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What are we drinking? Beverages shown in adolescents' favorite TV shows

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Abstract

Background—Media use has been shown to contribute to poor dietary intake; however, little attention has been paid to programming content. The portrayal of health behaviors in television (TV) programming contributes to social norms among viewers, which have been shown to influence adolescent behavior.

Objective—This study reports on a content analysis of beverages shown in a sample of TV shows popular with a large, diverse group of adolescents, with attention to the types of beverages and differences across shows and characters.

Design—Favorite TV shows were assessed in an in-school survey in 2010. Three episodes of each of the top 25 shows were analyzed using a detailed coding instrument.

Key measures—Beverage incidents (i.e. beverage shown or described) were recorded. Beverage types included milk, sugar-sweetened beverages (SSB), diet beverages, juice, water, alcoholic drinks and coffee. Characters were coded with regards to gender, age group, race, and weight status. Shows were rated for a youth, general or adult audience.

Statistical analyses—Chi-square tests were used to compare the prevalence of each type of beverage across show ratings (youth, general, adult), and to compare characteristics of those involved in each type of beverage incident.

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Results—Beverage incidents were common (mean=7.4 incidents/episode, range=0–25). Alcohol was the most commonly shown (38.8%); milk (5.8%) and juice (5.8%) were least common; 11.0% of incidents included SSB. Significant differences in all types of beverage were found across age groups. Almost half of young adults' (49.2%) or adults' (42.0%) beverage incidents included alcohol.

Conclusions—Beverages are often portrayed on TV shows viewed by adolescents, and common beverages (alcohol, SSB) may have adverse consequences for health. The portrayal of these beverages likely contributes to social norms regarding their desirability; nutrition and health professionals should talk with youth about TV portrayals to prevent the adoption of unhealthy beverage behaviors.

Keywords

Beverages; Mass Media; Content Analysis; Social Norms; Adolescence

Introduction

With continuing concerns about obesity, poor nutrition¹ and the known hazards of alcohol consumption among adolescents (ages 12–19),² beverage consumption in this age group is an important public health concern.^{1,3} Beverages are an important part of overall dietary intake, contributing over one-fifth of daily energy intake among children and adolescents.³ National data suggest that beverage consumption patterns have changed in the past decade, with reductions in sugar-sweetened beverages, whole milk and other drinks and increases in coffees/teas, energy drinks and sports drinks.³ Alcohol consumption has decreased among adolescents yet remains high, with over one-quarter reporting past month use.⁴ Attention to a variety of beverages in health research is therefore important.

Influences on beverage consumption and choice of beverages are certainly multifactorial, and television (TV) media has been shown to play a role in dietary intake. The bulk of research linking media to beverages has focused on advertising^{5–9} and the effects of screen media volumes (i.e. hours of media exposure),^{10–12} with an emphasis on alcohol and sugar-sweetened beverages. Relatively little research, however, has explored the actual content of media programming. TV show content accounts for greater viewing time than advertisements, which are very brief in comparison and which people may avoid watching through technologies like digital video recording and online services like Netflix and Hulu.^{13,14} Much of the existing literature on beverages in the media comes from the substance use field, examining the presence of alcohol in TV, finding that a majority of entertainment media, including those popular with adolescents, show alcohol being consumed and typically portray alcohol users in a positive light.^{15–19} Furthermore, viewing TV that includes alcohol has been associated with greater alcohol consumption among adolescents and young adults.²⁰ The limited research that has been done outside of the substance use field has found that food and beverage cues are common, including product placement within program content.^{21,22} For example, a review of prime time programming in the United Kingdom and Ireland found that sugar-sweetened beverages and coffee/tea are the most frequently shown drinks.²²

In spite of shifts in modes of media consumption over the past decade, TV remains a primary form of entertainment for adolescents, accounting for an average of 22 hours of TV per week.²³ It is critical to understand TV content, since it contributes to perceptions of behavioral norms among viewers, which have been shown to influence adolescent behavior.^{20,24–28} Behavioral influence may be even stronger when the viewer and on-screen character share certain personal characteristics (e.g. gender, race) or when the character has certain socially desirable physical traits such as a slender body type. Recent research has examined the portrayal of foods on shows targeting and/or popular with children and adolescents;^{29,30} however, research has not explicitly examined the portrayal of a broad range of beverages in shows popular in the United States. Parallel information on beverages is needed to fully inform the development of media-related interventions (e.g. media literacy programs) aimed at improving overall dietary intake. The present study therefore reports on a content analysis of beverages shown in a sample of TV shows nominated as favorites by a large and diverse group of adolescents. Further, the analysis tests for differences in beverage type between shows rated for a youth versus an adult audience, and explores ways in which beverage consumption varies across attributes of characters involved in the portrayal of beverages on screen.

Methods

Favorite TV shows were assessed in a sample of 2,793 middle- and high school students in Minneapolis and St. Paul, Minnesota, as part of an in-school survey of weight related behaviors (EAT 2010).³¹ Participants were asked to write in the names of their three favorite shows, and one or more shows was named by 2,130 students. TV show title data were cleaned to ensure proper counts (e.g. combining “Idol” and “American Idol”), and closely related shows such as “CSI,” “CSI-New York” and “CSI-Miami” were combined and considered as the original version. General topic areas (e.g. sports), networks (e.g. MTV) or event shows that did not use a scripted format were excluded. The resulting list of 653 shows was rank-ordered by popularity. The content of the 25 most popular adult, general, and youth shows watched by adolescents, listed in Table 1, was analyzed using three randomly selected episodes of each show (a total of 38.0 hours of TV programming). All episodes originally aired during the 2010 TV season and were accessed via online services (e.g. network website, Netflix). Additional details of the EAT 2010 study³¹ and content analysis of TV shows are available elsewhere.^{29,32} The University of Minnesota’s Institutional Review Board’s Human Subjects Committee approved all protocols used in EAT 2010 and determined that the present analysis was exempt from review.

Coding instrument and data collection

A coding instrument and detailed codebook were developed based on the research team’s previous work³³ and existing literature,^{34–36} to capture portrayals of food/beverages, physical activity, dieting, weight stigma, character traits and demographics, and show characteristics. Five graduate students were trained on the protocol for coding and analyzing shows, including at least four rounds of practice coding with earlier seasons of the top 25 shows. During the training period, coders analyzed shows independently; coders then met as a team to discuss their coding, reconcile any discrepancies, and clarify instructions in the

codebook. In the final round of practice coding, 2–3 coders scored selected episodes and inter-coder reliability was calculated with Cohen’s Kappa statistic³⁷. Food/beverage items (described below) had a mean $\kappa = 0.88$ and character demographics had a mean $\kappa = 0.92$; both kappas indicate excellent reliability.³⁷

Coders recorded any time a food or beverage was shown on screen or described (i.e., a beverage “incident”). The type of beverage was noted as milk, sugar-sweetened beverage, diet beverage, juice, water, alcoholic drink, other or undeterminable. After coding, a review of the “other” category indicated a large number of coffee and espresso-based drinks, and a separate category of coffee was therefore created. Remaining “other” drinks were most commonly tea and human blood (due to the inclusion of two vampire-themed shows in the sample). The “undeterminable” category was used where generic beverage containers were shown (e.g. drink cups) without an indicator of their content; in contrast, containers specific to certain beverages (e.g. coffee cups, soda cans) were included in their respective categories.

Demographic and other characteristics of the main and supporting characters in each show were recorded. For demographic characteristics, coders noted appropriate categories using a variety of visual and contextual cues given in the show (or after consulting the show’s website, if cues were inconclusive). Variables included characters’ gender as male or female; age group as child (<12 years old; example cue: size, attends elementary school), adolescent (~13–19 years; example cues: attends middle school or high school), young adult (~20–29 years; example cues: recent high school graduate, college student, not yet established a family or career), middle adult (~30–64 years; example cues: married, parental figure, well-established career), older adult (≥ 65 years; example cues: grey hair, grandparent figure, retired); and race (white, black/African American, Hispanic/Latino, Asian American, Native Hawaiian/Pacific Islander, American Indian/Native American, other). In addition, coders recorded characters’ weight status. Categories included thin/underweight, average/normal weight, heavier than normal/overweight, and obese. The default weight status for characters was “normal or average weight.” The character was classified as “thin/underweight” if he/she was depicted as being underweight or thinner than normal with obvious clavicle, facial, rib cage, or other bones protruding. Characters were classified as “heavier than normal/overweight” if they appeared to have excess body fat (e.g. an obvious pot-belly). The “obese” category was used for characters carrying an obviously excessive amount of weight such that, if calculated, their BMI would fall much above 30 kg/m². The coders were trained extensively on how to accurately code characters according to the above classifications, and the intercoder reliability for this classification was high. Each demographic and weight status variable included an “undeterminable” category, which was used when characters were not shown on screen or for non-human cartoons or animals where these characteristics could not be determined (undeterminable was coded 3.0% for all character variables except race, where it was coded for 6.6% of characters).

Show ratings were based on parental guidance information drawn from the show’s website or the Internet Movie Database website,³⁸ using standard parental guidance ratings.³⁹ Shows were combined into three categories for analysis: Youth Audience (TV-Y7 and TV-G), General Audience (TV-PG), and Adult Audience (TV-14 and TV-MA).

For each selected show, one coder viewed each of the three episodes three times to 1) identify all beverage incidents, 2) code all relevant information, and 3) review to ensure complete and accurate coding, revising as needed. Final data were entered into a spreadsheet for analysis.

Data Analysis

Two datasets were created to address this study's research questions. First, a dataset of all beverages incidents was created (e.g. characters having coffee). Second, a character-beverage data set was created for all main and supporting characters (N=366) who were shown in each beverage incident. Since multiple characters could be shown consuming beverages together, the total number of cases in the second dataset was 1,158 (e.g., for three characters having coffee, this single beverage incident would generate three separate cases in the character-beverage-level dataset). Chi-square tests were used to compare the prevalence of each type of beverage across the three show ratings (youth, general, adult) and to compare characteristics of those involved in beverage incidents. Analyses were conducted with SAS version 9.4 (July, 2013; SAS Institute, Inc., Cary, NC).

Results

The Student Sample

The student sample was diverse with regards to gender (46.8% male; 53.2% female), school-level (46.1% grades 6–8; 53.9% grades 9–12) and race/ethnicity (18.9% white, 29.0% African American, 19.9% Asian American, 16.9% Hispanic, 3.7% Native American, and 11.6% mixed or other race). Participants' mean age was 14.4 years (SD=2.0).

Beverages on TV

Across the 75 episodes of favorite shows, coders noted 554 beverage incidents. Almost all TV episodes (96.0%) included at least one beverage incident (mean=7.4 incidents/episode, range=0–25). Alcohol was shown in 19 of 20 shows rated for general or adult audiences, and was the most commonly shown beverage overall, in almost 40% of beverage incidents (Table 2). Milk and juice were least commonly shown (5.8% of incidents). No diet beverages were identified in any show, but all other types of beverages were shown in most shows. For example, although sugar-sweetened beverages were shown in 11.0% of all beverage incidents, 20 of 25 shows (80%) included at least one sugar-sweetened beverage incident (Table 2).

Differences in beverages shown across show ratings

Differences in the prevalence of each type of beverage in youth, general and adult rated shows are shown in Table 2. Sugar-sweetened beverages, juice and water were shown more in shows rated for youth audiences as compared to shows rated for general or adult audiences; for example, sugar-sweetened beverages were shown in 21.2% of beverage incidents on youth-rated shows, 13.2% of beverage incidents on general audience shows, and 7.6% of beverage incidents on adult-rated shows ($X^2=11.5$, $p=.003$). Alcohol was equally common in general audience shows as in adult-rated shows (43.1–44.6%), but was not shown at all in the coded sample of youth-rated shows ($X^2=47.6$, $p<.001$).

Characters involved in beverage incidents

Descriptive features of characters involved in each type of beverage incident are shown in Table 3. There were significant differences in all types of beverage incidents across age groups. For example, among child and adolescent characters, 20.3% of their beverage incidents involved sugar-sweetened beverages, compared to 4.0% among young adults and 10.5% among other adults ($X^2=32.4$, $p<.001$). Children and adolescents were also significantly more likely than older characters to be in beverage incidents involving milk, juice and water, and less likely to be in incidents with alcohol or coffee. Almost half of young adults' (49.2%) or adults' (42.0%) beverage incidents included alcohol.

There were no differences in beverage types across characters' weight status. For example, 12.4–14.9% of incidents included sugar-sweetened beverages across weight categories of characters involved.

Discussion

In this set of TV shows nominated as favorites by a large and diverse sample of adolescents, beverages are frequently shown, and alcohol is the most common (although evident only in shows rated for a general or adult audience). Significant differences were noted across the target audience categories; water and sugar-sweetened beverages were prevalent in youth shows and less common in shows created for a general or adult audience. Likewise, young characters were shown consuming sugar-sweetened beverages, milk, and juice more than older characters. Findings are consistent with prior research showing alcohol as the predominant on-screen beverage in prime-time TV, movies and music videos,^{15–19,40,41} and extensive presentation of sugar-sweetened beverages in youth-targeted shows.^{21,22} Combined, these results suggest that young viewers have ample exposure to alcohol use as normative (among adult characters), and to modeling of sugar-sweetened beverage consumption by youth characters.

Previous longitudinal research has demonstrated that young people increase soda and alcohol consumption and drink less fruit juice and milk as they progress through the developmental stages of adolescence.⁴² Media can create a social norm suggesting that intake of certain beverages is typical or expected among adolescents or young adults, who may act as role models for young viewers.^{22–24} In keeping with social ecological models of behavior,^{43,44} frequent exposure to these on-screen behaviors may contribute, along with other influences within adolescents' home/family, peer, school, and neighborhood environments, to observed longitudinal changes in beverage consumption.

It is interesting to note that overweight characters were no more likely to be shown in scenes with sugar-sweetened beverages than non-overweight characters. This finding has implications for viewers regardless of their own weight status. Representing frequent consumption of sugar-sweetened beverages by individuals who are not overweight may promote an unrealistic expectation that this habit will not lead to weight gain. In addition, fat stigmatizing in the media is common and well-documented,^{33,45,46} including an over-representation of heavy characters eating and choosing unhealthy food options,^{47,48} and such negative stereotypic images have been shown to affect attitudes about overweight

people.^{49,50} The absence of an association between characters' weight status and type of beverage may represent a recent shift in the portrayal of overweight characters' eating behaviors to be more similar to behaviors among non-overweight characters. Differences between the current findings of an absence of weight-related stigma and previous research showing weight-stigmatizing behaviors^{47,48} may also be attributable to differences in the type and sample of shows and the range of eating/drinking behaviors assessed.

Strengths and limitations

Strengths of this study include that the shows analyzed here were listed as favorites by a large and diverse population-based sample of adolescents rather than being selected from a network targeting youth audiences. In addition, coding three episodes of 25 shows identified a large number of beverage incidents, which permitted statistically valid comparisons across groups.

This work is also subject to certain limitations that should be taken into account in interpreting the findings. The coding instrument did not include an assessment of which characters were consuming which beverages, only which characters were present in scenes showing each type of beverage. For example, although one in six beverage incidents with young characters included alcohol in general and adult-rated shows, the young characters were not necessarily drinking the alcohol (e.g. Bart Simpson bringing Homer a beer). In addition, details on each type of drink could not be ascertained, such as whether milk products were low-fat or juice was 100% fruit juice. Relatedly, no incidents of portrayal of a diet beverage were coded. However, this could be a result of the difficulty of discerning whether a drink was diet without explicit verbal or written cues, which were not identified in this specific sample of shows. Details of alcohol consumption were also not recorded, such as driving while intoxicated or drunkenness presented in a humorous light. Without this level of detail on beverage content and context, the extent to which portrayals were aligned with dietary and other health recommendations could not be determined. Finally, shows examined in this study were identified as popular among youth in 2010, while beverage portrayals may have changed in recent years. However, three features of this sample of shows suggest their continued relevance. First, new episodes of eight of the shows analyzed in this study are still being produced (in 2016) due to their ongoing popularity. Second, six shows ended their series between 2013 and 2015, and have therefore been available for regular TV viewing by today's adolescents in recent years. Third, four additional shows had already concluded at the time they were nominated (i.e. prior to 2010), indicating that youth view shows in syndication or through online sources such as Netflix. All of the concluded shows continue to be available through these alternate sources.

Conclusions

Although shows targeted at youth audiences did not show alcohol, adolescents favored a large number of shows intended for general or adult audiences, in which alcohol was frequently shown. Additionally, approximately one in five beverage incidents in youth shows included sugar-sweetened drinks. While research directly linking these portrayals and youth behavior is needed, the portrayal of these beverages likely contributes to social norms regarding their desirability. Establishing healthy beverage choice norms should be addressed

through school- and community-based media literacy programs, which have been successful in improving adolescents' awareness of subtle media messages.^{51,52} Nutrition professionals and other health care providers working in clinical and school-based settings should talk with youth and their parents about TV to increase awareness of on-screen beverage consumption and social norms, to prevent the adoption of unhealthy behaviors. The entertainment industry is encouraged to include more healthful portrayals of beverage intake in shows marketed to all age groups. Previous public health efforts have led to voluntary and regulatory changes around cigarette smoking in screen media, suggesting that similar changes to food and beverage portrayals can further contribute to a healthier media environment.

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Table 1

Top 25 television shows nominated by EAT 2010 participants, by popularity

Rank	Show title	Genre	Show rating ^a
1	Family Guy	cartoon sitcom	Adult
2	The Simpsons	cartoon sitcom	General
3	SpongeBob Square Pants	cartoon youth	Youth
4	CSI	drama	Adult
5	iCarly	sitcom	Youth
6	South Park	cartoon sitcom	Adult
7	Two and a Half Men	sitcom	Adult
8	That 70's Show	sitcom	General
9	The Game	sitcom	General
10	George Lopez	sitcom	General
11	Everybody Hates Chris	sitcom	General
12	House	drama	Adult
13	The Vampire Diaries	drama	Adult
14	My Name is Earl	sitcom	General
15	Gossip Girl	drama	Adult
16	The Office	sitcom	General
17	Degrassi	drama	General
18	Hannah Montana	sitcom	Youth
19	Wizards of Waverly Place	sitcom	Youth
20	Suite Life on Deck	sitcom	Youth
21	Secret Life of the American Teenager	drama	Adult
22	Supernatural	drama	Adult
23	NCIS	drama	Adult
24	Bones	drama	Adult
25	Scrubs	sitcom	Adult

^aShow rating was based on Parental Guide ratings.³⁹ Youth shows included TV-Y7 and TV-G; General shows included TV-PG; Adult shows included TV-14 and TV-MA.

Prevalence of beverages shown or described in adolescents' favorite TV shows, total and by show rating

Table 2

Beverage type	Total incidents (N=554) ^a		Shows with at least one incident of this type (N=25)		Youth (n=66)		General (n=174)		Adult (n=314)		χ^2 ^b
	n	% of incidents	n	% of shows	n	% of incidents	n	% of incidents	n	% of incidents	
Milk	32	5.8	18	72.0	2	3.0	14	8.1	16	5.1	2.8, p=.243
SSB ^c	61	11.0	20	80.0	14	21.2	23	13.2	24	7.6	11.5, p=.003
Juice	32	5.8	19	76.0	11	16.7	10	5.8	11	3.5	17.4, p<.001
Water	77	13.9	21	84.0	22	33.3	24	13.8	31	9.9	25.1, p<.001
Alcohol	215	38.8	19 ^d	76.0	0	0.0	75	43.1	140	44.6	47.6, p<.001
Coffee	95	17.2	21	84.0	9	13.6	25	14.4	61	19.4	2.7, p=.264
Other	37	6.7	13	52.0	2	3.0	6	3.5	29	9.2	7.6, p=.022
Undeterminable	82	14.8	19	76.0	8	12.1	19	10.9	55	17.5	4.3, p=.117

^aColumn totals are >554 and 100% due to multiple types of beverage shown in some incidents.^bChi-squares test the associations between show rating and each type of beverage incident.^cSSB: sugar-sweetened beverage^dAlcohol was only shown in shows rated for general or adult audiences (n=20; 95%)

Table 3

Characteristics of characters involved in each type of beverage incident (percent)^a

	n	character-beverage incidents	Milk	SSB ^b	Juice	Water	Alcohol ^c	Coffee
Gender								
Male	788		7.0	12.9	6.1	17.6	35.8	16.9
Female	370		4.3	11.6	8.1	20.0	36.2	17.6
Chi-square ^d , p-value			3.1, p=.079	.40, p=.526	1.6, p=.202	.93, p=.334	.02, p=.887	.08, p=.771
Age group ^e								
Child/adolescent (19 years)	320		9.1	20.3	11.9	31.9	17.2	7.2
Young adult (~20–29 years)	177		4.0	4.0	5.7	9.0	49.2	16.4
Adult (~30+ years)	645		5.3	10.5	4.5	14.6	42.0	22.5
Chi-square ^d , p-value			7.1, p=.029	32.4, p<.001	18.9, p<.001	54.9, p<.001	72.4, p<.001	35.2, p<.001
Race/ethnicity								
White	895		6.5	11.2	6.8	18.9	35.4	17.3
Other race/ethnic group	202		4.0	17.8	6.9	21.3	38.1	18.8
Chi-square ^d , p-value			1.85, p=.174	6.7, p=.001	.003, p=.953	.61, p=.434	.52, p=.470	.25, p=.615
Weight ^f								
Thin/average weight	1035		5.8	12.4	6.9	18.1	35.6	17.8
Overweight	74		6.8	14.9	9.5	24.3	35.1	14.9
Obese	48		12.5	12.5	0.0	16.7	43.8	6.3
Chi-square ^d , p-value			3.6, p=.163	.39, p=.822	4.4, p=.113	1.9, .387	1.4, p=.507	4.6, p=.101

Boldface font indicates statistical significance (p<.05)

^aPercents do not total 100 across rows due to exclusion of “other” and “undeterminable” drinks and multiple beverages shown in some incidents.

^bSSB: sugar-sweetened beverage

^cBecause no alcohol incidents were recorded in youth-rated shows, comparisons refer to alcohol incidents in general audience and adult-rated shows.

^dChi-squares test the associations between characteristics and each type of beverage incident.

^echild = <12 years old, not yet in middle school; adolescent = ~13–19 years, in middle school or high school; young adult ~20–29 years; recent high school graduate, college-aged individual, and/or not yet established a family or career; adult = ~30+ years, married, parental or grandparent figure, and/or has a well-established career or retired.

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thin/underweight = thinner than normal with obvious clavicle, facial, rib cage, or other bones protruding. If BMI were calculated, the character would fall below 18.5 kg/m²; overweight= excess body fat (e.g. obvious pot belly). If BMI were calculated, the character would fall between 25 –30 kg/m²; obese= character carries an excessive amount of weight such though that, if calculated, their BMI would fall much above 30 kg/m². Default = average weight.