2. Cronbach's alpha was 0.86 for the physical and social appeal measures, 0.86 for the appeal to underage youth measures, and 0.78 for the ad effectiveness measures. We computed the sums of the component measures for each of these three constructs. Then, for all four constructs, we standardized the respondents' scores to create the main outcome variables.

Data Compilation

We transposed the data set so that each advertisement-respondent combination represented a separate set of observations. With 211 respondents and 20 advertisements, the total expected number of observation sets was 4,220. Due to the length of the survey, however, some respondents did not provide ratings for all 20 ads. The actual number of observation sets was 3,278, indicating that on average each respondent completed assessments for approximately 16 of the 20 ads.

Data Analysis

For each of the standardized measures, we used a t-test to compare the means for the popular vs. unpopular youth brands. Next, we conducted a series of linear regression analyses with relative brand popularity as the main predictor variable while controlling for respondent gender and age—younger than 21 years ("youth") vs. 21 and older ("young adult"). With each respondent assessing multiple ads, we adjusted for the clustering of observations by including a random effect for each individual respondent.

RESULTS

The sample mean for the *physical and social appeal* score was 0.84 (standard deviation [SD] = 0.10). As shown in Table 3, stratified by brand popularity, the mean score for the ads for popular youth brands was 1.56, compared to 0.12 for the ads for unpopular brands ($p < 0.0001$). On a standardized scale, the physical and social appeal score for the ads for popular brands was 0.13 standard deviations higher than the score for the ads for unpopular brands.

The sample mean for the *appeal to underage youth* score was 0.09 (SD = 1.91). Stratified by brand popularity, the mean score for the ads for popular youth brands was 0.33, compared to -0.15 for the ads for unpopular brands ($p < 0.0001$). On a standardized scale, the appeal to underage youth score for the ads for popular brands was 0.13 standard deviations higher than the score for the ads for unpopular brands.

The sample mean for the *perceived effectiveness* score was 1.43 (SD = 2.81). Stratified by brand popularity, the mean score for the ads for popular youth brands was 1.73, compared to 1.13 for the ads for unpopular brands ($p < 0.0001$). On a standardized scale, the perceived effectiveness score for the ads for popular brand advertisements was 0.11 standard deviations higher than the score for the ads for unpopular brands.

The sample mean for the *liking* score was 4.32 (SD = 2.36). Stratified by brand popularity, the mean score for the ads for popular youth brands was 4.51, compared to 4.13 for the ads for unpopular brands ($p < 0.0001$). On a standardized scale, the overall liking score for the ads for popular brands was 0.08 standard deviations higher than for the ads for unpopular brands.

In the random effects linear regression analyses, the ads for popular youth brands demonstrated significantly greater appeal across all four standardized measures (Table 4). The magnitude of effect ranged from 0.16 standard deviations for the liking score to 0.26 standard deviations for the physical and social appeal score.

There was no significant relationship between the respondents' age (younger than age 21 vs. 21 and older) and ratings of the advertisements' appeal (Table 4). Females reported liking the ads less than males did, but for the other three scores gender was unrelated to advertising appeal (Table 5).

Table 6 shows the differences in mean appeal scores between the popular and unpopular brands with stratification by age of respondent (younger than age 21 vs. 21 and older). For each appeal measure, there was a significantly higher mean rating for the popular brand ads compared to the unpopular brand ads. This difference was present for both the underage respondents and those 21 and older.

DISCUSSION

To the best of our knowledge, this is the first paper to examine differences in the appeal of alcohol advertisements for popular youth brands versus unpopular brands. We employed four measures of advertising appeal: *physical and social appeal*—the extent to which an ad suggests that the product will make people look popular, cool, successful, sexy, and attractive; *appeal to underage youth*—the extent to which the ads' images, symbols, and other features primarily appeal to or are aimed at underage youth; *perceived effectiveness*—how effective an ad appears to be; and *liking*—how much respondents like an ad. Across all four measures, a sample of underage youth and young adults consistently rated the ads for popular alcohol brands to have greater appeal.

Our analysis also demonstrated that how the ads were evaluated was not influenced by the age of the respondents. Both underage youth (younger than 21 years) and young adults (21 and older) had similar reactions to the advertisements, rating the ads for popular youth brands to have greater appeal on all four measures. Note that our conclusion that ads for the popular brands were more appealing is not based on any increased appeal among underage compared to legal-age respondents, but on our finding that the appeal scores for all four constructs were significantly higher for the popular brands compared to the unpopular brands.

It is important to note that our major finding—that alcohol advertisements for brands popular among youth had greater appeal to an underage youth and young adult audiences—does not imply a causal relationship between the design of these advertisements and a desire

to appeal to an underage youth audience. In fact, there are several possible alternative explanations for the study findings.

First, while the brands in our sample were chosen to sharply demarcate brands popular or unpopular among underage drinkers, this sampling also created a demarcation between brands that are popular or unpopular among adults. We are therefore comparing brands with overall popularity among the general population with brands that are much less popular. Thus, it is possible that the enhanced appeal of the advertisements for the popular youth brands merely reflects an increased level of overall appeal for brands that are more attractive to the entire population. Our results may reflect an overall lower appeal of advertisements for unpopular alcohol brands among viewers of all ages, not just among young people.

Second, it is possible that brands with higher overall popularity also have higher advertising budgets, giving them the ability to produce more appealing advertisements.

This research contributes to the existing literature by demonstrating that the advertisements for brands popular among youth have greater appeal to an underage audience than advertisements for brands that are not popular among youth. Even if the result was due to the unpopular brands being poorly marketed, this would still be an important set of findings, as it is consistent with the hypothesis that marketing affects youth drinking behavior by influencing brand-specific alcohol expectancies.²⁸

Our finding that there was little difference in the appeal of alcohol advertisements among underage youth and young adults points to a major potential limitation in the alcohol industry's self-regulatory advertising codes. These codes forswear any advertising that is directed at underage youth. For example, Anheuser-Busch InBev's marketing and communications code specifies that "responsible marketing...is directed at individuals of legal drinking age and above."²⁹, p. 6 However, our findings show that advertisements which appeal to young adults of legal drinking age and above may hold equal or even greater appeal to underage youth.

Our findings reinforce the need for a public review mechanism to assess whether new alcohol advertising has been designed to appeal primarily to young people below the legal purchase age. Presently, the Distilled Spirits Council of the United States (DISCUS), an industry trade association, receives and responds to complaints about alcohol advertisements.³⁰ The DISCUS review mechanism has four shortcomings. First, the Board works for an industry trade association rather than an independent organization. Second, the Board is set up to respond to complaints, not to conduct systematic reviews of marketing practices. Third, the Board's reviews are guided by the DISCUS code rather than an independently established standard. Fourth, the code review board is composed of people far above the legal purchase age.

The Beer Institute has a similar mechanism for reviewing alcohol advertising.³¹ As with DISCUS, however, the Institute's procedure relies upon consumer complaints, and the review board does not contain young adults.³²

To date, the federal government has failed to adequately monitor and regulate alcohol advertising. The Federal Trade Commission (FTC) encourages a self-regulatory approach,³³ and its reviews of this approach have assessed only whether the industry is complying with its own guidelines,⁴ and not whether those guidelines are sufficient to protect youth from advertising exposure.

In addition to our inability to draw any causal conclusions regarding possible intent of alcohol manufacturers to appeal to an underage audience, this study has several limitations. The study was restricted to a small number of magazine ads that appeared during the time that we conducted our national survey of youth consumption of specific alcohol brands. It is possible that these 20 ads were not fully representative of the alcohol ads being used during that time period. Moreover, with this restricted sample, we were not able to determine whether there is a linear relationship between brand popularity and how underage youth and young adults rate brand-specific ads. It is also possible that the ratings might have been biased if respondents were aware of the popularity of various alcohol brands among underage drinkers. Finally, it is possible that our sample of public health students may have been more sensitized to the potential youth appeal of alcohol advertisements compared to the general population of youth and young adults.

Despite these limitations, we have demonstrated a methodology for assessing the appeal of alcohol advertisements that could be used to determine whether there is a differential appeal of brand-specific advertising to youth versus older adult audiences. To explore whether alcohol brands that are popular among underage drinkers appeal differentially to youth, further research will need to: (1) compare the responses of underage youth and older adult viewers; and (2) compare a sample of brands that are uniformly popular among adults, but which differ in terms of their youth popularity.

Acknowledgments

This study was supported by the National Institute on Alcohol Abuse and Alcoholism grant R01 AA020309. The sponsor had no role in the planning or conduct of the study.

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TABLE 1

Alcohol Brands Advertised in the Magazine Sample and Selection of Final Ad Sample

Brand	Youth Consumption Level (%) ^a	Selection ^b
Bud Light	27.9	P
Smirnoff vodka	12.7	P
Absolut vodka	10.1	P
Heineken	9.7	P
Bacardi rum	9.3	P
Miller Lite	7.5	P
Hennessy cognac	5.7	P
Patron tequila	5.5	P
Jim Beam bourbon	4.0	P
Sky vodka	3.6	P
Miller High Life	3.2	
Seagram's malt beverages	3.2	
Budweiser Select	2.9	
Jose Cuervo margaritas	2.8	
Pinnacle vodka	2.7	
Kahlua liqueur	2.5	
Wild Turkey bourbon	2.0	
Amstel Light	2.0	
Miller Light	1.4	
Dailys cocktails	1.3	
Stella Artois	1.2	
Skinnygirl margaritas	0.9	
Belvedere vodka	0.9	
Michelob Ultra	0.8	
Sobieski vodka	0.6	
New Belgium	0.4	U
Crystal Head vodka	0.3	U
Midori liqueur	0.3	U
Evan Williams bourbon	0.1	U
Tito's vodka	0.1	U
Freixenet	0.1	U
Patron XO liqueur	0.1	U
Pucker vodka	0.0	U
Evan Williams liqueurs	0.0	U
Pama liqueur	0.0	U

^aPercentage of underage drinkers who reported consuming each brand in the past 30 days, Youth Alcohol Brand Survey [25].

^bP = Selected as a “popular” youth brand, U = Selected as an “unpopular” youth brand.

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TABLE 2

Summary of Youth Content Appeal Constructs, Measures, and Scores

Measures	Response Scales
Construct 1: Physical and Social Appeal Score 1 = Sum of measures 1 through 5 Mean: 0.84 (SD: 5.40) [Range: -10, +10] Cronbach's alpha = 0.86	
Measure 1: Popularity This ad shows this product will make people popular.	Strongly agree = +2, Agree = +1 Disagree = -1, Strongly Disagree = -2
Measure 2: Coolness This ad shows this product will make people cool.	Strongly agree = +2, Agree = +1 Disagree = -1, Strongly Disagree = -2
Measure 3: Success This ad shows this product will make people successful.	Strongly agree = +2, Agree = +1 Disagree = -1, Strongly Disagree = -2
Measure 4: Sexiness This ad shows this product will make people look sexy.	Strongly agree = +2, Agree = +1 Disagree = -1, Strongly Disagree = -2
Measure 5: Attractiveness This ad shows this product will make people look attractive.	Strongly agree = +2, Agree = +1 Disagree = -1, Strongly Disagree = -2
Construct 2: Appeal to Underage Youth Score 2 = Sum of measures 1 through 3 Mean: 0.09 (SD: 1.91) [Range: -2, +4] Cronbach's alpha = 0.86	
Measure 1: Image Appeal The images in this ad are primarily appealing to which of these age groups?	Adults: 0 Underage youth: 1
Measure 2: Symbol Appeal This ad uses symbols, language, music, gestures, celebrities, or features that appeal primarily to persons below age 18	Strongly agree = +2, Agree = +1 Disagree = -1, Strongly Disagree = -2
Measure 3: Primary Target What age group is this ad primarily aimed at?	Adults: 0 Underage youth: 1
Construct 3: Perceived Effectiveness Score 3 = Sum of measures 1 through 3 Mean: 1.43 (SD: 2.81) [Range: -6, +6] Cronbach's alpha = 0.78	
Measure 1: Effectiveness This is an effective ad.	Strongly agree = +2, Agree = +1 Disagree = -1, Strongly Disagree = -2
Measure 2: Attention How much attention did you give to this ad?	More attention than usual = +2 Average amount of attention = +1 Less attention than usual = -1 No attention at all = -2
Measure 3: Effect If you were to drink this type of alcohol, this ad would make you want to buy the product.	Strongly agree = +2, Agree = +1 Disagree = -1, Strongly Disagree = -2
Construct 4: Liking Score 4 = Liking score Mean: 4.32 (SD: 2.36) [Range: 0, 10]	
How much did you like this ad?	0-10 scale (0=Not at all; 10=Very much)

TABLE 3
Differences in Mean Appeal Scores between Advertisements for Popular versus Unpopular Youth Alcohol Brands

Outcome Variable	Popular Youth Brands		Unpopular Youth Brands		Two-sample t-test ^d
	Mean	SE	Mean	SE	
Score 1: Physical and Social Appeal	1.56	0.13	0.12	0.13	p<0.0001
Score 1 Standardized	0.13	0.02	-0.13	0.02	p<0.0001
Score 2: Appeal to Underage Youth	0.33	0.05	-0.15	0.05	p<0.0001
Score 2 Standardized	0.13	0.02	-0.13	0.02	p<0.0001
Score 3: Perceived Effectiveness	1.73	0.07	1.13	0.07	p<0.0001
Score 3 Standardized	0.11	0.02	-0.11	0.02	p<0.0001
Score 4: Liking	4.51	0.06	4.13	0.06	p<0.0001
Score 4 Standardized	0.08	0.03	-0.08	0.03	p<0.0001

^d p-value for two-sample t-test.
SE = Standard error.

TABLE 4

Predictors of Standardized Appeal Scores in Random Effects Linear Regression Model^a

Outcome Variable	Popular Youth Brands vs. Unpopular Brands		Female Respondents vs. Male Respondents		Underage Youth vs. Young Adults ^b	
	Coefficient	95% CI	Coefficient	95% CI	Coefficient	95% CI
Score 1: Physical and Social Appeal	0.26 [*]	0.20,0.32	-0.12	-0.30,0.06	0.09	-0.07,0.25
Score 2: Appeal to Underage Youth	0.25 [*]	0.19,0.32	-0.08	-0.23,0.07	0.11	-0.02,0.24
Score 3: Perceived Effectiveness	0.21 [*]	0.15,0.28	-0.04	-0.21,0.12	0.01	-0.13,0.15
Score 4: Liking	0.16 [*]	0.10,0.22	-0.21 [*]	-0.41, -0.01	0.07	-0.11,0.24

^a Regression coefficients and 95% confidence intervals are shown for random effects linear regression with standardized appeal score as outcome variable and random effect for each individual respondent.

^b Underage youth respondents are younger than 21 years old; young adult respondents are 21 and older.

CI = Confidence interval.

^{*} Regression coefficient statistically significant at p<0.05.

TABLE 5

Differences in Mean Appeal Scores between Advertisements for Popular versus Unpopular Youth Alcohol Brands, Stratified by Age of Respondents—
Underage Youth vs. Young Adults^a

Outcome Variable	Popular Youth Brands		Unpopular Youth Brands		Two-Sample t-test ^b
	Mean	SE	Mean	SE	
Score 1: Physical and Social Appeal					
Underage youth only	1.87	0.27	0.80	0.26	p<0.01
Young adults only	1.47	0.15	-0.09	0.16	p<0.0001
Score 2: Appeal to Underage Youth					
Underage youth only	0.51	0.10	0.01	0.09	p<0.001
Young adults only	0.28	0.06	-0.20	0.05	p<0.0001
Score 3: Perceived Effectiveness					
Underage youth only	1.84	0.13	1.16	0.14	p<0.001
Young adults only	1.69	0.08	1.12	0.08	p<0.0001
Score 4: Liking					
Underage youth only	4.82	0.13	4.36	0.13	p<0.001
Young adults only	4.43	0.07	4.06	0.07	p<0.02

^a Underage youth respondents are younger than 21 years old; young adult respondents are 21 and older.

^b p-value for two-sample t-test.

SE = Standard error.

TABLE 6
Mean (standard deviation) Scores for Perceived Youth Appeal Measures by Brand and Brand Popularity Category

Brand	Youth Consumption Level (%) ^a	Physical and Social Appeal Score ^b	Appeal to Underage Youth Score ^b	Perceived Effectiveness Score ^b	Liking Score ^b
Popular Youth Brands					
Bud Light	27.9	2.72 (4.08)	1.24 (1.99)	1.67 (2.50)	4.16 (2.16)
Smirnoff vodka	12.7	4.95 (3.54)	1.84 (1.88)	1.90 (2.23)	3.92 (2.21)
Absolut vodka	10.1	3.75 (4.41)	1.22 (1.99)	2.07 (2.69)	4.50 (2.48)
Heineken	9.7	-2.52 (4.32)	-0.77 (1.19)	1.15 (2.84)	4.47 (2.42)
Bacardi rum	9.3	7.79 (2.58)	1.15 (1.98)	3.44 (2.16)	5.68 (2.45)
Miller Lite	7.5	-3.07 (3.54)	0.05 (1.84)	1.35 (2.77)	4.65 (2.20)
Hennessy cognac	5.7	-1.60 (4.78)	-0.51 (1.42)	0.17 (3.11)	3.79 (2.53)
Patron tequila	5.5	0.22 (4.57)	-0.92 (1.02)	2.10 (2.35)	4.92 (2.35)
Jim Beam bourbon	4.0	-0.59 (4.66)	-0.85 (1.16)	2.05 (2.31)	4.80 (2.11)
Skyy vodka	3.6	3.90 (3.52)	0.89 (1.91)	1.33 (2.64)	4.04 (2.29)
Unpopular Youth Brands					
New Belgium	0.4	-2.49 (3.96)	-1.14 (1.05)	1.03 (3.08)	4.42 (2.38)
Crystal Head vodka	0.3	-0.57 (4.79)	0.33 (1.87)	1.10 (2.77)	4.24 (2.39)
Midori liqueur	0.3	7.42 (2.46)	1.76 (1.85)	2.51 (2.36)	4.24 (2.39)
Evan Williams bourbon	0.1	-2.40 (4.52)	-0.94 (1.11)	0.12 (2.69)	3.55 (2.08)
Tito's vodka	0.1	-3.37 (3.68)	-1.01 (1.20)	-0.76 (2.84)	3.01 (1.98)
Freixenet	0.1	4.00 (4.28)	-0.68 (1.30)	2.19 (2.34)	4.83 (2.23)
Patron XO liqueur	0.1	0.90 (4.58)	-0.62 (1.26)	1.62 (2.67)	4.48 (2.25)
Pucker vodka	0.0	2.84 (4.27)	2.16 (1.86)	1.73 (2.65)	4.23 (2.30)
Evan Williams liqueurs	0.0	-2.26 (4.62)	-0.50 (1.49)	1.18 (2.92)	4.16 (2.13)
Pama liqueur	0.0	-3.21 (4.31)	-0.93 (1.21)	0.44 (3.08)	3.90 (2.56)

^aPercentage of underage drinkers who reported consuming each brand in the past 30 days, Youth Alcohol Brand Survey [25].

^bThe five highest mean scores in each column are in bold.