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## Beer advertisements and adolescent drinking knowledge, expectancies, and behavior

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### ABSTRACT

**Objective:** (1) To examine the degree to which overall beer advertising expenditure is related to youth brand awareness, preferences, and drinking behavior, and (2) to use multiple methods, including individual brand awareness and expectancies, to gain a broader understanding of the effects of alcohol advertising on youth alcohol-related expectancies and behavior.

**Method:** Mixed psychological and advertising methods were used to examine how beer advertising is related to adolescents' beer brand awareness, expectancies, and behavior. 1588 7–12th graders were surveyed in two U.S. states.

**Results:** The amount of money spent advertising beer brands was positively correlated with adolescents' brand awareness, preference, use, and loyalty behavior (all correlations above 0.65). Moreover, beer advertising-related variables predicted adolescents' intention to drink and actual alcohol consumption, independent of peer and parent alcohol-related behavior and attitudes.

**Conclusions:** The results show that overall levels of advertising expenditures were strong predictors of adolescents' beer brand awareness, preferences, use, and brand loyalty. Moreover, advertising-related variables were substantial predictors of adolescents' intention to drink as an adult and current underage drinking behavior. Together, the present findings suggest that previous work may have underestimated the relationship between alcohol advertising and adolescents' drinking behavior.

### 1. Introduction

By 8th grade, 23% of adolescents in the United States have consumed alcohol (Johnston et al., 2018). Between 8% (8th grade) and 33% (12th grade) have reported drinking alcohol in the past 30 days and 4% (8th grade) to 17% (12th grade) of adolescents engaged in heavy episodic drinking (i.e., females 4+/males 5+ beverages) in the past two weeks (Johnston et al., 2018). Significant negative consequences have been associated with adolescent alcohol use such as risky sexual behavior, motor vehicle crashes, substance use disorder, and premature death (Marshall, 2014; Patrick & Schulenberg, 2014).

Despite the high prevalence and risks associated with adolescent alcohol use, alcohol advertisements are widespread and easily accessible to adolescents through many types of media such as television, radio, sports events, music concerts, websites, and social media. In 2011, 14 alcohol companies reported spending \$3.45 billion on marketing expenditures - approximately 26% was spent on national/regional/local television advertisements (Federal Trade Commission,

2014). Although alcohol producers have self-regulatory codes that include restrictions on placement and content of advertising to prevent adolescent exposure, code violations are prevalent (Noel, Babor, & Robaina, 2017).

Extant studies have examined adolescent exposure to alcohol advertisements in relation to alcohol-related outcomes (for reviews see Anderson, De Bruijn, Angus, Gordon, & Hastings, 2009; Jernigan, Noel, Landon, Thornton, & Lobstein, 2017). Adolescent exposure to alcohol advertisements is associated with alcohol initiation, persistence of alcohol use, greater adolescent alcohol use, and greater risk of experiencing alcohol-related negative consequences in later adolescence (Anderson et al., 2009; Jernigan et al., 2017). Additionally, studies have examined reasons for engaging in alcohol use within the context of adolescent exposure to alcohol advertisements. Expectancy theory, derived from a social learning basis, was developed to better understand the reasons for an individual's use of substances, where positive and negative beliefs regarding a particular substance affects quantity and frequency of alcohol use (Jones, Corbin, & Fromme, 2001).

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Studies have been mixed regarding alcohol advertising exposure and alcohol expectancies, where some studies have found alcohol advertising exposure leads to more positive alcohol expectancies (Dal Cin et al., 2009; de Bruijn, Tanghe, Beccaria, Buljaski, Celata, Gosselt, & Slowdonik, 2012; Fleming, Thorson, & Atkin, 2004) and others have not (Lipsitz, Brake, Vincent, & Winters, 1993; Martino et al., 2016). The focus on exposure to alcohol-related advertising has been an important step in determining antecedents to adolescent alcohol use. However, a gap in the literature remains in regard to the role of advertising strategies in adolescent alcohol use and advertising exposure.

Advertisers employ specific cognitive and affective strategies to promote brand equity (i.e., effect of brand knowledge on consumer response to brand marketing, for a review see Keller, 2016): brand awareness, brand preference, brand usage, and brand loyalty (Harris, Gordon, MacKintosh, & Hastings, 2015; Keller, 2016). Adolescents are especially sensitive to these strategies relative to brand equity (Harradine & Ross, 2007). Alcohol brand marketing has become an increasingly important element in the daily life of adolescents (Casswell, 2004). However, few studies have examined these cognitive/affective strategies in relation to adolescent alcohol use and the ones that do have so far only examined the roles of brand awareness (Borzekowski, Ross, Jernigan, DeJong, & Siegel, 2015; Harris et al., 2015; Unger, Schuster, Zogg, Dent, & Stacy, 2003) and brand usage (Borzekowski et al., 2015) in adolescent alcohol use. Findings suggested that both strategies were associated with alcohol advertising exposure and risky alcohol use. Given the risks associated with alcohol use and the greater sensitivity to marketing tools experienced by adolescents, it is of critical importance to determine the impact of these cognitive/affective strategies used by advertisers on adolescent alcohol use.

Although much research has focused on advertising exposure, there is less research regarding the relations among strategies used by advertisers, alcohol-related advertising exposure, and adolescent alcohol use. In order to verify that the strategies employed by advertisers are related to brand equity, we used actual expenditures of beer companies to determine the relationship with adolescent brand awareness, brand preference, brand loyalty, and brand usage in addition to more traditional measures of advertising exposure. We then examined the associations of advertisement-related variables (e.g., cognitive/affective advertising strategies, media exposure) and adolescent intention to drink as an adult as well as current alcohol consumption while controlling for perceived peer and parent attitudes and behaviors.

## 2. Method

### 2.1. Participants and procedure

Participants (N = 1588) were recruited from two Midwestern suburban junior high schools, two suburban high schools, and one Eastern urban junior high school in 1999 (148 students in an alternative school for high risk students were also surveyed, but are not reported on here). Students were recruited from mandatory health classes. At each school, teachers were asked to volunteer their classrooms for inclusion. Teachers were trained by study staff to administer surveys assessing demographics, alcohol use, parental and peer attitudes toward alcohol, alcohol expectancies, intention to use alcohol, beer brand awareness and preference, television viewing. Students who returned signed parental consent and provided their assent completed surveys anonymously during one class period, with over 90% of student participation across classes. A majority of the sample was female (51%) and Caucasian (90%). The mean age of respondents was 15.2 (SD = 1.45). Participants represented 3.4% 7th grade, 26.9% 8th grade, 8.8% 9th grade, 23.2% 10th grade, 32.8% 11th grade, and 4.8% 12th grade. Consent procedures outlined by each school were followed. This study was approved by the University of Minnesota Institutional Review Board.

### 2.2. Measures

Participants completed a survey questionnaire based on those used by Grube and his colleagues (e.g., Grube & Wallack, 1994).

#### 2.2.1. Demographics

Demographic items included age, sex, race/ethnicity, and parental level of education (e.g., Some high school up to Graduate or professional school).

#### 2.2.2. Alcohol use

Respondents were asked to indicate frequency of drinking alcoholic beverages in the past year using a Likert-type scale (e.g., 1 = none, 2 = 1 – 2 times in the past 12 months, 5 = About once a month, to 9 = every day). Additionally, participants indicated how often they thought they would drink beer after age 21 (1 = not at all to 6 = almost every day).

#### 2.2.3. Television viewing

Amount of television viewing was measured by asking participants to report number of hours they watch television during 4 time periods, with weekdays and weekends assessed separately (Gentile & Walsh, 2002; Gentile, Berch, Choo, Khoo, & Walsh, 2017). Participants also reported number of sports programs watched during the previous 4 weeks (0 = none to 6 = 7 or more). This question has been used in past research because beer advertising is greater during sports programming than other programming (Madden & Grube, 1994).

#### 2.2.4. Alcohol-related attitudes

Participants were asked to indicate how often they thought their mothers, fathers, best female friends, and best male friends had consumed alcohol in the past year (0 = not at all to 6 = almost every day). Additionally, participants indicated how much they thought their mothers, fathers, best female friends, and best male friends would approve or disapprove of the student's currently using alcohol (0 = would disapprove very much to 5 = would approve very much). Mean scores were calculated for subsequent analyses.

#### 2.2.5. Alcohol-related expectancies

Alcohol-related positive expectancies were assessed using 14 items; negative expectancies were measured using a 5 item questionnaire. Respondents were asked to indicate their agreement with each statement (0 = strongly agree to 5 = strongly disagree).

#### 2.2.6. Brand awareness, preference, usage, and loyalty

To assess brand knowledge, we used measures developed to assess brand marketing effectiveness (Keller, 1993). Students were asked to list the names of all the brands of beer they could think of (unaided brand awareness). Subsequently, respondents were presented with a list of 26 brands of beer and indicated whether they had ever heard of them (aided brand awareness). An open-ended question asked participants to name their favorite brand of alcoholic beverage, regardless of whether they had ever tried it (brand preference). Another item asked students what brands of alcoholic beverages popular kids would drink at a party (brand reputation, Veloutsou & Moutinho, 2009). Brand loyalty was measured by asking students if they owned any alcohol-related products (e.g., t-shirts, posters), and what brands were depicted on them. Brand usage was measured by asking students whether they had ever consumed each of 26 named brands of beer.

### 2.3. Analytic strategy

National aggregates of advertising budgets for 26 beer brands reported for the two years prior to data collection were integrated into an existing data set (full list of brands available upon request). As these data were national (population level data) aggregates (regional and

individual level data were unavailable), only correlation models could be utilized. We correlated advertising budgets with the percentage of adolescents who had heard of (1: brand awareness), preferred (2: brand preference), used (3: brand usage), and shown loyalty to each of those brands (4: brand loyalty).

Multiple regression analyses were then conducted using Johnson's relative weight analysis. This is an appropriate adjustment for collinearity among independent variables and is used to estimate the proportionate contribution each predictor makes to the overall  $R^2$  while considering unique and combined effects associated with other variables (Johnson, 2000, 2001). In model 1, we investigated the proportionate contribution of sex, age, peer and parent approval of drinking, peer and parent frequency of drinking, amount of television and sports watched, number of beer brands identified (both aided and unaided), and positive and negative expectancies about drinking in frequency of drinking in the past year. In model 2, we examined the proportionate contribution sex, age, peer and parent approval of drinking, peer and parent frequency of drinking, the amount of television and sports watched, the number of beer brands identified (both aided and unaided), and positive and negative expectancies about drinking in adolescent's intention to drink beer after age 21.

Structural Equation Modeling was conducted in Mplus version 7.2 (Muthén & Muthén, 2017) to examine the relations among advertising and media, parent and peer approval of drinking, positive drinking attitudes, and adolescent alcohol use (See Fig. 3). A latent variable for advertising and media was created: amount of television watched per week, number of sports programs watched, brand knowledge, brand preference, and brand loyalty. Measurement models indicated that the latent variable had reasonable fit. The fit could have been improved by removing the indicators of media consumption, but we have included them for two reasons. First, they belong theoretically. Second, they demonstrate one of the important empirical results of this study – that traditional measures of media consumption may not capture the influence of advertising as well as measures favored by advertisers, such as brand awareness and preference. Other predictors in the model included parental approval of drinking, peer approval of drinking, and positive drinking attitudes. Sex and age were added as control variables (Fig. 3).

### 3. Results

#### 3.1. Descriptives

The average age of first drink was 13.4 years ( $SD = 2.2$ ). Over half of participants (55%) reported having consumed at least one alcoholic drink (e.g., beer, wine, or liquor) in the past year, 31% percent had consumed 1 + drinks at least once a month in the past year, and 43% had engaged in heavy episodic drinking in the past year (19% for 7th & 8th graders, 40% for 9th/10th, and 54% for 11th/12th). When asked to name their two favorite television advertisements, alcohol-related commercials had the highest level of recall (32%) with 20% of participants identifying Budweiser brand commercials. Other favorite commercials were represented by other products: soft drinks (31%), fashion (19%), automotive (14%), and sports (9%). For brand loyalty, 25% of adolescents reported that they owned alcohol-related products (34% of boys, 17% of girls; 21% of 7th/8th graders, 25% of 9th/10th, and 29% of 11th/12th).

#### 3.2. Advertising-related outcomes

Beer brand advertising budgets strongly predicted the percentage of students who had heard of, preferred, and tried each of 26 brands. Both unaided and aided brand awareness were strongly positively correlated with the amount of money spent to advertise each brand (see Table 1). The percentage of adolescents who named each beer brand as the brand most likely to be consumed by the popular kids at a party was positively

**Table 1**

Correlations between beer brand advertising budgets and adolescent brand awareness, preference, usage, and loyalty.

Adolescent brand perceptions	Beer brand advertising budgets
Brand awareness	
Unaided brand awareness	0.73
Aided brand awareness	0.71
Brand preference	
Personal favorite named brand of beer	0.66
Brand status/prestige among peers	0.72
Brand usage	
Brand used by adolescent	0.79
Brand loyalty	
Brands of alcohol-related products owned	0.63

Note: All correlations are significant at  $p < .001$ .

correlated with advertising budgets. Although slightly weaker, brand awareness, the percentage of adolescents who named each brand as their favorite correlated strongly and positively with the amount of money spent to advertise each brand. Regarding brand loyalty, there was a strong, positive correlation between size of advertising budget and the percentage of students who indicated owning the products with beer advertisements. The strongest correlation was with brand usage – the percentage of students who had personally consumed each of the brands was correlated with the amount of money spent to advertise each brand at  $r = 0.79$ ,  $p < .001$ .

Table 2 displays the top five beer brands (in terms of advertising exposure) and the percentage of students who named them each. As can be seen, Budweiser spent the most money and has the highest percentage of youth who know the brand, prefer it, use it, and have products related to it. Miller spent the next most and has the second highest percentage of youth who named it (in three of the four categories). Coors spent the third highest amount of money on advertising, and has the third highest percentage of youth who named it (in three of the four categories). Although descriptive, these results provide details underlying the correlations in Table 1.

#### 3.3. Adolescent alcohol use behavior

In the overall relative weights regression model examining current drinking behavior, 61% of the variance in alcohol use frequency was accounted for by study variables (Fig. 1;  $F[16,1281] = 133.6$ ,  $p < .001$ ). Brand awareness (both unaided and aided brand awareness) accounted for 10% of the variance. However, television-viewing habits did not account for significant variance (0.6%) in adolescent alcohol use behavior after controlling for the other variables. Peer drinking and approval accounted for the greatest amount of variance in drinking behavior (29%). Parental drinking and approval accounted for 5%. For expectancies, positive expectancies accounted for 11% of variance and negative drinking expectancies accounted for 1% of variance in the model. Demographic variables accounted for 4% of the variance in the model.

Intention to drink beer as an adult was positively correlated with both sports viewing ( $r = 0.21$ ,  $p < .001$ ), weekly amount of television viewing ( $r = 0.09$ ,  $p < .001$ ), and current frequency of alcohol use ( $r = 0.48$ ,  $p < .001$ ). In the relative weights analyses, the overall model accounted for 48% of the variance in intention to drink,  $F(16, 1278) = 80.7$ ,  $p < .001$  (Fig. 2). Aided and unaided brand awareness accounted for 9% of the variance in intention to drink. The amount of television watched per week and the number of sports programs watched in the past month accounted for 2% of the variance. Positive alcohol expectancies accounted for the greatest amount of variance (14%). Negative alcohol expectancies accounted for 3% of the variance. Peer drinking and approval accounted for 10%, and parental drinking

**Table 2**  
Brand awareness, preference, usage, and loyalty among 7th–12th grade students for top five advertised brands.

Top Five Advertised Brands*	Advertising Budget	Brand Awareness	Brand Preference	Brand Usage	Brand Loyalty
Budweiser/Bud Light	\$492,232,000	99%	28%	44%	54%
Miller Genuine Draft/Miller Lite	\$262,362,400	97%	8%	39%	6%
Coors/Coors Light	\$224,239,800	90%	1%	22%	9%
Corona/Corona Extra	\$34,532,000	65%	4%	20%	10%
Heineken	\$34,392,200	79%	3%	20%	1%

\* Note: Brands with similar names have been combined for this table.

and approval accounted for 5% of the variance. Demographic variables accounted for 4% of the variance in the model.

Fig. 3 illustrates the relations among advertising and media, parent and peer approval of drinking, positive drinking attitudes, and adolescent alcohol use. Loadings for advertising and media ranged from 0.03 to 0.64,  $ps < 0.001$  except hours per week, which was not significant. Notably, the brand knowledge (unaided brand awareness = 0.62; aided brand awareness = 0.64 and brand loyalty 0.53) indicators had the highest loadings. Although brand preference (0.12) had a lower loading than sports programs (0.25), the loading was significant whereas amount of television per week (0.03) was not significant. Overall model fit was adequate ( $X^2 = 275.20$ ,  $df = 27$ ,  $p < .001$ ; RMSEA = 0.08; CFI = 0.94; SRMR = 0.04).

Advertising and media had the largest relations with positive drinking attitudes and adolescent alcohol use. As expected, positive expectancies were significantly predicted by advertising-related variables, parent approval of drinking, and peer approval of drinking, controlling for sex and age. These variables explained 46% of the variance in positive alcohol expectancies. Positive expectancies in turn significantly predicted the frequency of underage drinking (total  $R^2$  for frequency of drinking = 0.52). The effect of advertising and the media was partially mediated through positive expectancies (indirect  $\beta = 0.06$ ,  $p < .001$ ), as were the effects of parent approval of drinking (indirect  $\beta = 0.01$ ,  $p < .05$ ) and peer approval of drinking (indirect  $\beta = 0.06$ ,  $p < .001$ ).

#### 4. Discussion

Findings indicate that beer-advertising expenditures are positively correlated with adolescent brand receptivity. Notably, all correlations obtained were greater than 0.65, including the correlation with actual brand use ( $r = 0.79$ ). This suggests that previous research might have underestimated the magnitude of the effects of alcohol-related advertising exposure. Furthermore, the effects of alcohol-related advertisement exposure on adolescent alcohol use was not solely demonstrated by a gross measure of media exposure and instead highlighted the importance of examining brand receptivity domains, as they are the primary method in which advertisers measure brand equity. Although, this study does not provide evidence of beer companies' intention to target adolescents, it does highlight the need to restrict alcohol-related promotions that target adolescents, as suggested by the World Health Organization (WHO) in the global strategy aimed at reducing alcohol-related harms (World Health Organization, 2010).

Brand receptivity, specifically brand awareness, accounted for substantial variance in current adolescent alcohol use and adolescent intention to use alcohol. Indeed, brand awareness constituted more variance than television viewing or watching sports programs with positive expectancies encompassing the most variance associated with adolescent alcohol use. Considering that brand awareness and positive drinking expectancies are developed, in part, as a result of media-related exposure (Austin, Chen, & Grube, 2006), these findings are theoretically supported. Indeed, positive expectancies (Dal Cin et al., 2009; de Bruijn, Tanghe, Beccaria, Buljaski, Celata, Gosselt, and Slowdonik,

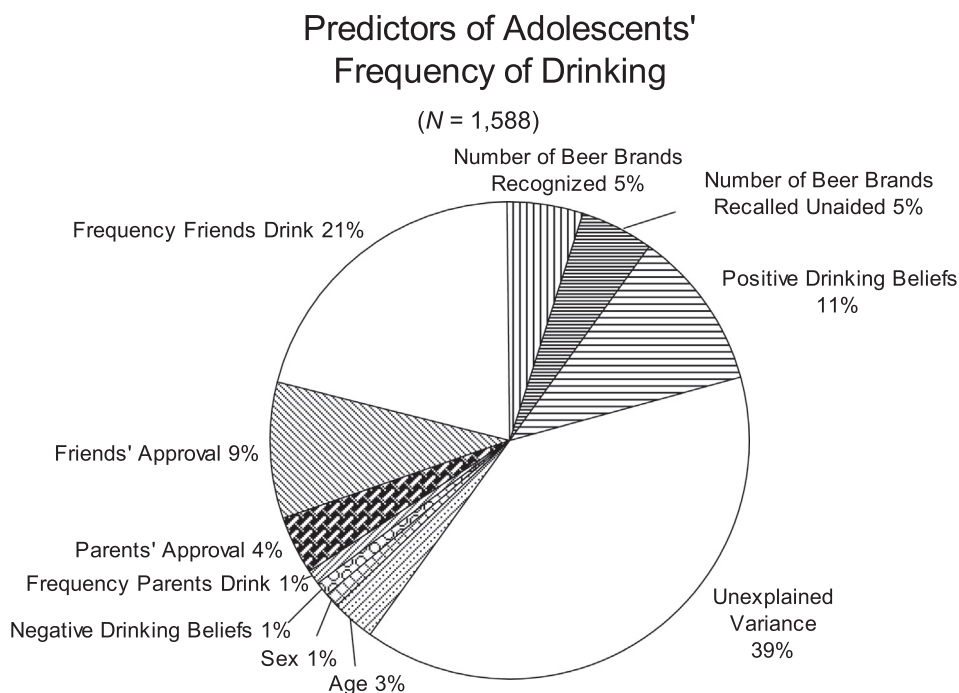


Fig. 1. Relative weights analysis of the variance in adolescents' frequency of drinking alcohol explained by multiple predictors.

### Predictors of Adolescents' Intention to Drink (N = 1,588)

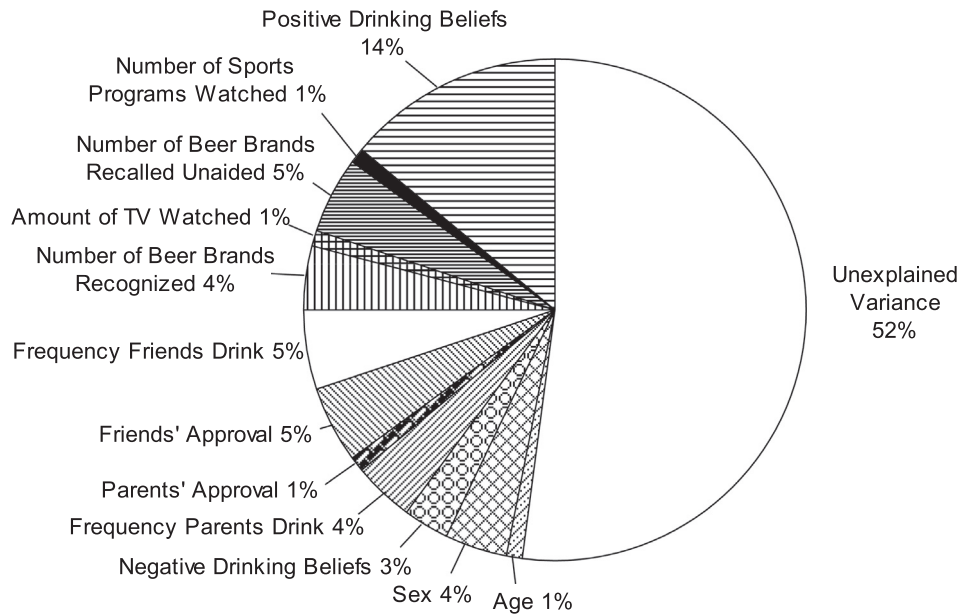


Fig. 2. Relative weights analysis of the variance in adolescents' intention to drink beer as an adult explained by multiple predictors.

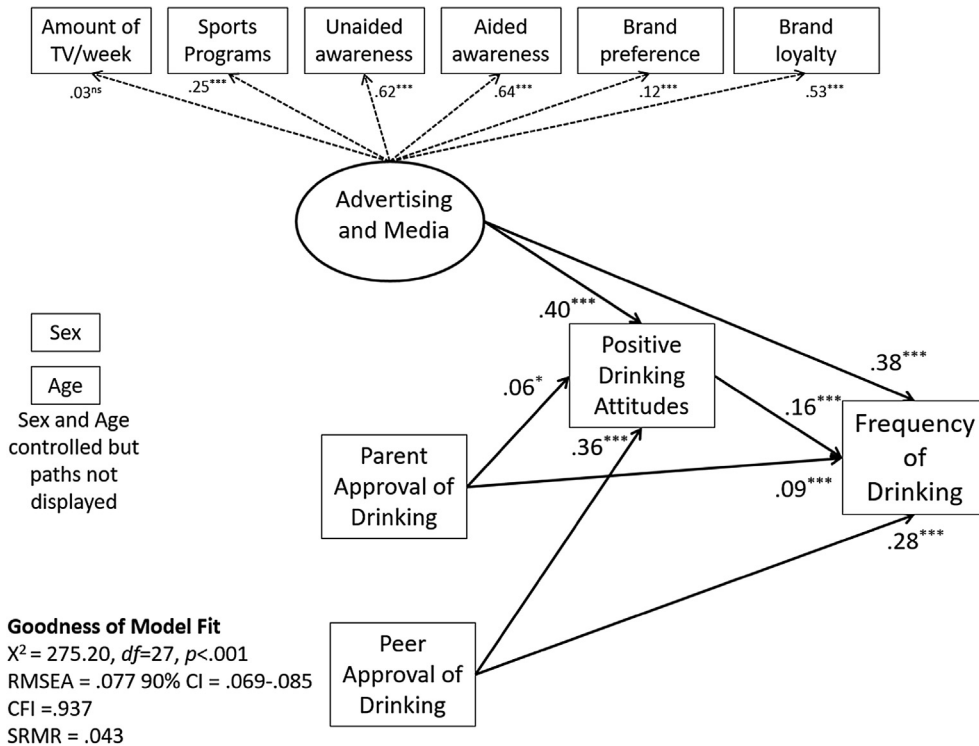


Fig. 3. Relations among advertising and media, parent and peer approval of alcohol use, positive drinking attitudes, and adolescent alcohol use. Note: All path coefficients are standardized. \*p < .05; \*\*p < .01; \*\*\*p < .001.

2012; Felming, Thorson, & Atkin, 2004), brand awareness (Borzekowski et al., 2015; Harris et al., 2015; Unger et al., 2003), and brand usage (Ross et al., 2014) have been linked to alcohol advertising. Although parents and peers may influence adolescent brand awareness and positive drinking exposure, reciprocally, alcohol-specific media exposure also influences parents and peers. Thus, further research is needed to tease apart the effects of direct media, indirect media, and

parent/peer attitudes toward alcohol in relation to adolescent alcohol use.

When including brand receptivity domains in a latent variable of advertising and media to determine relations with adolescent alcohol use, brand awareness and brand loyalty had the highest loadings and brand preference had a higher loading than amount of television watched per week. This finding suggests that the alcohol marketing

industry is particularly adept at creating advertising messages that increase the familiarity of a product name and at integrating the specific brands into potential users' self-and social-images (Casswell, 2004). Furthermore, the inclusion of brand receptivity domains such as brand preference and brand loyalty along with brand awareness indicates that exposure to alcohol-related advertising and media has a robust association with adolescent alcohol use at a similar magnitude as peer and parent attitudes toward alcohol use. These results, along with others demonstrating that adolescents recognize and enjoy beer advertisements, slogans, and mascots (Grenard, Dent, & Stacy, 2013), suggest that beer advertising is attractive to adolescents and is likely a major contributor to underage drinking.

There were limitations to this study. Although a large sample was used, these findings may not be generalizable to other race/ethnicities and regions in the U.S. Additionally, a cross-sectional approach was used and temporal relations could not be examined, although expenditure data were from the year prior and year of data collection. Even though the results are consistent with causal theories of advertising effects, causal inferences cannot be made. Furthermore, it is unlikely that adolescents' drinking would cause differences in beer companies' prior advertising expenditures. Because the study used self-report, there is potential for recall and social desirability biases.

The study is also limited by the somewhat global measures, such as national spending per brand. National spending may underestimate the effects if there are significant differences in marketing strategy and spending by region. It may be possible in the future to examine advertising expenditures at the local level and by medium.

In sum, the present study used a unique approach to examine the effect of media exposure to adolescent alcohol use. Given the public health implications of adolescent drinking, it is useful to recognize the targeted strategies that advertisers use to influence brand awareness, preference, loyalty, and use. Understanding the role of actual expenditures of beer companies on brand receptivity domains in relation to adolescent alcohol use has implications for policy and regulations in relation to the alcohol industry. Considering the alcohol industry is currently self-regulated, there is preliminary evidence here to suggest the status quo may not be effective at reducing adolescent exposure to alcohol-related advertisements. Unlike the successful advertising regulations imposed on the tobacco industry to curb adolescent smoking, further regulation regarding alcohol advertising exposure is critical in reducing the harms associated with adolescent alcohol use.

#### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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#### References

- Anderson, P., De Bruijn, A., Angus, K., Gordon, R., & Hastings, G. (2009). Impact of alcohol advertising and media exposure on adolescent alcohol use: A systematic review of longitudinal studies. *Alcohol Alcoholism*, 44(3), 229–243.
- Austin, E. W., Chen, M., & Grube, J. W. (2006). How does alcohol advertising influence

- underage drinking? The role of desirability, identification and skepticism. *Journal of Adolescent Health*, 38, 376–384.
- Borzekowski, D. L., Ross, C. S., Jernigan, D. H., DeJong, W., & Siegel, M. (2015). Patterns of media use and alcohol brand consumption among underage drinking youth in the United States. *Journal of Health Communication*, 20(3), 314–320.
- Casswell, S. (2004). Alcohol brands in young peoples' everyday lives: New developments in marketing. *Alcohol and Alcoholism*, 39, 471–476.
- Dal Cin, S., Worth, K. A., Gerrard, M., Gibbons, F. X., Stoolmiller, M., Wills, T. A., & Sargent, J. D. (2009). Watching and drinking: Expectancies, prototypes, and friends' alcohol use mediate the effect of exposure to alcohol use in movies on adolescent drinking. *Health Psychology*, 28(4), 473.
- de Bruijn, A., Tanghe, J., Beccaria, F., Buljaski, M., Celata, C., Gosselt, J., ... & Slowdonik, L. (2012). Report on the impact of European alcohol marketing exposure on youth alcohol expectancies and youth drinking.
- Federal Trade Commission (2014). Self-regulation in the alcohol industry.
- Fleming, K., Thorson, E., & Atkin, C. K. (2004). Alcohol advertising exposure and perceptions: Links with alcohol expectancies and intentions to drink or drinking in underaged youth and young adults. *Journal of Health Communication*, 9(1), 3–29.
- Gentile, D. A., Berch, O. N., Choo, H., Khoo, A., & Walsh, D. A. (2017). Bedroom media: One risk factor for development. *Developmental Psychology*, 53, 2340–2355. <https://doi.org/10.1037/dev0000399>.
- Gentile, D. A., & Walsh, D. A. (2002). A normative study of family media habits. *Journal of Applied Developmental Psychology*, 23, 157–178.
- Grenard, J. L., Dent, C. W., & Stacy, A. W. (2013). Exposure to alcohol advertisements and teenage alcohol-related problems. *Pediatrics*, 131(2), e369–e379.
- Grube, J. W., & Wallack, L. (1994). Television beer advertising and drinking knowledge, beliefs, and intentions among schoolchildren. *American Journal of Public Health*, 84, 254–259.
- Harradine, R., & Ross, J. (2007). Branding: A generation gap? *Journal of Fashion Marketing and Management: An International Journal*, 11(2), 189–200.
- Harris, F., Gordon, R., MacKintosh, A. M., & Hastings, G. (2015). Consumer socialization and the role of branding in hazardous adolescent drinking. *Psychology & Marketing*, 32(12), 1175–1190.
- Jernigan, D., Noel, J., Landon, J., Thornton, N., & Lobstein, T. (2017). Alcohol marketing and youth alcohol consumption: A systematic review of longitudinal studies published since 2008. *Addiction*, 112, 7–20.
- Johnson, J. W. (2000). A heuristic method for estimating the relative weight of predictor variables in multiple regression. *Multivariate Behavioral Research*, 35, 1–19.
- Johnson, J. W. (2001). Determining the relative importance of predictors in multiple regression: Practical applications of relative weights. In F. Columbus' (Vol. Ed.), *Advances in psychology research: Vol. 5*, (pp. 231–251). Huntington, NY: Nova Science Publishers.
- Johnston, L. D., Miech, R. A., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E., & Patrick, M. E. (2018). *Monitoring the Future national survey results on drug use, 1975–2015: Overview, key findings on adolescent drug use*. Ann Arbor: Institute for Social Research, University of Michigan.
- Jones, B. T., Corbin, W., & Fromme, K. (2001). A review of expectancy theory and alcohol consumption. *Addiction*, 96(1), 57–72.
- Keller, K. L. (1993). Conceptualizing, measuring, and managing customer-based brand equity. *Journal of Marketing*, 57(1), 1–22.
- Keller, K. L. (2016). Reflections on customer-based brand equity: Perspectives, progress, and priorities. *AMS Review*, 6(1–2), 1–16.
- Lipsitz, A., Brake, G., Vincent, E. J., & Winters, M. (1993). Another round for the brewers: Television ads and children's alcohol expectancies. *Journal of Applied Social Psychology*, 23(6), 439–450.
- Marshall, E. J. (2014). Adolescent alcohol use: Risks and consequences. *Alcohol Alcoholism*, 49(2), 160–164.
- Martino, S. C., Kovalchik, S. A., Collins, R. L., Becker, K. M., Shadel, W. G., & D'Amico, E. J. (2016). Ecological momentary assessment of the association between exposure to alcohol advertising and early adolescents' beliefs about alcohol. *Journal of Adolescent Health*, 58(1), 85–91.
- Muthén, L. K., & Muthén, B. (2017). *Mplus user's guide: Statistical analysis with latent variables, user's guide*.
- Noel, J. K., Babor, T. F., & Robaina, K. (2017). Industry self-regulation of alcohol marketing: A systematic review of content and exposure research. *Addiction*, 112, 28–50.
- Patrick, M. E., & Schulenberg, J. E. (2014). Prevalence and predictors of adolescent alcohol use and binge drinking in the United States. *Alcohol Research: Current Reviews*, 35, 193–200.
- Ross, C. S., Ostroff, J., Siegel, M. B., DeJong, W., Naimi, T. S., & Jernigan, D. H. (2014). Youth alcohol brand consumption and exposure to brand advertising in magazines. *Journal of Studies on Alcohol and Drugs*, 75(4), 615–622.
- Unger, J. B., Schuster, D., Zogg, J., Dent, C. W., & Stacy, A. W. (2003). Alcohol advertising exposure and adolescent alcohol use: A comparison of exposure measures. *Addiction Research and Theory*, 11(3), 177–193.
- Veloutsou, C., & Moutinho, L. (2009). Brand relationships through brand reputation and brand tribalism. *Journal of Business Research*, 62, 314–322.
- World Health Organization (2010). *Global Strategy to reduce the harmful use of alcohol*.