Do Associations Between Drinking Event Characteristics and Underage Drinking Differ by Drinking Location?

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ABSTRACT. Objective: We investigated how associations between social and situational characteristics (number of people, adult supervision, group gender composition, group age composition, ease of alcohol access, and weekend) and underage drinking are moderated by the specific locations in which drinking occurs. **Method:** Using a case-crossover design and retrospective surveys, a sample of 385 adolescents (mean age = 16.5 years; 47.3% female) from 24 mid-size California cities reported the last time they drank alcohol in a specific location (restaurant, outdoors, home) and the last time they were at the same type of location without drinking, as well as characteristics of each drinking and nondrinking event ($N = 1,096$ events). **Results:** Results of multilevel regression models indicated that perceived ease of alcohol access was associated with drinking across all locations (adjusted odds ratios [aORs] = 2.11–2.75, all $p < .01$). Weekend (vs. weekday) increased the odds of

drinking outdoors (aOR = 3.75, $p < .001$) and in the home (aOR = 4.37, $p < .001$), as did a lack of adult supervision (aOR = 1.70, $p < .05$ for outdoors; aOR = 1.64, $p < .01$ for home). Larger groups (aOR = 1.06, $p < .001$) and being with older people (aOR = 2.28, $p < .001$) increased the odds of drinking in the home only. Significant cross-level interaction effects between location and group size (aOR = 0.96, $p < .001$), group gender composition (aOR = 0.78, $p < .05$), group age composition (aOR = 0.70, $p < .01$), ease of alcohol access (aOR = 0.88, $p < .05$), and weekend (aOR = 0.66, $p < .05$) suggested that these predictors were less significant in outdoor locations compared with the home. **Conclusions:** Locations moderate the social and situational characteristics of events and are important for underage drinking. Results can inform targeted prevention efforts. (*J. Stud. Alcohol Drugs*, 79, 417–422, 2018)

THE PREVALENCE OF UNDERAGE DRINKING remains high in the United States. According to the 2015 Monitoring the Future survey, almost two thirds of 12th graders have tried alcohol, and more than one third reported drinking in the past 30 days (Miech et al., 2016). To better inform preventive efforts, the current study investigated whether and how specific locations moderate the effects of social and situational characteristics on risk for underage drinking.

A drinking context consists of the location (e.g., home, outdoor setting), type of event (e.g., party, family get-together), and the social (e.g., number of people, age composition) and situational characteristics (e.g., time of day, adult supervision) of a specific drinking event (Freisthler et al., 2014). Recent studies suggest that specific aspects of drinking contexts influence the risk for underage drinking and alcohol-related consequences (Bersamin et al., 2016; Freisthler et al., 2014; Grüne et al., 2017; Lipperman-Kreda et al., 2015; Mair et al., 2015). Moreover, underage drinking may be associated with different problems depending on the drinking context (Mair et al., 2015). Targeting drinking contexts may be important for preventing underage drinking

and alcohol-related consequences. Yet, how different context characteristics interact to shape underage drinking is not well understood.

It is widely acknowledged that the social characteristics of a drinking context can affect drinking behaviors (Mayer et al., 1998; Monk & Heim, 2014; Quigley & Collins, 1999). For example, studies found that young adults report heavier alcohol use when drinking with larger compared with smaller groups (Kairouz et al., 2002; Senchak et al., 1998; Thrul & Kuntsche, 2015, 2016). The presence or absence of opposite-gender friends may also play an important role in drinking behaviors of young people (Thrul et al., 2017), although these findings are inconsistent with those of other studies (Demers et al., 2002; Miller et al., 2013). Given the overall scarcity of studies investigating the effects of social characteristics of the drinking context on drinking behavior of adolescents, more research in this area is needed.

The presence of adults, adult supervision, and the availability of alcohol are additional factors that may affect underage drinking. A recent review suggested that parental monitoring (e.g., parents' knowledge of their child's activities, whereabouts, and friends) reduced levels of drinking among adolescents (Ryan et al., 2010). The impact of adult

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supervision in specific drinking locations, however, is less clear. A recent study found that the presence of a responsible adult was associated with reduced drinking by girls, but not boys, and perceived ease of access to alcohol was associated with drinking in the home (Bersamin et al., 2016). How group size, adult supervision, gender and age composition, and perceived availability of alcohol are associated with drinking in different locations was therefore a focus of the present investigation.

The current study will address limitations of previous research on drinking contexts. Studies that focus only on drinking events potentially ignore the confounding of the likelihood of certain young drinkers selecting into specific contexts with drinking in those contexts. Previous research has shown that individual characteristics (e.g., gender, age, attitudes) are associated with adolescents' drinking in different locations (Anderson & Brown, 2010; Goncy & Mrug, 2013; Harford & Grant, 1987; Harford & Spiegler, 1983; Lipperman-Kreda et al., 2015). A case-crossover design investigating drinking and nondrinking events in the same type of location for each person—in which each person serves as his or her own control—can reduce confounding effects of differential selection into locations and allows studying the unique contextual effects on underage drinking. To the best of our knowledge, only one study has used this design to compare drinking events to nondrinking events among adolescents (Jackson et al., 2016). Also, previous research has not studied the effects of context characteristics specific to drinking locations. Our recent study that showed specific problems are associated with specific locations (Mair et al., 2015) suggests the importance of investigating characteristics associated with drinking in those locations.

Current study

We investigated associations between social and situational characteristics and risk for underage drinking in three drinking locations using a case-crossover design based on pairs of drinking (case) and nondrinking (control) events among adolescent past-year drinkers. We further investigated interactive effects between these characteristics and locations on the risk of drinking in order to understand whether these effects were moderated by location.

Method

Participants

Sample of cities. Data for the current study were collected from adolescents (15–18 years old) in 24 midsize California cities that participated in a randomized trial to evaluate the effects of environmental strategies to reduce community alcohol problems. The selection of cities has been described

elsewhere (Bersamin et al., 2016). Data for this study were collected at baseline.

Survey methods. Households within each city were randomly sampled from lists of landline and cell phone exchanges that included address information. An invitation letter was mailed to these households, followed by telephone contact. Households and participants were screened for eligibility based on city of residence and age. The estimated response rate was 42%. Respondents received \$20 as compensation for their participation. Institutional review board approval was obtained.

Survey sample. Participants were surveyed through a computer-assisted telephone interview. The survey took place in 2013–2014.

A total of 1,217 adolescents participated in the survey. A subsample of 444 youths who reported past-year alcohol use was selected for the current analyses. Because our aim was to investigate drinking (case) and nondrinking (control) events reported by the same participant for the same location, we excluded 59 participants (13.3%) who did not report corresponding case and control events or who had missing data on any of the measures. Further, we excluded drinking and nondrinking events in bars or nightclubs, since only three pairs of case and control events were available. The current study is based on data from 385 past-year adolescent drinkers. An average of 16.0 youths ($SD = 4.8$, range: 8–26) were included from each city. Compared with included participants, those excluded were more likely to be non-Hispanic or Black but did not differ on any other baseline sociodemographic or drinking behavior measures.

Measures

Alcohol use and drinking locations. Past-year drinkers were asked about the number of days in the past year they drank alcohol in (a) restaurants; (b) bars or nightclubs; (c) outdoor places, such as parks, beaches, parking lots, sidewalks, or street corners; and (d) own home or someone else's home. Respondents who reported past-year alcohol use in any of these locations were asked specific questions about (a) the last time they drank at this location (drinking event – case; e.g., “Think about the LAST TIME you drank alcohol at restaurants.”) and (b) the last time they were at this type of location but did not drink alcohol (nondrinking event – control; e.g., “Now, think about the LAST TIME you were at a restaurant but DID NOT DRINK ALCOHOL.”). Participants were also asked if they ever felt drunk and about the number of days they felt drunk in the past 12 months.

Social and situational characteristics of drinking and nondrinking events. Participants reported the (a) total number of people in the group; (b) whether there was a responsible adult present (“Was there an adult there who was responsible for your group?”; coded as 0 = yes, 1 = no); (c)

TABLE 1. Social and situational characteristics by location and drinking/nondrinking event

Characteristics	Restaurant (<i>n</i> = 50)		Outdoors (<i>n</i> = 350)		Home (<i>n</i> = 696)	
	Drinking (<i>n</i> = 25)	Nondrinking (<i>n</i> = 25)	Drinking (<i>n</i> = 175)	Nondrinking (<i>n</i> = 175)	Drinking (<i>n</i> = 348)	Nondrinking (<i>n</i> = 348)
Number of people, <i>M</i> (<i>SD</i>)	6.12 (6.37)	5.12 (5.82)	12.58 (19.98)	7.25 (12.18)	13.59 (17.57)	4.90 (5.63)
Lack of adult supervision, <i>n</i> (%)	7 (28.0%)	15 (60.0%)	144 (82.3%)	121 (69.1%)	176 (50.6%)	101 (29.0%)
Gender composition, <i>n</i> (%)						
Mostly girls	4 (16.0%)	9 (36.0%)	24 (13.7%)	49 (28.0%)	63 (18.1%)	97 (27.9%)
Mostly boys	4 (16.0%)	4 (16.0%)	44 (25.1%)	46 (26.3%)	71 (20.4%)	114 (32.8%)
About half and half	17 (68.0%)	11 (44.0%)	107 (61.1%)	80 (45.7%)	214 (61.5%)	137 (39.4%)
Age composition older, <i>n</i> (%)	17 (68.0%)	12 (48.0%)	50 (28.6%)	51 (29.1%)	132 (37.9%)	112 (32.2%)
Perceived ease of access, <i>M</i> (<i>SD</i>)	3.04 (0.98)	1.92 (1.15)	3.35 (0.65)	2.70 (1.08)	3.41 (0.75)	2.41 (1.09)
Weekend, <i>n</i> (%)	14 (56.0%)	14 (56.0%)	143 (81.7%)	100 (57.1%)	267 (76.7%)	142 (40.8%)
Number of drinks, <i>M</i> (<i>SD</i>)	1.64 (1.04)	—	3.37 (2.55)	—	3.13 (2.55)	—

the gender distribution of the group (1 = *mostly girls*, 2 = *mostly boys*, 3 = *about half girls and half boys*, dichotomized for regression models into *mostly one gender* [1,2] versus *mixed* [3]); (d) the age distribution of the group (1 = *mostly people your age*, 2 = *mostly people younger than you*, 3 = *mostly people older than you*, 4 = *mostly adults*, 5 = *a mix of ages*, dichotomized into *mostly your age or younger* [1,2] versus *older or mixed* [3,4,5]); (e) how difficult or easy it was for someone their age to get alcohol at the location on that occasion (1 = *very difficult* to 4 = *very easy*); and (f) whether it was a weekend day (Friday or Saturday vs. other days).

Demographics. Youths reported their gender, age, and race/ethnicity.

Analytic strategy

All data were analyzed using Stata Version 14 (StataCorp LP, College Station, TX). Multilevel logistic regression models predicting drinking versus nondrinking as a function of social and situational characteristics were estimated. First, we estimated two-level models (drinking and nondrinking events nested within participants) for each of the three drinking locations separately (i.e., restaurant, outdoors, home), to investigate associations between social and situational characteristics and underage drinking for each of the three locations. Next, we estimated three-level multilevel logistic regression models (drinking and nondrinking events nested within locations nested within participants) to investigate potential moderating effects of different locations on the associations between social and situational characteristics and underage drinking. We estimated six interaction models including all context characteristics using data of all three locations. Cross-level interactions between each context characteristic and location (e.g., Adult Supervision $\times$ Home) were included one at a time. Location main effects were excluded from all interaction models, since by design location was a constant across drinking and nondrinking events (i.e., each drinking event in a given location was paired with

a nondrinking event in that location). We did not control for participant characteristics in the models, as every participant contributed pairs of drinking and nondrinking events for a specific location.

Results

Participant sample description

Participants were 16.5 years old on average (*SD* = 0.9), 47.3% were female, 70.1% were non-Hispanic White, 1.0% were non-Hispanic Black, and 18.4% were Hispanic. Participants reported consuming alcohol on an average of 13.4 days (*SD* = 24.8) in the past year. Most participants (64.4%) reported being drunk at least once in their lives and feeling drunk on an average of 7.5 days during the past year (*SD* = 16.4).

Drinking situation sample description

We analyzed data for a total of 548 drinking events and corresponding 548 nondrinking events, each pair reported by the same participant in the same location (2.8 events per participant). Of the 548 drinking events, 25 (4.6%) were in restaurants, 175 (31.9%) were in outdoor places, and 348 (63.5%) were in the own home or someone else's home (Table 1).

Two-level models investigating main effect for each location

As shown in Table 2, perceived ease of access to alcohol was associated with a higher likelihood of drinking in each of the three locations. Lack of adult supervision and weekends were associated with a higher likelihood of drinking outdoors and in the home. Also, a greater number of people at the event was associated with an increased risk of drinking in the home, as were groups of older age or mixed age compared with groups of younger age or the same age as the adolescent.

TABLE 2. Two-level multilevel models for each location; logistic regression predicting drinking versus nondrinking situation

Predictor	Model 1: Restaurant (<i>n</i> = 50)		Model 2: Outdoors (<i>n</i> = 350)		Model 3: Home (<i>n</i> = 696)	
	aOR	[95% CI]	aOR	[95% CI]	aOR	[95% CI]
Number of people	0.97	[0.87, 1.07]	1.01	[0.98, 1.05]	1.06***	[1.03, 1.09]
Lack of adult supervision	0.38	[0.13, 1.12]	1.70*	[1.00, 2.87]	1.64**	[1.13, 2.38]
Gender composition mixed	1.95	[0.35, 10.76]	1.39	[0.81, 2.36]	1.26	[0.87, 1.82]
Age composition older	0.47	[0.12, 1.92]	1.01	[0.62, 1.64]	2.28***	[1.55, 3.36]
Perceived ease of access	2.75**	[1.45, 5.22]	2.11***	[1.67, 2.65]	2.46***	[2.04, 2.97]
Weekend (vs. weekday)	0.90	[0.27, 2.98]	3.75***	[2.22, 6.35]	4.37***	[3.00, 6.35]

Notes: aOR = adjusted odds ratio; CI = confidence interval.

p* < .05; *p* < .01; ****p* < .001.

Three-level models investigating cross-level interactions between social and situational characteristics and locations

As Table 3 shows, we found significant interactions between location and number of people, group gender composition, group age composition, perceived ease of access, and weekend. These interactions consistently showed that the

associations between these social and situational characteristics and drinking were weaker for outdoors compared with the home.

Discussion

The current study investigated the contribution of social and situational characteristics to underage drinking in three

TABLE 3. Three-level models investigating cross-level interactions between social and situational characteristics and locations; logistic regression predicting drinking versus nondrinking situation (*N* = 1,096)

Predictor	Model 1: No. of People × Location		Model 2: Adult Supervision × Location		Model 3: Gender Composition × Location		Model 4: Age Composition × Location		Model 5: Perceived Access × Location		Model 6: Weekend × Location	
	aOR	[95% CI]	aOR	[95% CI]	aOR	[95% CI]	aOR	[95% CI]	aOR	[95% CI]	aOR	[95% CI]
Number of people	1.06***	[1.03, 1.08]	1.03***	[1.02, 1.05]	1.03***	[1.02, 1.05]	1.04***	[1.02, 1.05]	1.03***	[1.02, 1.05]	1.03***	[1.02, 1.05]
No adult supervision	1.57**	[1.13, 2.17]	1.64**	[1.14, 2.34]	1.61**	[1.15, 2.26]	1.65**	[1.18, 2.30]	1.62**	[1.16, 2.27]	1.56**	[1.12, 2.17]
Gender composition mixed	1.35	[0.99, 1.84]	1.41*	[1.03, 1.92]	1.52*	[1.09, 2.10]	1.38*	[1.01, 1.88]	1.39*	[1.02, 1.90]	1.40*	[1.03, 1.92]
Age composition older	1.60**	[1.13, 2.27]	1.51*	[1.07, 2.14]	1.51*	[1.07, 2.14]	1.72**	[1.20, 2.47]	1.53*	[1.08, 2.16]	1.55*	[1.10, 2.19]
Perceived ease of access	2.32***	[1.97, 2.74]	2.35***	[1.99, 2.77]	2.34***	[1.99, 2.76]	2.35***	[2.00, 2.77]	2.42***	[2.05, 2.86]	2.33***	[1.98, 2.75]
Weekend (vs. weekday)	3.82***	[2.78, 5.24]	3.83***	[2.79, 5.25]	3.89***	[2.83, 5.34]	3.94***	[2.86, 5.42]	3.87***	[2.82, 5.31]	4.41***	[3.11, 6.27]
Interactions												
No. of People × Restaurant	0.99	[0.91, 1.07]										
No. of People × Outdoors	0.96***	[0.93, 0.98]										
No. of People × Home	1.00	ref.										
No Supervision × Restaurant			1.05	[0.66, 1.67]								
No Supervision × Outdoors			0.84	[0.69, 1.01]								
No Supervision × Home			1.00	ref.								
Gender Composition												
Mixed × Restaurant					1.08	[0.70, 1.68]						
Gender Composition												
Mixed × Outdoors					0.78*	[0.64, 0.96]						
Gender Composition Mixed												
× Home					1.00	ref.						
Age Composition Older ×												
Restaurant							1.04	[0.67, 1.62]				
Age Composition Older ×												
Outdoors							0.70**	[0.55, 0.89]				
Age Composition Older ×												
Home							1.00	ref.				
Perceived Access ×												
Restaurant									1.09	[0.85, 1.41]		
Perceived Access ×												
Outdoors									0.88*	[0.80, 0.98]		
Perceived Access ×												
Home									1.00	ref.		
Weekend × Restaurant											0.78	[0.33, 1.84]
Weekend × Outdoors											0.66*	[0.45, 0.97]
Weekend × Home											1.00	ref.

Notes: aOR = adjusted odds ratio; CI = confidence interval; no. = number; ref. = reference.

p* < .05; *p* < .01; ****p* < .001.

specific locations among youth in California using a case-crossover design.

Perceived ease of access to alcohol was positively associated with the risk for underage drinking in each of the three locations but was more important in the home compared with outdoor locations. These findings are consistent with previous research on underage drinking in the home (Bersamin et al., 2016) and extend this finding to underage drinking in restaurants and outdoor locations as well. Moreover, our results lend support to the extant literature on perceived alcohol availability and underage drinking based on large survey studies (Kuntsche et al., 2008; Lipperman-Kreda et al., 2010; Paschall et al., 2012).

The significant association between number of people and risk of underage drinking in the home is consistent with research on young adults (Kairouz et al., 2002; Senchak et al., 1998; Thrul & Kuntsche, 2015). However, we did not find the same effect in restaurants and outdoor locations. Moreover, significant interactions indicated that the number of people present was more important in the home compared with outdoor drinking locations. It is possible that large groups in the home signify parties, which is associated with high risk for underage drinking (Anderson & Brown, 2010; Goncy & Mrug, 2013; Lipperman-Kreda et al., 2015). This interpretation is consistent with our findings that weekends, when parties usually occur, were more strongly associated with drinking in the home compared with outdoor locations. Our finding adds to the literature, because most previous studies have aggregated analyses across multiple locations (Thrul & Kuntsche, 2015), thus potentially masking the differential effects of group size by drinking location. Future studies with adolescents are needed to further clarify this association.

Our results showed that a lack of adult supervision was significantly associated with an increased risk for drinking in the home. This finding is partially congruent with a previous study, which reported that adult supervision in the home reduced underage drinking among girls but not among boys (Bersamin et al., 2016).

Last, we found that being with groups consisting of predominantly older people (compared with the respondent's own age) was associated with a higher risk for drinking in the home. Associating with older people in general increases the likelihood that adolescents can obtain alcohol through social sources, the main way adolescents obtain alcohol (Jackson et al., 2016; Substance Abuse and Mental Health Services Administration, 2011; Wagenaar et al., 1996). Significant interactions indicated that being with groups of predominantly older people is more important for underage drinking in the home compared with outdoor locations. It is possible that the home provides more opportunities for underage drinkers to drink with older people who are less likely to drink outdoors (Lipperman-Kreda et al., 2015).

Limitations

Our findings are based on a nonrepresentative sample from selected mid-sized California cities and may thus reflect specific aspects of the California or U.S. legal context (e.g., drinking age of 21) and not necessarily generalize to other adolescent samples. Further, even in our relatively large sample of adolescents, only 25 pairs of drinking and nondrinking situations were identified in restaurants. This may have resulted in a lack of power to detect main and interactive effects for restaurants. Our analytical strategy did not take into account the number of drinks consumed per occasion. This should be investigated in future studies. Last, survey reports may be associated with retrospective recall bias. However, the case-crossover design may have reduced the impact of this bias by obtaining information from drinkers about the most recent drinking and nondrinking events at a particular location. Thus, recall bias would likely affect both of these events similarly.

Conclusions

Findings of this study can inform context-based tailored interventions targeting specific locations and event characteristics to reduce underage drinking. For example, applications could assess location and situational context either through ecological momentary assessment self-reports or passively collected wearable or smartphone sensor data. This information could then inform and educate adolescents about high-risk situations and suggest protective behavioral strategies to reduce underage drinking or alcohol-related consequences.

Conflict of Interest Statement

Joel W. Grube has been supported within the past three years by funding from the alcohol industry to evaluate industry-sponsored programs to reduce alcohol sales to minors and other alcohol-related harms. The other authors declare that they have no conflict of interest.

References

- Anderson, K. G., & Brown, S. A. (2010). Middle school drinking: Who, where, and when. *Journal of Child & Adolescent Substance Abuse*, 20, 48–62. doi:10.1080/1067828X.2011.534362
- Bersamin, M., Lipperman-Kreda, S., Mair, C., Grube, J., & Gruenewald, P. (2016). Identifying strategies to limit youth drinking in the home. *Journal of Studies on Alcohol and Drugs*, 77, 943–949. doi:10.15288/jsad.2016.77.943
- Demers, A., Kairouz, S., Adlaf, E. M., Gliksman, L., Newton-Taylor, B., & Marchand, A. (2002). Multilevel analysis of situational drinking among Canadian undergraduates. *Social Science & Medicine*, 55, 415–424. doi:10.1016/S0277-9536(01)00258-1
- Freisthler, B., Lipperman-Kreda, S., Bersamin, M., & Gruenewald, P. J. (2014). Tracking the when, where, and with whom of alcohol use: Integrating ecological momentary assessment and geospatial data to examine risk for alcohol-related problems. *Alcohol Research: Current Reviews*, 36, 29–38.

- Goncy, E. A., & Mrug, S. (2013). Where and when adolescents use tobacco, alcohol, and marijuana: Comparisons by age, gender, and race. *Journal of Studies on Alcohol and Drugs*, 74, 288–300. doi:10.15288/jsad.2013.74.288
- Grüne, B., Piontek, D., Pogarell, O., Grübl, A., Groß, C., & Reis, O., . . . Kraus, L. (2017). Acute alcohol intoxication among adolescents—The role of the context of drinking. *European Journal of Pediatrics*, 176, 31–39. doi:10.1007/s00431-016-2797-4
- Harford, T. C., & Grant, B. F. (1987). Psychosocial factors in adolescent drinking contexts. *Journal of Studies on Alcohol*, 48, 551–557. doi:10.15288/jsa.1987.48.551
- Harford, T. C., & Spiegler, D. L. (1983). Developmental trends of adolescent drinking. *Journal of Studies on Alcohol*, 44, 181–188. doi:10.15288/jsa.1983.44.181
- Jackson, K. M., Merrill, J. E., Barnett, N. P., Colby, S. M., Abar, C. C., Rogers, M. L., & Hayes, K. L. (2016). Contextual influences on early drinking: Characteristics of drinking and nondrinking days. *Psychology of Addictive Behaviors*, 30, 566–577. doi:10.1037/adb0000184
- Kairouz, S., Gliksman, L., Demers, A., & Adlaf, E. M. (2002). For all these reasons, I do . . . drink: A multilevel analysis of contextual reasons for drinking among Canadian undergraduates. *Journal of Studies on Alcohol*, 63, 600–608. doi:10.15288/jsa.2002.63.600
- Kuntsche, E., Kuendig, H., & Gmel, G. (2008). Alcohol outlet density, perceived availability and adolescent alcohol use: A multilevel structural equation model. *Journal of Epidemiology and Community Health*, 62, 811–816. doi:10.1136/jech.2007.065367
- Lippman-Kreda, S., Grube, J. W., & Paschall, M. J. (2010). Community norms, enforcement of minimum legal drinking age laws, personal beliefs and underage drinking: An explanatory model. *Journal of Community Health*, 35, 249–257.
- Lippman-Kreda, S., Mair, C. F., Bersamin, M., Gruenewald, P. J., & Grube, J. W. (2015). Who drinks where: Youth selection of drinking contexts. *Alcoholism: Clinical and Experimental Research*, 39, 716–723. doi:10.1111/acer.12670
- Mair, C., Lippman-Kreda, S., Gruenewald, P. J., Bersamin, M., & Grube, J. W. (2015). Adolescent drinking risks associated with specific drinking contexts. *Alcoholism: Clinical and Experimental Research*, 39, 1705–1711. doi:10.1111/acer.12806
- Mayer, R. R., Forster, J. L., Murray, D. M., & Wagenaar, A. C. (1998). Social settings and situations of underage drinking. *Journal of Studies on Alcohol*, 59, 207–215. doi:10.15288/jsa.1998.59.207
- Miech, R. A., Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2016). *Monitoring the Future national survey results on drug use, 1975–2015: Volume I, Secondary school students*. Ann Arbor, MI: Institute for Social Research, The University of Michigan.
- Miller, B. A., Byrnes, H. F., Branner, A., Johnson, M., & Voas, R. (2013). Group influences on individuals drinking and other drug use at clubs. *Journal of Studies on Alcohol and Drugs*, 74, 280–287. doi:10.15288/jsad.2013.74.280
- Monk, R. L., & Heim, D. (2014). A systematic review of the alcohol norms literature: A focus on context. *Drugs: Education, Prevention, & Policy*, 21, 263–282. doi:10.3109/09687637.2014.899990
- Paschall, M. J., Grube, J. W., Thomas, S., Cannon, C., & Treffers, R. (2012). Relationships between local enforcement, alcohol availability, drinking norms, and adolescent alcohol use in 50 California cities. *Journal of Studies on Alcohol and Drugs*, 73, 657–665. doi:10.15288/jsad.2012.73.657
- Quigley, B. M., & Collins, R. L. (1999). The modeling of alcohol consumption: A meta-analytic review. *Journal of Studies on Alcohol*, 60, 90–98. doi:10.15288/jsa.1999.60.90
- Ryan, S. M., Jorm, A. F., & Lubman, D. I. (2010). Parenting factors associated with reduced adolescent alcohol use: A systematic review of longitudinal studies. *Australian and New Zealand Journal of Psychiatry*, 44, 774–783. doi:10.1080/00048674.2010.501759
- Senchak, M., Leonard, K. E., & Greene, B. W. (1998). Alcohol use among college students as a function of their typical social drinking context. *Psychology of Addictive Behaviors*, 12, 62–70. doi:10.1037/0893-164X.12.1.62
- Substance Abuse and Mental Health Services Administration. (2011). *Report to Congress on the prevention and reduction of underage drinking*. Washington, DC: U.S. Department of Health and Human Services.
- Thrl, J., & Kuntsche, E. (2015). The impact of friends on young adults drinking over the course of the evening—An event-level analysis. *Addiction*, 110, 619–626. doi:10.1111/add.12862
- Thrl, J., & Kuntsche, E. (2016). Interactions between drinking motives and friends in predicting young adults alcohol use. *Prevention Science*, 17, 626–635. doi:10.1007/s11121-016-0660-5
- Thrl, J., Labhart, F., & Kuntsche, E. (2017). Drinking with mixed-gender groups is associated with heavy weekend drinking among young adults. *Addiction*, 112, 432–439. doi:10.1111/add.13633
- Wagenaar, A. C., Toomey, T. L., Murray, D. M., Short, B. J., Wolfson, M., & Jones-Webb, R. (1996). Sources of alcohol for underage drinkers. *Journal of Studies on Alcohol*, 57, 325–333. doi:10.15288/jsa.1996.57.325