Identifying Strategies to Limit Youth Drinking in the Home

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ABSTRACT. Objective: The present study aims to better understand the situational, contextual, and social event–level characteristics that contribute to youth drinking behavior in the home. **Method:** We used survey data from 1,217 adolescents (15–18 years, 47.7% female) living in 24 midsized, noncontiguous California cities. The study focused on those who reported at least one drink during their last drinking occasion at home or a friend's home (n = 336). We obtained data about total drinks at last event as well as contextual and situational characteristics at last event, including adult presence, number of people present, participant's home or friend's home, ease of alcohol access, and gender ratio. We also gathered information on individual-level characteristics such as past-year drinking behavior, perceived drinking norms, age, ethnicity, and gender. Multilevel Poisson regression models were used to analyze the data. **Results:** Among the full sample, the number of people at the event and the perceived ease of access were positively associated with an increase in number of drinks consumed. Among females, having a responsible adult present was associated with consuming fewer drinks. Among males, having more boys at the event was related to consuming fewer drinks, whereas increased perceived access to alcohol was positively associated with consuming more drinks. **Conclusions:** Parents may be able to manage or manipulate the home drinking environment to reduce heavy drinking and alcohol-related problems. Future research is needed to explore additional contextual factors that may enable or inhibit heavy drinking. (*J. Stud. Alcohol Drugs, 77,* 943–949, 2016)

RECENT RESEARCH SUGGESTS that drinking settings (e.g., beaches, parking lots or street corners, sporting events, restaurants, private homes) may contribute to differential alcohol use among young drinkers (Clapp et al., 2006; Demers et al., 2002; Kypri et al., 2007; Lipperman-Kreda et al., 2015; Mair et al., 2015; Paschall & Saltz, 2007; Wells et al., 2005). For example, one study found that college students drank more at fraternity/sorority parties, off-campus parties, and restaurants/bars than in outdoor settings, whereas fewer drinks were consumed at campus events; no differences emerged for residence hall parties relative to outdoor events (Paschall & Saltz, 2007)

Among adolescents, however, many settings are off-limits or constrain drinking behavior because of underage drinking laws and enforcement policies that (a) limit an adolescent's ability to enter a specific locale (e.g., an identification check at a bar) or (b) place them at risk for being caught by law enforcement (e.g., parking lots and street corners). It thus is not surprising that youth report drinking in private homes, where there are fewer constraints. A recent study found that underage youth reported drinking most frequently at someone else's home (53%), followed by one's own home (40%) (Lipperman-Kreda et al., 2015). A national study found that 88.7% of 17- to 21-year-olds drank in a private home compared with 11.3% who reported drinking in a public setting (Wells et al., 2005)

Given that a private home is the primary location for underage drinking, the current study aims to increase our understanding of the contextual characteristics in the home environment that may enable or deter youth drinkers from drinking more heavily in this setting. Results can be used to develop effective tools and strategies for parents to implement in their home.

The drinking context is a multifaceted construct that comprises more than simply the physical location. It also includes the social characteristics, such as the attributes of people at that location and time and their relationships to one another, as well as the situational characteristics that change from event to event, such as parental supervision and availability of alcohol (Freisthler et al., 2014), which can constrain drinking (e.g., a parent is watching) or encourage alcohol use (e.g., alcohol is easily available).

Previous studies have noted a relationship between the social and situational characteristics of the drinking context and the amount of alcohol consumed at that event. For example, studies with young adults (including college students) have found that size of a drinking group is positively associated with the amount of alcohol consumed and that this association is stronger for men than for women (Aitken & Jahoda, 1983; Demers et al., 2002; Thrul & Kuntsche, 2015). Another study found that 9th- and 12th-grade drinkers who reported consuming five or more drinks on one occasion were more likely to report drinking in groups of at least 11 people, to drink with friends than with parents, and to drink with other underage youth (Mayer et al., 1998). A study fo-

Received: March 14, 2016. Revision: June 9, 2016.

This research and the preparation of this article were supported by National Institute on Alcohol Abuse and Alcoholism (NIAAA) Grant P60-AA006282. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIAAA or the National Institutes of Health.

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cusing on college students found that undergraduate students drink more per occasion depending on event-level characteristics including circumstance (e.g., party, get-together), location (e.g., home, bar, restaurant), day of the week, and group size; these relationships persist even after controlling for individual characteristics such as gender, frequency of consumption, living arrangement, and perceived campus norms (Demers et al., 2002). Another study among college students found that party size was also positively associated with intoxication, although the association varied by drinking setting (Marzell et al., 2015).

A number of mechanisms might account for these relations. The presence of a large number of drinkers may increase the extent to which heavier drinking is modeled or behavior matching occurs (Bandura, 1977; Chartrand & Bargh, 1999). Alternatively, youth may drink more because they are conforming to social pressures and social norms (Maddock & Glanz, 2005; Santor et al., 2000).

Group composition also may affect drinking behaviors, although gender differences have been noted. An early study with 18- to 25-year-olds noted that alcohol consumption was positively related to drinking within a same-gender group for both males and females (Aitken & Jahoda, 1983). An observational study of adolescent and young adult bar drinkers in the Netherlands, where the legal drinking age was 16, found that males drank faster when in large groups as well as all-male groups, whereas a similar effect did not emerge among women (van de Goor et al., 1990). Conversely, a study on pre-parties in heavier drinking college students found that males who drank in a mixed-gender setting had higher blood alcohol levels than those who drank in a single-gender setting. No relationship between group composition and blood alcohol levels emerged for females (Hummer et al., 2013).

Among adolescents, adult supervision also may contribute to or limit alcohol use. The presence of an adult may signal tacit approval of underage drinking, which results in heavier drinking. Alternatively, supervision may depress alcohol use as parents who are present may be more likely to enforce rules around alcohol use. Previous correlational studies have found that aspects of parental monitoring and supervision appear to be effective in constraining and preventing adolescent alcohol use (Ryan et al., 2010).

However, focusing on event-level studies suggests a more complex picture. One study found no relationship between adult presence and whether there was alcohol at the last adolescent home party (Friese & Grube, 2014). Another study found that youth who drank with their parents reported fewer number of drinks at last drinking occasion. However, if they reported that an adult (e.g., parents or friends' parent) provided them with alcohol at a party in the past year, youth drank more on their last drinking occasion (Foley et al., 2004). The role and effect of an adult at a specific event need to be examined more carefully to assess how they contribute to adolescent drinking behavior.

Similarly, although many studies document an association between ease of access to or availability of alcohol and youth drinking behavior (Dent et al., 2005; Jones-Webb et al., 1997; Komro et al., 2007; Morleo et al., 2010), a majority of these studies measure community-level access or perceived access in general. Few have examined how easy it is to obtain alcohol during a specific drinking event and alcohol use during that event. However, among college students, one study found that the presence of a keg and drink promotions was positively associated with intoxication (Marzell et al., 2015).

The present study extends the existing research in this area by investigating the situational and social characteristics that contribute to youth (ages 15–18) drinking behavior in their most frequently used drinking context: the home. Based on extant research, we hypothesize that increased size of event (number of people) and greater alcohol access during the most recent drinking event at home will all be associated with greater alcohol use. It is unclear whether adult presence will support or depress youth drinking. Because the current study focuses on perceived adult supervision/responsibility, we hypothesize that this factor will be negatively associated with number of drinks consumed at last home drinking event. We also hypothesize a relationship between group gender composition and drinking behavior, although based on previous research we can only speculate as to the direction of the association. Last, we will explore whether social and situational characteristics at the home setting have a differential impact on drinking by gender.

Method

Study sample and survey methods

The current study used data obtained from 1,217 15- to 18-year-old adolescents residing in 24 midsized cities in California. Adolescents were selected and recruited through a two-stage process. First, a subset of 24 cities was selected from an existing geographically diverse sample of 50 noncontiguous California cities (population range: 50,000 to 500,000) (Lipperman-Kreda et al., 2015; Paschall et al., 2014). The 24 cities were selected based on high levels of underage drinking, drinking and driving, and alcohol-related motor vehicle crashes using data from various sources, including the California Healthy Kids Survey (WestEd, 2016), a survey of more than 8,000 adults conducted by the Prevention Research Center (Gruenewald et al., 2014), and the California Statewide Integrated Traffic Reporting System (California Highway Patrol, 2016).

Second, using a list-assisted sample of landline and cell phone exchanges, households within each selected city were randomly sampled. Households first received an invitation letter followed by a telephone call to describe the study, ascertain eligibility (subject age and city of residence), obtain parental consent, and invite participation. The estimated

Table 1. Individual and contextual characteristics among youth drinkers in the home: Gender differences

Variable	% or *M* (*SD*)	Females % or *M* (*SD*)	Males % or *M* (*SD*)
Outcome variable			
No. of drinks, last home drinking event	3.24 (2.79)	2.76 (2.05)**	3.66 (3.27)
Individual characteristics			
Age, in years	16.59 (0.84)	16.56 (0.86)	16.62 (0.82)
Male	52.7%	–	–
Non-Hispanic White	68.5%	64.2%	72.3%
Perceived best friend alcohol use	2.97 (1.44)	2.81 (1.37)**	3.11 (1.48)
No. of days drunk/past year	8.75 (20.18)	6.91 (14.47)	10.40 (24.11)
Contextual characteristics of last home drinking event			
Your home	27.4%	23.9%	30.5%
No. of other people at the event	13.51 (17.68)	12.36 (16.31)	14.55 (18.07)
Adult responsible	47%	52.8%*	41.8%
More boys than girls	19.9%	6.9%**	31.6%
More girls than boys	18.2%	31.4%**	6.2%
Ease of access (1 = *very difficult,* 4 = *very easy*)	3.42 (0.74)	3.42 (0.75)	3.42 (0.74)

Notes: Significance tests are conducted between gender. No. = number.
*p <. 05; **p < .01.

response rate for this survey was 42%. This study was reviewed and approved by the Pacific Institute for Research and Evaluation's institutional review board.

Study participants were surveyed in 2013–2014 through a computer-assisted telephone interview in either English or Spanish. The survey took approximately 20 minutes. A total of 1,217 adolescents (52% male; M_{age} = 16.23 years, *SD* = 0.90; non-Hispanic White = 62.1%) participated. An average of 51 youth (range: 32–63, *SD* = 6.18) were interviewed in each city. Youth received $20 as compensation for their participation in the study. The current study was restricted to youth who indicated they had at least one drink of alcohol at their home or someone else's home in the past 12 months (n = 335). Sample characteristics are provided in Table 1.

Measures

Drinking locations. Adolescents were asked to report on their drinking behaviors at home or someone else's home, a restaurant, a bar or nightclub, or an outdoor location. For each location, those who reported drinking alcohol at least once in the past 12 months were asked to think about the last time they drank alcohol at that location. They were then asked a series of items specific to that drinking event. For this analysis, we focused on reports related to drinking at home.

Number of drinks. Youth were asked to indicate how many drinks they had the last time they drank alcohol at their home or someone else's home (*M* = 3.24, *SD* = 2.79, range: 1–25). To meet the assumptions of a Poisson distribution, we re-scaled the data and subtracted one from each reported drink total (n – 1).

Social and situational characteristics. Youth were asked to indicate if there was a responsible adult present (1 = *yes,* 0 = *no*). They were also asked how easy it was to get alcohol at the home on that occasion (from 1 = *very difficult* to 4 = *very easy, M* = 3.42, *SD* = 0.74). Participants were asked to estimate how many people were present the last time they drank at a home location (*M* = 13.51, *SD* = 17.68, range: 1–150). Youth were also asked to estimate the gender distribution at their last drinking event at a home location (1 = *mostly girls,* 2 = *mostly boys,* 3 = *about half girls and half boys*). Gender distribution was recoded into two dummy variables indicating more boys than girls (group composition: more males than females) and more girls than boys (group composition: more females than males). The referent group was an equal number of males and females. Participants were also asked to report whether their last drinking event at a home location was at their own home (1 = *yes,* 0 = *no*).

Individual characteristics. To assess descriptive norms among their specific peer group, adolescents were asked how often they thought their best friend had at least one whole drink of an alcoholic beverage in the past 12 months (1 = *never* to 7 = *every day, M* = 2.97, *SD* = 1.44). Respondents also indicated on average how many drinks they had per drinking occasion over the past year (*M* = 3.15, *SD* = 2.28, range: 1–15). Participants were asked their age, gender, and race/ethnicity. A dummy variable was created to indicate non-Hispanic White (vs. other).

Data analysis

To account for clustering of adolescents within cities and considering the nature of our outcome measure (i.e., number

Table 2. Bivariate correlations, by gender

Variable	1.	2.	3.	4.	5	6.	7.	8.	9.	10.
1. Total drinks	1	-.22**	.14	-.22**	.08	-.06	.29**	.31**	.11	.15
2. Your home	-.22**	1	-.22**	.26**	-.10	.07	-.15	-.08	-.21***	.08
3. No. of other people at event	.26*	-.46**	1	-.02	.02	-.51**	.12	-.08	.02	-.07
4. Adult responsible	-.13	.41**	-.18*	1	-.24**	.07	-.11	-.10	-.07	.04
5. More boys than girls	-.12	.13	-.44**	-.06	1	-.19*	.09	.05	.11	-.03
6. More girls than boys	.10	.14	-.13	-.12	-.18*	1	.00	.07	.04	.05
7. Perceived best friend alcohol use	.26**	-.23**	.06	-.18*	-.00	-.00	1	.40**	.01	.11
8. No. of days drunk/past year	.18*	-.16*	-.03	-.20**	.07	-.04	.48**	1	.01	-.01
9. Ease of access	.28**	-.43**	.23**	-.19*	.00	.04	.17*	.08	1	.04
10. Age	.07	.05	-.06	-.03	.12	-.05	.13	.15	-.03	1

Notes: Females (n = 159) on the top diagonal, males (n = 177) on the bottom diagonal. No. = number.
*p < .05; **p < .01; ***p < .001.

of drinks), we conducted multilevel random-effects Poisson regression analyses with all variables entered simultaneously using STATA Version 14 (StataCorp LP, College Station, TX). Analyses were first conducted for the full sample.

Second, we ran a series of models to examine the role of gender. Specifically, we interacted gender with each contextual characteristic and ran a regression model including the base model (all individual and contextual level variables) and each interaction term separately. Significant interaction terms assisted with interpreting results from a third analysis where we stratified the sample by gender and ran separate models for males and females. All models controlled for individual characteristics including age, non-Hispanic White, perceived best-friend alcohol use, and average number of drinks over the past year.

Results

Preliminary analyses. The sample was relatively evenly distributed between males (52.7%) and females (47.3%), and the average age of respondents was 16.59 years (SD = 0.84). At the last drinking event at home or someone else's home, males drank on average about one more alcoholic drink than females (M = 3.66 vs. 2.76, p < .01) and were less likely than females to report having a responsible adult at the event. Also, males were more likely to report more boys than girls at the last event, and females were more likely to report more girls at the last event than boys (Table 1).

Bivariate correlations provide preliminary evidence that associations between social and situational characteristics of the home environment and drinking behavior differ by gender (Table 2). For example, the number of people at an event was significantly associated with total number of drinks at that event among males (r = .26, p < .05) but not among females (r = .14, p > .10). Conversely, having a responsible adult present was negatively associated with total number of drinks among females (r = -.22, p < .01) but not among males (r = -.13, p > .10). Comparing total number of drinks by categorical situational characteristics was conducted to provide descriptive statistics underscoring some findings from the correlational table (Table 3). For example, youth drink an average of one more drink when drinking at someone else's home compared with their own (M = 2.32 vs. 3.58, p < .01). This also seems to be the case when no responsible adult is present (M = 2.72 vs. 3.70, p < .01).

Multilevel regression analyses. Results from the multilevel regression with the full sample indicated that the number of people at the event was positively—albeit modestly—associated with drinking quantity (incident rate ratio [IRR] = 1.01, p < .05). Perceived ease of access also was positively associated with an increase in number of drinks (IRR = 1.20, p < .01). None of the other social or situational characteristics was significant (Table 4). Post hoc analysis where group size was categorized into small, medium, and large groups (as operationalized by Mayer et al., 1998) also did not yield any significant association with number of drinks. At the individual level, age, being male, and reporting a greater typical number of drinks were all associated with consuming more drinks at last drinking event in a home setting (ps < .05).

Moderation analyses. No significant effects emerged for the interactions of gender by home, total number of people present, or having more females at the event. However, sig-

Table 3. Total number of drinks at last home drinking event by situational characteristic

Variable	M (SD)	n
Location		
Your home	2.32** (2.927)	92
Someone else's home	3.58 (2.668)	244
Gender distribution		
More boys than girls	3.26 (2.825)	269
Equal gender distribution	3.15 (2.687)	67
More girls than boys	3.00 (3.601)	61
Adult responsible		
Not present	3.70** (2.348)	178
Present	2.72 (3.152)	158
Number of other people at event		
1	1.74*[a] (1.054)	23
2–3	2.28*[a] (1.773)	69
4–9	3.28 (2.992)	92
≥10	3.87 (3.031)	152

[a]Significantly different from Group 4 (≥10).
*p < .05; **p < .01.

Table 4. Individual and home contextual characteristics predicting total number of drinks at last home drinking occasion

Variables	IRR	[95% CI]
Age	1.16*	[1.02, 1.33]
Male	1.44**	[1.15, 1.82]
Non-Hispanic White	0.93	[0.76, 1.14]
Perceived best friend alcohol use	1.05	[0.96, 1.16]
Typical number of drinks	1.20**	[1.13, 1.27]
Your home	0.77	[0.54, 1.11]
Number of people at event	1.01*	[1.00, 1.01]
Adult responsible	0.93	[0.74, 1.18]
More boys than girls[a]	0.80	[0.57, 1.13]
More girls than boys[a]	1.07	[0.68, 1.68]
Ease of access	1.20**	[0.99, 1.45]

Notes: IRR = incident rate ratio; CI = confidence interval. [a]Referent group = equal numbers of boys and girls.
*$p < .05$; **$p < .01$.

nificant gender interaction terms did emerge for responsible adult present (IRR = 1.55, $p < .05$), group composition—more males (IRR = 0.02, $p = .03$), and perceived ease of access (IRR = 1.42, $p = .03$). Stratified analyses by gender (Table 5) show that among females, having a responsible adult present was associated with consuming fewer drinks (IRR = 0.73, $p < .05$), whereas it was not significant for males. Having more boys at the event was related to consuming fewer drinks among males, but it was not significantly related to the number of drinks consumed for females. Increased ease of access to alcohol was positively associated with increased consumption among males (IRR = 1.43, $p < .01$) but not among females. Although the interaction term was not significant, having the event at one's own home was significantly related with consuming fewer drinks for females (IRR = 0.58, $p < .05$), but it was not significantly related to consumption for males (IRR = 0.93).

Post hoc analyses. We conducted an additional set of regression analyses interacting own home (vs. someone else's home) with each additional contextual factor. Results indicate that a significant interaction exists between own home and the total *number* of guests (IRR = 1.06, $p < .01$). Specifically, the number present had a stronger effect on consumption when drinking at the youth's home versus other's home.

Discussion

Overall, our results suggest that perceived ease of access to alcohol and number of people at the home event were positively associated with number of drinks consumed. However, the effect size for number of people was small; for every additional person in attendance, there is only a 1% increase in likelihood that youth will have another drink. These results, although not as strong as those from previous research, trend in a similar direction and suggest that the size of an event increases alcohol consumption. Comparable studies have been conducted with college student populations and have not focused on the home location (Demers et al., 2002; Marzell et al., 2015; Thrul & Kuntsche, 2015). It may be that there is a stronger effect among college students and/or young adults, or perhaps the mixed findings are a function of setting.

Post hoc analyses suggest that there may be a nuanced effect of group size. Surprisingly, youth drink more with more people present at their own home versus at someone else's home. Additional research is necessary to definitively ascertain how group size influences drinking behavior among adolescents, because this variable lends itself well to an environmental intervention: Parents, neighbors, and community members can develop rules and/or policies to control event size.

Perceived ease of access to alcohol was positively associated with number of drinks. A 1-point increase in perceived ease of access was associated with a 20% increase in the likelihood of having another drink. This association, however, was moderated by gender. Males were 43% more likely to increase their total number of drinks with each 1-point increase in perceived ease of access. This association, however, was not significant among females. This finding may have implications for parents and how they store and monitor alcohol in the home. Specifically, parents may influence the

Table 5. Gender differences

	Females ($n = 159$)		Males ($n = 176$)	
Variables	IRR	[95% CI]	IRR	[95% CI]
Age	1.33**	[1.05, 1.68]	1.10	[0.94, 1.30]
Non-Hispanic White	1.00	[0.74, 1.34]	0.91	[0.70, 1.16]
Perceived best frend alcohol use	1.13**	[1.02, 1.24]	0.99	[0.87, 1.12]
Typical number of drinks	1.17**	[1.11, 1.24]	1.25**	[1.16, 1.36]
Your home	0.58*	[0.35, 0.93]	0.93	[0.58, 1.49]
Number of people at event	1.00	[0.99, 1.01]	1.00	[1.00, 1.00]
Adult responsible	0.73*	[0.54, 0.98]	1.06	[0.77, 1.45]
More boys than girls[a]	1.22	[0.82, 1.80]	0.69**	[0.52, 0.91]
More girls than boys[a]	1.08	[0.68, 1.72]	1.16	[0.65, 2.07]
Ease of access	0.95	[0.72, 1.24]	1.43**	[1.11, 1.83]

Notes: IRR = incident rate ratio; CI = confidence interval. [a]Referent group = equal numbers of boys and girls.
*$p < .05$; **$p < .01$.

home drinking environment by generally limiting the availability of alcohol (e.g., locking liquor cabinets, monitoring quantities of alcohol in the home) and monitoring alcohol availability during social events.

Our results indicated that group gender composition was associated with alcohol consumption in the home for males. Specifically, males drank less in the home when the gender ratio was skewed toward more boys. Other studies have found that the proportion of females depresses male consumption, whereas large male groups facilitate higher drinking rates, albeit in different drinking contexts such as public locations such as discos, youth centers, and bars (Hennessy & Saltz, 1993; van de Goor et al., 1990). Additional research and better measures of group composition are necessary to understand the dynamics between gender composition and adolescent drinking behavior.

Among girls, drinking in one's own home and having a responsible adult present were associated with consuming fewer drinks. Similar effects were not found among males. It may be that girls are more responsive to adult supervision, less likely to try and bend the rules, or more worried about getting caught than boys. It may also be that the adults have different expectations about drinking for girls versus boys or monitor girls more closely. Parental monitoring and supervision may also differ depending on the size of the party, age of the child, as well as the gender distribution in relation to the child's gender (e.g., more males than females and the child is a female).

Understanding how adults are interacting and supervising youth while at a home party and how those interactions differ by gender would be informative and assist with the development of gender-specific prevention strategies. Adult supervision strategies to reduce drinking could consist of having a responsible adult present at the event or perhaps even requesting that a neighbor check in if parents are out of town. These approaches may provide necessary constraints around the home drinking environment to reduce adolescent drinking in that context.

A primary limitation of the current study pertains to issues associated with recall and recall bias. Youth were asked about their last home drinking event along with details of that occasion. Their memory of it or ability to describe components of the event may be biased or inaccurate. This especially may be the case for heavier drinkers. In addition, it is likely that the elapsed time to the last drinking event varied significantly among participants. That is, for one participant the last home drinking event may have occurred a week before the survey and for another participant the event may have occurred 6 months prior. Unfortunately, we did not collect data about the timing of the last home drinking event. Nonetheless, the current study is one of the first to examine event-level contextual characteristics that contribute to drinking at the most common drinking location for youth, the home.

Regardless of these possible shortcomings, the results have implications for developing effective family-based alcohol prevention and harm-reduction strategies. Future research should make use of methodologies such as real-time ecological momentary assessments research to gain insights into the specific contextual cues that influence adolescent drinking behavior free from recall bias. It is also necessary to address other situational and social factors including age composition of drinking group, presence or absence of family members, presence of a romantic partner, and circumstance (e.g., celebration, planned party, unplanned party). Future research should focus on whether the effect of contextual variables varies by developmental stage (age) as well as whether the same contextual factors operate similarly in different settings such as outdoor events, school dances, restaurants, and parking lots.

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