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ORIGINAL ARTICLE

## Associations Between Thematic Content and Industry Self-Regulation Code Violations in Beer Advertising Broadcast During the U.S. NCAA Basketball Tournament

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### ABSTRACT

*Background:* Beer marketing in the United States is controlled through self-regulation, whereby the beer industry has created a marketing code and enforces its use. We performed a thematic content analysis on beer ads broadcast during a U.S. college athletic event and determined which themes are associated with violations of a self-regulated alcohol marketing code. *Methods:* 289 beer ads broadcast during the U.S. NCAA Men's and Women's 1999–2008 basketball tournaments were assessed for the presence of 23 thematic content areas. Associations between themes and violations of the U.S. Beer Institute's Marketing and Advertising Code were determined using generalized linear models. *Results:* Humor (61.3%), taste (61.0%), masculinity (49.2%), and enjoyment (36.5%) were the most prevalent content areas. Nine content areas (i.e., conformity, ethnicity, sensation seeking, sociability, romance, special occasions, text responsibility messages, tradition, and individuality) were positively associated with code violations ( $p < 0.001$ – $0.042$ ). There were significantly more content areas positively associated with code violations than content areas negatively associated with code violations ( $p < 0.001$ ). *Conclusions:* Several thematic content areas were positively associated with code violations. The results can inform existing efforts to revise self-regulated alcohol marketing codes to ensure better protection of vulnerable populations. The use of several themes is concerning in relation to adolescent alcohol use and health disparities.

### KEYWORDS

Alcohol; marketing; advertising; self-regulation; adolescents

Alcohol use is responsible for 88,000 deaths, including approximately 4400 youth, and 2.5 million potential years old life lost in the United States (U.S.) each year (Centers for Disease Control and Prevention, n.d.; Stahre, Roeber, Kanny, Brewer, & Zhang, 2014). The economic costs of excessive alcohol consumption amount to approximately \$250 billion annually (Sacks, Gonzales, Bouchery, Tomedi, & Brewer, 2015). Youth are particularly vulnerable to alcohol-related consequences. Eleven percent of all alcohol in the United States is consumed by 12–20 year olds, primarily in the form of binge drinking (Office of Juvenile Justice and Delinquency Prevention, 2005), and there were 189,000 alcohol-attributable emergency room visits by youth in 2010 (Center for Behavioral Health Statistics and Quality, 2012). Early alcohol initiation is also associated with a greater probability of developing alcohol dependence or abuse later in life (Substance Abuse and Mental Health Services Administration, 2014). In 2013, 35% of U.S. high school students drank alcohol in the past 30 days, and the past 30-day rate of

heavy episodic (binge) drinking was approximately 21% (Kann et al., 2014).

Youth are regularly exposed to, and consistently demonstrate high awareness of, alcohol marketing. In the United States, 15–20 year olds reported seeing 2.79 magazine ads, hearing 1.59 radio ads, and seeing 2.48 billboards for distilled spirits per week (Fleming, Thorson, & Atkin, 2004). Australian youth reported seeing up to 5.4 alcohol ads per week (Fielder, Donovan, & Ouschan, 2009). In Brazil, 78.1% of teens reported seeing any alcohol ads in the past week (Pinsky et al., 2010), while 77% of Scottish 12–14 year olds demonstrated awareness of alcohol advertising on television (Gordon, MacKintosh, & Moodie, 2010). A high density of alcohol ads has been documented in public settings frequented by youth, including schools, churches, playgrounds, and public transportation (Gentry et al., 2011; Kwate, Jernigan, & Lee, 2007; McKee, Jones-Webb, Hannan, & Pham, 2011; Nyborn, Wukitsch, Nhean, & Siegel, 2009). Awareness of online alcohol marketing activities is high among youth in several countries

(Jones & Magee, 2011; Lin, Caswell, You, & Huckle, 2012), and the volume of alcohol marketing on social media platforms has been increasing over time (Winpenny, Marteau, & Nolte, 2014). Moreover, per capita alcohol ad exposure may be increasing fastest among youth populations (Jernigan, Ostroff, & Ross, 2005).

Alcohol ad exposure is linked to increased alcohol consumption. Twelve of thirteen studies analyzed in a review of the impact of alcohol marketing on youth concluded that marketing activities increased either alcohol initiation or alcohol consumption (Anderson, de Bruijn, Angus, Gordon, & Hastings, 2009). The 13th study concluded that marketing activities increased intentions to drink. Using more stringent inclusion and exclusion criteria, a separate review of seven cohort studies found a modest association between alcohol advertising exposure and alcohol consumption in youth (Smith & Foxcroft, 2009). Other studies have demonstrated that youth exposure to alcohol ads increases the risk for experiencing alcohol-related problems later in adolescence and that being able to name a favorite alcohol ad is a marker for binge drinking (Grenard, Dent, & Stacy, 2013; Morgenstern et al., 2014). Moreover, a modeling study found that a 28% reduction in alcohol advertising was associated with reductions of 16% and 33% in youth drinking and youth binge drinking, respectively (Saffer & Dave, 2006).

To protect youth and other vulnerable populations from the effects of alcohol marketing, the alcohol industry has promoted self-regulated marketing and advertising codes as a method to restrict exposure to harmful content (International Center for Alcohol Policies, 2011). Published by the International Alliance for Responsible Drinking (IARD), an alcohol industry funded organization formerly known as the International Center for Alcohol Policies, the *Guiding Principles: Self-Regulation of Marketing Communications for Beverage Alcohol* (Guiding Principles) was designed to cover all alcoholic products and marketing in all media. The Guiding Principles prohibit alcohol marketing to be placed in any media where the audience composition is less than 70% above the legal purchase age and contain several guidelines restricting advertising content, grouped within the following categories: responsible marketing communications, responsible consumption, health and safety, minors, and the effects of alcohol. Key guidelines include prohibitions on the use of content that can be appealing to minors and content addressed at vulnerable groups, such as pregnant women and children. In the United States, alcohol marketing self-regulation is largely product specific. Principally beer, wine, and distilled spirits producers follow marketing codes published by the U.S. Beer Institute (2011), the Wine Institute (2011), and the Distilled Spirits

Council of the United States (2011). The guidelines contained within these codes are similar to IARD's Guiding Principles.

Systematic evaluations of both the exposure and content guidelines of self-regulated alcohol marketing codes have shown them to be ineffective. In the 25 largest U.S. markets in 2010, 23.7% of alcohol ads and 33% of alcohol ad impressions on television occurred during programming with audiences consisting of greater than 30% youth (Jernigan, Ross, Ostroff, McKnight-Eily, & Brewer, 2013). Between 2005 and 2012, there were 15.2 billion alcohol ad impressions on television that were noncompliant with existing alcohol marketing self-regulated codes (Ross, Brewer, & Jernigan, 2016). In 2011, magazine ads for eleven of the alcohol brands most consumed by youth generated more ad exposure for males 18–20 years old than all other age groups (Ross et al., 2014). For females 18–20 years old, 16 of the alcohol brands most consumed by youth generated more ad exposure than all other age groups. Moreover, up to 74% of unique alcohol ads broadcast on U.S. television may contain violations of the content guidelines of the codes, depending on code version and scoring algorithm used (Babor, Xuan, Damon, & Noel, 2013). Similar violation rates have been reported for digital content produced by U.K. alcohol brands (Gordon, 2011b).

Several content analyses of alcohol ads without regard to a marketing code have been conducted, although relatively few have been performed on television ads. In U.S. television ads, themes of camaraderie, relaxation, and humor predominated in the early 1980s (Finn & Strickland, 1982). The use of these themes continued into the early 2000s, with the addition of masculinity and sex appeal, particularly when female characters were shown (Austin & Hust, 2005). The use of youth-oriented content, such as cartoons and animals, has also been documented (Pasch, Komro, Perry, Hearst, & Farbaksh, 2009).

Few content analyses of alcohol ads broadcast on television have been performed. Furthermore, despite a number of studies identifying thematic content used in alcohol ads and other studies determining rates of violations of the alcohol industry's self-regulated marketing code, no study has systematically associated alcohol ad content with code violations. That is, no study has determined which content used in alcohol advertising may be potentially harmful based on its association with violations of a marketing code. Since marketing codes are designed to protect vulnerable groups, content that violates a marketing code may be particularly harmful to these populations. We performed a thematic content analysis on a set of advertisements that were previously rated for code violations. Associations between thematic content and

code violations were determined using generalized linear models.

## Methods

### Ad selection

In a previous study, all unique beer ads ( $N = 289$ ) broadcast during the 1999–2008 men's and women's NCAA basketball tournament were rated for violations of the U.S. Beer Institute Code (Babor et al., 2013). All of these advertisements were included in this study.

### Ad characterization

For each ad, the year of broadcast, alcohol producer (Anheuser-Busch, SABMiller, Other), type of game (Men's, Women's, or either Men's or Women's games) and the type of beer (Light, Regular, or Flavored Malt Beverages) was recorded. An "Other" category was created for a diverse group of smaller alcohol producers other than Anheuser-Busch and SABMiller. For game type, the "either Men's or Women's game" category was created because individual broadcasts of the same ad could have occurred in either a Men's game or a Women's game, but such distinctions are lost when aggregating by the total number of times broadcast.

### Code violations

Code violation ratings were based on the 2006 U.S. Beer Institute Marketing and Advertising code. These ratings have been previously published and the results from the previous study have been carried over to the current analysis (Babor et al., 2013). Briefly, the ads were rated for violations using the Delphi technique, which is a procedure involving multiple rounds of rating to build group consensus (Hasson, Keeney, & McKenna, 2000), and using a questionnaire specifically designed to detect violations in a self-regulated alcohol marketing code (Babor, Xuan, & Proctor, 2008). The questionnaire contained three types of questions. First, five-point Likert scale questions were used to assess the participant's level of agreement with a statement of fact or opinion (e.g., "This ad depicts the image of Santa Claus"). The response categories ranged from strongly disagree to strongly agree. Second, participants were asked to determine the apparent age of the main character of the ad (e.g., "How old do you think this actor is?") or which age group the ad would primarily appeal to (e.g., "The images in this ad are most appeal to which of the following age groups: below 21; between 21 and 30; between 31 and 40; between 41 and 50; above 50?"). Third, participants were asked to assess how much alcohol

consumption was taking place in the situation shown in the ad (e.g., "How many drinks do you estimate this person is likely to consume in the situation shown in the ad?").

Although several algorithms used to calculate violations were tested in the previous study, a violation in the present study was defined using the frequency criterion, which used an aggregate scoring algorithm that required a majority of 15 expert raters to rate the advertisement in violation of a guideline (Babor et al., 2013). For example, a violation would occur if more than 50% of the experts agreed or strongly agreed "This ad depicts situations where beer is being consumed excessively." This criterion is a conservative approach to defining code violations that still prevents any single rating from influencing the final determination of a violation. The "experts" who rated the ads were public health professionals who had experience or expertise in public health, mental health, communications, alcoholism treatment, or substance abuse research.

### Content ratings

A separate procedure was used to identify thematic content in the ads. Each ad was rated for the presence of 27 preliminary thematic content areas. Of these, 26 were previously described by others (Austin & Hust, 2005; Finn & Strickland, 1982; Pasch et al., 2009; Pinsky & Silva, 1999). A 27th category was formed when responsibility messages were subdivided into text or spoken messages. Due to overlapping definitions used in previous studies, several categories were collapsed or eliminated. Three categories (health benefit, carbs, and calories) were collapsed into a "Health" category. The categories of violence and action/adventure were collapsed into a "Sensation Seeking" category. Thus, the following 23 content areas were investigated: animals, conformity, enjoyment, ethnicity, happiness, health, humor, individuality, irony, masculinity, quality, relaxation, religion, responsibility messages: spoken, responsibility messages: text, romance, self-reward, sensation seeking, sex, special occasion, sociability, taste, and tradition.

Three raters who had experience conducting public health, substance use, and marketing research were recruited to rate the ads for content. All three rated the first 50 ads, with substantial to perfect item-level interrater reliability (ICCs = 0.703–1.00). For the remaining 239 ads, 191 were rated by raters 1 and 2, and 48 were rated by raters 1 and 3. Item-level interrater reliability between raters 1 and 2 (ICCs = 0.798–1.00) and between raters 1 and 3 (ICCs = 0.701–1.00) was also substantial to perfect. Ads were rated separately and responses were recorded on paper worksheets. For ads that were rated by two raters, the presence of a content area was defined as both raters

agreeing the content area was present, and the absence of a content area was defined as when at least one rater determined the content area was not present. For ads that were rated by three raters, the presence of a content area was defined as when two or more raters agreed the content area was present, and the absence of a content area was defined as when two or more raters agreed the content area was not present.

### Statistical analysis

To determine which content areas were associated with code violations, generalized linear models with a Poisson distribution and a Log link function were used with an iterative, backward selection process. The total number of violations per ad was specified as the dependent variable. All content areas were included in the model during the first iteration except for religion, sex, and humor. Religion and sex were excluded because by definition each is a violation of the U.S. Beer Institute Code. Humor was excluded because by definition it is not a violation. Non-significant content areas were removed and the process repeated until a stable model was produced. Since a single ad can contain multiple content areas simultaneously, content areas positively associated with code violations (CAPs) and content areas negatively associated with code violations (CANs) were collapsed into two continuous variables. The total number of CAPs versus CANs per broadcast was compared using a paired *t* test.

Statistical analysis was performed using SPSS Version 22.0 (Armonk, NY: IBM Corp.). All analyses were weighted by the number of times an ad was broadcast unless otherwise noted. Statistical significance was set at 0.05 *a priori*. This study was approved by the Institutional Review Board within the University of Connecticut Health Center Human Subjects Protection Office.

### Results

There were 1747 broadcasts of the 289 ads included in the study (Table 1). Taste occurred in the majority of broadcasts and ads (61.0% and 57.8%) while humor occurred in a majority of all broadcasts (61.3%). Masculinity (49.2% and 44.3%) and enjoyment (36.5% and 34.6%) occurred in over one-third of all broadcasts and ads, respectively. Irony was absent from all broadcasts. Text responsibility messages (e.g., "Drink Responsibly") were present in 21.5% of ads and 25.2% of broadcasts. Spoken responsibility messages were present in only 3.1% of ads and 2.2% of broadcasts. The code violation rate was 63.9% among the broadcasts and 61.6% among the ads (Table 2).

Broadcasts were distributed evenly between study years, with each contributing between 7.3% and 12.9% of

**Table 1.** Frequency of thematic content areas.

Content area	Number of times broadcast (%)	Number of unique ads (%)
Humor	1071 (61.3)	144 (49.8)
Taste	1066 (61.0)	167 (57.8)
Masculinity	859 (49.2)	128 (44.3)
Enjoyment	637 (36.5)	100 (34.6)
Sociability	481 (27.5)	82 (28.4)
Responsibility message: Text	441 (25.2)	62 (21.5)
Sensation seeking	420 (24.0)	69 (23.9)
Romance	404 (23.1)	59 (20.4)
Individuality	378 (21.6)	69 (23.9)
Sex	322 (18.4)	52 (18.0)
Health	228 (13.1)	37 (12.8)
Special occasion	211 (12.1)	38 (13.1)
Self-reward	199 (11.4)	26 (9.0)
Tradition	187 (10.7)	40 (13.8)
Animals	172 (9.8)	28 (9.7)
Ethnicity	145 (8.3)	21 (7.3)
Quality	109 (6.2)	28 (9.7)
Happiness	105 (6.0)	23 (8.0)
Relaxation	83 (4.8)	20 (6.9)
Responsibility message: Spoken	39 (2.2)	9 (3.1)
Conformity	28 (1.6)	7 (2.4)
Religion	7 (0.4)	1 (0.3)
Irony	0 (0.0)	0 (0.0)
Total	1747 (100)	289 (100)

broadcasts (Table 2). Approximately 60% of all broadcasts and ads were produced by Anheuser-Busch. Most broadcasts were for light beer (62.6%) and only broadcast during Men's games (63.3%).

Two iterations were required before a stable model associating thematic content areas with code violations was produced. Nine content areas were identified as

**Table 2.** Ad and broadcast characteristics.

Variable	Broadcasts	Ads
CAP per broadcast*	1.54 (1.20)	1.55 (1.22)
CAN per broadcast*	0.69 (0.73)	0.69 (0.73)
Code violations**	1117 (63.9)	178 (61.6)
Year of broadcast**		
1999	144 (8.2)	27 (9.3)
2000	127 (7.3)	28 (9.7)
2001	151 (8.6)	31 (10.7)
2002	193 (11.0)	36 (12.5)
2003	189 (10.8)	35 (12.1)
2004	200 (11.4)	28 (9.7)
2005	191 (10.9)	32 (11.1)
2006	161 (9.2)	27 (9.3)
2007	166 (9.5)	20 (6.9)
2008	225 (12.9)	25 (8.7)
Producer**		
Anheuser-Busch	1010 (57.8)	180 (62.3)
SABMiller	481 (27.5)	70 (24.2)
Other	256 (14.7)	39 (13.5)
Beer type**		
Light	1093 (62.6)	184 (63.7)
Regular	516 (29.5)	89 (30.8)
Flavored malt beverages	138 (7.9)	16 (5.5)
Game type**		
Men's only	1105 (63.3)	170 (58.8)
Either men's or women's	343 (19.6)	59 (20.4)
Women's only	299 (17.1)	60 (20.8)

\*Mean (SD); \*\*Number (%).

**Table 3.** Content areas significantly associated with code violations.

Content area	$\beta$	95% CI	Wald $\chi^2$	$p$
<b>CAPs</b>				
Conformity	0.51	0.28, 0.74	18.26	< 0.001
Ethnicity	0.39	0.25, 0.54	29.76	< 0.001
Sensation seeking	0.33	0.24, 0.42	51.44	< 0.001
Sociability	0.32	0.24, 0.40	56.75	< 0.001
Romance	0.30	0.21, 0.39	44.36	< 0.001
Special occasion	0.28	0.19, 0.38	37.70	< 0.001
Responsibility Message: Text	0.23	0.13, 0.33	21.51	< 0.001
Tradition	0.14	0.01, 0.27	4.14	0.042
Individuality	0.11	0.03, 0.20	6.84	0.009
<b>CANs</b>				
Quality	-2.35	-2.91, -1.79	68.59	< 0.001
Self-reward	-0.61	-0.76, -0.47	71.17	< 0.001
Responsibility message: Spoken	-0.45	-0.76, -0.13	7.77	0.005
Health	-0.25	-0.38, -0.11	13.13	< 0.001
Enjoyment	-0.09	-0.18, -0.01	5.12	0.24

CAPs, and five content areas were identified as CANs (Table 3). CAPs were associated with an approximate 0.1 to 0.5 increase in violations per broadcast. There was greater variability in the coefficients for CANs. Interestingly, text responsibility messages ( $\beta$  (95%CI) = 0.23 (0.13, 0.33),  $p < 0.001$ ) were identified as a CAP while spoken responsibility messages ( $\beta$  (95% CI) = -0.45 (-0.76, -0.13),  $p = 0.005$ ) were identified as a CAN. There were significantly more CAPs (mean (SD) = 1.54 (1.20)) than CANs (mean (SD) = 0.69 (0.73)) per broadcast ( $t$  (1746) = 28.354,  $p < 0.001$ ; Table 2).

## Discussion

Thematic content used in beer ads is both positively and negatively associated with violations of the U.S. Beer Institute's self-regulated marketing and advertising code. Themes positively associated with code violations (i.e. conformity, ethnicity, sensation seeking, sociability, romance, special occasions, text responsibility messages, tradition, and individuality) may be considered potentially harmful to vulnerable populations.

Reducing the number of CAPs used in beer advertisements while promoting the use of CANs may reduce the number of ads that violate existing self-regulated alcohol marketing codes and potentially better protect populations that may be vulnerable to beer marketing. Several public health researchers have called for changes in alcohol marketing codes, particularly where self-regulation dominates (Babor et al., 2010; Gordon, 2011a; Hastings & Sheron, 2013), and these results can inform such efforts. However, achieving such changes may be difficult. While self-regulation has worked in other industries, these regulations were required to ensure economic viability of the industry (Sharma, Teret, & Brownell, 2010). The alcohol industry is unlikely to have a similar opinion on regulations that restrict their ability to reach existing and new customers.

If pledges by the alcohol industry to protect vulnerable populations are followed, these findings can inform changes in self-regulated alcohol marketing codes. The existing structure of these regulations is restrictive, listing specific types of content that are barred from appearing in alcohol advertising. The thematic content areas identified here as being associated with code violations could be added to these codes and explicitly banned from being used in future alcohol marketing campaigns. Ideally, existing voluntary or statutory alcohol marketing codes would use a permissible structure similar to the Loi Évin (1991) in France, which states only the content that is allowed. These findings suggest that permissible codes should focus principally on product quality.

The findings also suggest that if responsibility messages are included in alcohol advertising broadcast on television, spoken responsibility messages should be used in place of text messages. Adolescent viewers may not notice text responsibility messages (e.g., "Drink Responsibly," "Live Responsibly," and "Enjoy Responsibly"). In an eye-tracking study of magazine alcohol ads, adolescents spent only 0.35 s fixated on the responsibility message (Thomsen & Fulton, 2007). Moreover, text responsibility messages are unlikely to define the meaning of responsible drinking or promote abstinence as an acceptable alternative to drinking (Smith et al., 2014). Instead, by combining persuasion techniques with nondescript catchphrases, these ostensible prevention messages are, according to some critics, no more than a marketing tactic designed to assuage critics of the alcohol industry (Barry & Goodson, 2010).

The use of several content areas that were associated with code violations is inconsistent with the intent of self-regulated codes to protect vulnerable populations. The desire for larger friend networks (i.e., sociability) and conforming to peer and adult alcohol norms (i.e., conformity) are strong predictors of adolescent alcohol use. Results

from the Add Health Study indicate that alcohol consumption leads to an increase in popularity among adolescents (Ali, Amialchuk, & Nikaj, 2014), and the desire for larger and stronger friend networks on social media is positively associated with alcohol use (Cook, Bauermeister, Gordon-Messer, & Zimmerman, 2013; Huang, Soto, Fujimoto, & Valente, 2014). Among disadvantaged youth that were marginalized by peers, alcohol use was seen as an acceptable, alternative activity to bond with other marginalized youth (Fletcher & Bonell, 2013). Furthermore, while acceptance as a member of a peer group is important for the development of healthy social skills, it may require an individual to concede to group norms (Santor, Messervey, & Kusumakar, 2000). This strong pressure to conform can result in earlier alcohol initiation and greater alcohol consumption (Santor, Messervey, & Kusumakar, 2000; Trucco, Colder, Bowker, & Wiczorek, 2011).

Alcohol advertising that focuses on ethnicity may be addressing populations that suffer from significant alcohol-related health disparities. Hispanic drinkers who consume low levels of alcohol report greater alcohol dependence symptoms and alcohol-related social consequences compared to Caucasian drinkers with similar drinking patterns (Mulia, Ye, Zemore, & Greenfield, 2008). Hispanic drinkers are at a greater risk for developing liver disease and have the highest mortality rate due to liver cirrhosis (Flores et al. 2008; Stinson, Grant, & Dufour, 2001; Yoon & Yi 2008), while being less likely to receive specialty alcohol treatment (Schmidt, Ye, Greenfield, & Bond, 2007). Hispanic populations also have higher rates of alcohol-attributable intimate partner violence than Caucasian populations (Caetano, Cunradi, Clark, & Schafer, 2000).

Humor was the most prevalent content area but is explicitly excluded as a violation of the U.S. Beer Institute's marketing code. Eisend (2011) has suggested that humor in advertising creates a distraction from counterarguments, thereby reducing negative cognitions associated with a brand. Humor has been used extensively to mask deceptive marketing practices (Shabbir & Thwaites, 2007), and ads may be significantly more memorable when humor is used (Cline & Kellaris, 2007; Eisend, 2009).

### Limitations

There are a number of limitations to this study. First, the ads may not be representative of all beer ads produced throughout a calendar year. However, because the ads were broadcast during a popular sporting event and were collected over several years, they are likely representative of beer ads broadcast during large U.S.

sporting events, where a majority of alcohol advertising may be located and where a significant proportion of the viewers is likely to be under the U.S. legal alcohol purchase age of 21 years (Lyons McNeill, & Britton, 2014; O'Brien et al., 2015; Zwarun, 2006). Second, we were unable to estimate exposure to these advertisements. It is possible that ads with CANs were viewed by more individuals than ads with CAPs, although we believe that to be unlikely. Third, the thematic content analysis performed did not include all possible themes present in alcohol ads, instead focusing specifically on those themes that have been identified in prior research. There are likely several additional thematic content areas that can influence code violation rates, such as a party atmosphere or volume of alcoholic drinks consumed. Alternatively, excluded non-thematic ad characteristics, such as colors used or lighting levels, may also influence code violation rates (Hutchison, Thomas, & Elias, 2011; Wauters, Brengman, & Mahama, 2014).

### Conclusions

Several thematic content areas used in beer advertising were positively associated with violations of the industry's self-regulated marketing and advertising code. These findings can inform efforts to revise existing alcohol marketing codes. Themes positively associated with code violations can be expressly banned in restrictive codes, and themes negatively associated with code violations can be expressly allowed in permissible codes. The use of several themes is concerning in relation to adolescent alcohol use and health disparities.

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### Declaration of interest

The authors report no conflicts of interest.

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