



HHS Public Access

Author manuscript

J Child Adolesc Subst Abuse. Author manuscript; available in PMC 2017 March 02.

Published in final edited form as:

J Child Adolesc Subst Abuse. 2016 ; 25(3): 206–211. doi:10.1080/1067828X.2014.898168.

Extreme Consumption Drinking Gaming and Prepartying Among High School Students

Cara C. Tomaso,
Smith College

Byron L. Zamboanga,
Smith College

Amie L. Haas,
Palo Alto University

Shannon R. Kenney,
Brown University

Lindsay S. Ham, and
University of Arkansas

Brian Borsari
Brown University

Abstract

Drinking games and prepartying (i.e., drinking before going to a social gathering/event) have emerged as high-risk drinking behaviors in high school students. The present study examines the current prepartying behaviors of high school students who report current participation in extreme consumption games (e.g., *Chugging*) with those who do not. High school students ($N=182$) reporting current drinking games participation completed anonymous surveys. Gamers who prepartied frequently (vs. those who did not) were approximately 1.5 times more likely to play extreme consumption games, even after controlling for demographics, typical consumption, and participation in other types of drinking games. Practitioners should target adolescents who participate in extreme consumption games, particularly those who participate in this high-risk activity as a form of prepartying.

Keywords

Drinking games; prepartying; hazardous alcohol use; problem behaviors; adolescents

Correspondence regarding this article should be addressed to Cara C. Tomaso, Psychology, Smith College, 44 College Lane, Bass Hall, Northampton, MA 01063, USA (ctomaso@smith.edu).

Cara C. Tomaso and Byron L. Zamboanga, Smith College; Amie L. Haas, Palo Alto University; Shannon R. Kenney, Brown University; Lindsay S. Ham, University of Arkansas; Brian Borsari, Brown University.

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute on Alcohol Abuse and Alcoholism or the National Institutes of Health, or the Department of Veterans Affairs or the United States Government.

Drinking games are considered a high-risk drinking activity. Currently, there is no standard definition of the term “drinking games.” One way to operationalize drinking games is that they (a) are social drinking events, (b) are played according to a set of rules that dictate when players should drink and how much alcohol should be consumed, (c) are designed to encourage quick and heavy consumption of alcohol in order to ensure intoxication, and (d) involve performing a cognitive and/or motor task (Zamboanga et al., 2013a). Although the drinking games literature has grown considerably during the last few decades, few studies have examined drinking game behaviors among adolescent and high school samples. For instance, a study with a large sample of Norwegian high school students found that a higher percentage of older students (as opposed to younger students) participated in drinking games and that those who played drinking games frequently also consumed high amounts of alcohol in general (Pedersen, 1990). Although research on drinking games participation among high school students suggests that gaming is associated with increased alcohol consumption, the literature on drinking games within this population (Pedersen, 1990; Farrow, 1987) is limited in scope and is over two decades old.

More recent work on high school drinking game behaviors has relied on college students’ retrospective reports. One study found that 63% of high school graduates reported lifetime participation in drinking games (Borsari, Bergen-Cico, & Carey, 2003). In another study, roughly 54% of first-year college students indicated that they played drinking games during the last months of high school (Kenney, Hummer, & LaBrie, 2010). These prevalence rates pose a health concern because (a) college students’ alcohol-related behaviors may be extensions of their previously established problematic drinking behaviors, such as drinking games participation and prepartying (i.e., drinking before going out), and because (b) these behaviors can persist or even escalate upon students’ arrival at college (Kenney, LaBrie, & Hummer, 2012).

There are literally hundreds of different types of drinking games. Some require skill (e.g., *Coins*), others are competitive (e.g., *Beer Pong*), and some entail an element of chance (e.g., *7–11 dice*; Polizzotto, Saw, Tjhung, Chua, & Stockwell, 2007). Certain games referred to as extreme consumption games (e.g., *Chugging*, *Keg Stands*) focus more on rapid ingestion of alcohol than on competition or chance (LaBrie, Ehret, & Hummer, 2013; see Zamboanga et al. 2013a for review). Extreme consumption games have been identified as the most hazardous type of drinking games because they emphasize both rapid and continuous consumption of large amounts of alcohol compared to other types of drinking games (Polizzotto et al., 2007; LaBrie et al., 2013).

Another high-risk drinking activity is prepartying (a.k.a., “pregaming” or “front-loading”), which involves drinking before going to a social gathering or event (Borsari et al., 2007). Although the literature on prepartying in college samples has grown during the past several years, prepartying in adolescent and high school (or recently graduated) samples is just beginning to be explored (see Zamboanga et al., 2013b for brief review). For instance, a study conducted with a sample of entering college freshmen who reported prior alcohol use found that 65% engaged in prepartying (referred to as “pregaming”) and that participation in this activity was associated with increased negative alcohol-related health outcomes (e.g., vomiting, blackouts, and shakiness due to drinking; Haas, Smith, Kagan, & Jacob, 2012).

Research with high school students who reported current alcohol use found that 48% prepartied at least once in the past 30 days prior to assessment (Zamboanga et al., 2011). Finally, a recent study with adolescents from Germany found that roughly 36% reported that they drink alcohol before going out (Wahl, Sonntag, Roehrig, Kriston, & Berner, 2013). Despite these high prevalence rates, research on prepartying in adolescent and high school samples remains sparse.

Researchers have recently begun to examine the link between drinking games and prepartying among college students. The limited research suggests that those who participate in any drinking games while prepartying are at elevated risk for experiencing negative alcohol-related consequences (LaBrie, Hummer, Kenney, Lac, & Pedersen, 2011; Hummer, LaBrie, & Lac, 2011; Hummer, Napper, Ehret, & LaBrie, 2013). Because extreme consumption games have been identified as the most hazardous form of drinking games (Polizzotto et al., 2007; LaBrie et al., 2013), adolescents' participation in these types of drinking games as well as engaging in prepartying could intensify the health risks that these activities pose for youth. It may also be especially important to consider participation in extreme consumption games alongside prepartying because students who preparty may seek fast, efficient methods of intoxication in order to ensure that they are inebriated before arriving at their next destination. Thus, the rapid intoxication associated with extreme consumption games may make these games particularly attractive to adolescent gamers who preparty. This is a health concern, particularly for adolescents, because prepartying usually entails transportation from one destination to another by car or other means (Zamboanga et al., 2013a).

The present study is, to our knowledge, the first to examine current extreme consumption gaming and prepartying behaviors among a sample of high school students. To do so, we compared drinking gamers who reported current extreme consumption gaming with student drinking gamers who did not. We predicted that extreme consumption gaming would be associated with higher frequencies of prepartying. In addition, recent research suggests that college students often preparty before attending sporting events (in this context, prepartying is often referred to as "tailgating"; Lawrence, Hall, & Lancey, 2012). Moreover, a recent study (Wahl et al., 2013) asked German adolescents about the events for which they typically prepartied (referred to as "predrinking"), and approximately 79% of their sample mentioned that they prepartied before going to private parties. Therefore, we also conducted exploratory analyses using frequency of extreme consumption gaming and prepartying to determine whether there were differences in the types of events that students are likely to preparty for, such as home-sporting events and parties.

Method

Participants and Procedures

Respondents were drawn from an alcohol study ($N=594$) conducted at a local public high school in the northeast region of the United States. As in our previous work (Borsari et al., 2013), we focused on high school students who were current drinkers and who played drinking games (21% of whom played extreme consumption games) at least once in the past month ($n=182$; $n=101$ [56%] reported prepartying at least once in the past month;

$M_{\text{age}}=16.2$; 49% females; 79% White, 21% non-White). All students were mailed an invitation to participate and a parental consent form. Students were instructed to return their signed consent forms [regardless of their parents' decision to allow their child(ren) to participate] to their teachers so that their forms could be entered to win one of several prizes (approximately 70% student response rate). Those who received parental permission to participate completed a self-report, anonymous survey during one class period (which took between 30–45 minutes to complete). The IRB of the principal investigator's institution (a) approved all study procedures and (b) granted a waiver of written assent in order to help facilitate the veracity of students' self-reports; therefore, students verbally assented to complete the survey.

Measures

Students provided information about their age, gender, grades (1=*Mostly F's* to 9=*Mostly A's*), number of prepartying events in the past month, the types of events for which they are likely to preparty (e.g., home night sporting events, parties), and their typical alcohol consumption over the past year (Alcohol Use Disorders Identification Test consumption subscale; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993; $\alpha=.74$). In this study, prepartying was defined as drinking before going out, including drinking while waiting for people to gather, or drinking to get “buzzed” before going to an event where alcohol might be difficult to obtain. Students also reported whether they played drinking games in the past month, as well as the categories of games (Borsari, 2004) they played: (1) extreme consumption games (e.g., *Chugging*, *Keg Stands*, or *Power Hour*), (2) team games (e.g., *Beer Pong*), (3) media games (i.e., games that involve a TV show, movie, or song), (4) dice games (e.g., 7–11), (5) card games (e.g., Kings), (6) motor skills games (e.g., quarters), (7) board games (e.g., Monopoly), and (8) verbal games (e.g., *Never Have I Ever*). In this study, drinking games were defined as an activity that consists of rules that govern the consumption of alcohol. We used the standard past 30-day recall period to help facilitate students' accurate report of their frequency of prepartying and drinking games participation.

Results

Descriptive statistics and bivariate correlations among the study variables are presented in Table 1. We also examined differences in prepartying frequency by extreme consumption gaming behavior. Adolescents who participated in extreme consumption games reported three times as many prepartying events in the past month compared to students who did not engage in extreme consumption games [$M=3.08$ vs. 0.92 , respectively; $F(1,181)=49.12$, $p<.001$, $\eta^2=.21$].

We conducted stepwise logistic regression to identify characteristics predicting extreme consumption gaming as well as the contribution of prepartying to extreme consumption gaming when typical alcohol consumption and demographic variables were entered as covariates (Table 2). Demographic variables (age, gender, grades) and typical alcohol consumption were entered into the first step of the model as control variables, and prepartying frequency was entered in the second step. In the final model, lower grades and greater alcohol consumption were related to a higher likelihood of participation in extreme

consumption games. Prepartying frequency was a significant predictor, even when the demographic variables were entered into the model (OR=1.46; 95% CI=1.12–1.90), and correctly classified 85.6% of the students (false positive rate=4.5%; false negative rate=10.9%). We conducted a follow-up analysis controlling for students' participation in other types of drinking games (as well as demographics and typical alcohol consumption), and results yielded similar findings, such that increased participation in prepartying predicted nearly identical increased odds of being an extreme consumption gamer.

Exploratory Analyses

Using the subset of students who prepartied at least once in the past month ($n=101$), prepartying frequency (low: 1–2 times a month vs. high: 3 or more times a month) was crossed with extreme consumption gaming status (played an extreme consumption vs. did not play an extreme consumption game) to create four groups: (1) low prepartying/did not play an extreme consumption game ($n=56$); (2) low prepartying/played an extreme consumption game ($n=11$); (3) high prepartying/did not play an extreme consumption game ($n=16$); and (4) high prepartying/played an extreme consumption game ($n=18$). Chi-square tests revealed that 89% of students in the high prepartying/played an extreme consumption game group typically prepartied for home-sporting events, compared to 54% of the students in the low prepartying/played an extreme consumption game group [$\chi^2(3, N=101)=10.16, p<.05$, Cramer's $V=.32$]. No group differences emerged for prepartying for parties [$\chi^2(3, N=101)=3.20, p>.05$, Cramer's $V=.18$].

Discussion

Recent research has found that drinking games participation and prepartying are two types of high-risk drinking activities that are common among adolescents (Kenney et al., 2010). Participation in extreme consumption games may be especially relevant to prepartying because it is conceivable that those who preparty might be in a hurry to become inebriated before heading to their next destination. Thus, we examined prepartying and extreme consumption gaming behaviors in a subset of high school student drinkers who reported playing drinking games. As predicted, student gamers who participated in extreme consumption games prepartied three times more often per month than student gamers who did not participate in extreme consumption games. Moreover, when controlling for age, gender, grades, typical alcohol consumption, and participation in other types of drinking games, gamers who prepartied frequently were approximately 1.5 times more likely to be extreme consumption gamers than those who did not.

These findings suggest that extreme consumption gaming and prepartying appear to be uniquely related. Given the health risks associated with these activities (e.g., high blood alcohol levels [BALs] that may lead to adverse physiological effects and/or engagement in high-risk activities with detrimental health effects like unsafe sex), practitioners could focus interventions toward adolescents who preparty *and* participate in extreme consumption games or toward adolescents who play extreme consumption games as a form of prepartying. These targeted interventions are relevant in the college setting given that students' drinking behaviors may be extensions of high-risk drinking habits (e.g.,

prepartying and drinking games participation) that were formed during high school and then persist and/or intensify during college (Kenney et al., 2012).

Our findings also suggest that nearly all of the students in the high prepartying/played an extreme consumption game group prepartied for home-sporting events. Extreme consumption gamers may view alcohol as a necessary social ingredient for having fun and thus may also feel the need to be “buzzed” or intoxicated in order to better enjoy home-sporting events where alcohol is not likely to be available. Perhaps school-sponsored events that provide students with alcohol-free opportunities to socialize prior to home sporting events may be beneficial. Unfortunately, this method of becoming intoxicated not only poses health risks for the student who is intoxicated (e.g., alcohol poisoning; increased risk for injury or accidents), but also for the individuals who encounter that student (e.g., physical injuries from car accidents or fights; sexual victimization) when he or she is in transit to the event and then again during it. Environmental strategies (Saltz, Paschall, McGaffigan, & Nygaard, 2010) that focus on transit points (e.g., bike/foot patrols) during home-sporting events combined with targeted intervention for students who preparty and participate in extreme consumption games may help curb students’ involvement in these high-risk drinking practices and help to protect the health and safety of bystanders.

The study’s limitations indicate several promising directions for future research. First, the use of self-report data without collateral verification and the modest sample size of extreme consumption gamers suggest that larger trials with alternate assessment strategies are needed. Second, the cross-sectional study design, which precludes any inferences of temporal associations or conclusions regarding the direction of the relations between the study variables, highlights the need for longitudinal trials. Third, we acknowledge that we did not examine the co-occurrence of extreme consumption gaming and prepartying activities. Future research should therefore utilize event-specific study designs (LaBrie et al., 2011; Hummer et al., 2011, 2013), whereby students are asked whether they played extreme consumption games as a form of prepartying and/or whether they prepartied before events in which extreme consumption gaming took place. Such inquiries are particularly important given that college students who play drinking games as a form of prepartying (a) reach higher BALs and experience more negative alcohol-related consequences (Hummer et al., 2013) and (b) are more likely to experience blackouts (LaBrie et al., 2011) compared to students who do not play drinking games while prepartying. Finally, although we assessed the different types of events for which students prepartied, we did not examine the social context in which students’ prepartying took place (e.g., with friends or by oneself, in a coed or single-sex setting). In a sample of college students, Hummer et al. (2013) found that although women achieved similar BALs regardless of whether they prepartied with other women or in coed contexts, men became more intoxicated when they prepartied in coed environments. LaBrie et al. (2011) also assessed prepartying context (“prepartying alone” vs. “prepartying with friends/roommates”) but found that neither setting was predictive of blackouts among college students. It is possible that prepartying context is only a salient predictor of negative outcomes when gender (i.e., coed vs. single-sex environment) is taken into account, however the moderating influence of context on the relationship between this high-risk activity and negative consequences is still unclear. As such, future research should endeavor to examine the associations between (a) the social context in which prepartying

takes place, (b) negative alcohol-related consequences, BALs, and drinking games participation as form of prepartying among high school student populations, and (c) whether the aforementioned findings generalize to high school student samples.

Despite these limitations, our preliminary findings shed light on the importance of investigating both extreme consumption gaming and prepartying behaviors among high school students. We hope that this study will encourage further research on these high-risk drinking activities among adolescent samples.

Acknowledgments

This investigation was supported by a grant to Byron L. Zamboanga from the Committee on Faculty Compensation and Development, Smith College. Special thanks to Kathryne Van Tyne for her editorial comments on this paper, and Byron L. Zamboanga's research staff for their assistance with this project. Brian Borsari's contribution to this manuscript was supported by a grant to B. Borsari from the National Institute on Alcohol Abuse and Alcoholism (R01 AA017427).

References

- Borsari B. Drinking games in the college environment: A review. *Journal of Alcohol and Drug Education*. 2004; 48(2):29–51.
- Borsari B, Bergen-Cico D, Carey KB. Self-reported drinking-game participation of incoming college students. *Journal of American College Health*. 2003; 51(4):149–154. DOI: 10.1080/07448480309596343 [PubMed: 12735390]
- Borsari B, Boyle KE, Hustad JTP, Barnett NP, O'Leary Tevyaw T, Kahler CW. Drinking before drinking: Pregaming and drinking games in mandated students. *Addictive Behaviors*. 2007; 32(11): 2964–2705. DOI: 10.1016/j.addbeh.2007.05.003
- Borsari B, Zamboanga BL, Correia CJ, Olthuis JV, Van Tyne K, Zadworny Z, Grossbard JR, Horton NJ. Characterizing high school students who play drinking games using latent class analysis. *Addictive Behaviors*. 2013; 38(10):2532–2540. DOI: 10.1016/j.addbeh.2013.04.009 [PubMed: 23778317]
- Farrow JA. The use of vignette analysis of dangerous driving situations involving alcohol to differentiate adolescent DWI offenders and high school drivers. *The American Journal of Drug and Alcohol Abuse*. 1987; 13(1–2):157–174. DOI: 10.3109/00952998709001506 [PubMed: 3687881]
- Haas AL, Smith SK, Kagan K, Jacob T. Pre-college pre-gaming: Practices, risk factors, and relationship to other indices of problematic drinking during the transition from high school to college. *Psychology of Addictive Behaviors*. 2012; 26(4):931–938. DOI: 10.1037/a0029765 [PubMed: 23088409]
- Hummer JF, LaBrie JW, Lac A. Warming up and staying loose: The prevalence, style, and influence of prepartying behavior and drinking games among intercollegiate athletes. *Athletic Insight*. 2011; 3(2):135–152.
- Hummer JF, Napper LE, Ehret PJ, LaBrie JW. Event-specific risk and ecological factors associated with prepartying among heavier drinking college students. *Addictive Behaviors*. 2013; 38(3):1620–1628. DOI: 10.1016/j.addbeh.2012.09.014 [PubMed: 23254208]
- Kenney SR, Hummer JF, LaBrie JW. An examination of prepartying and drinking game playing during high school and their impact on alcohol-related risk upon entrance into college. *Journal of Youth and Adolescence*. 2010; 39(9):999–1011. DOI: 10.1007/s10964-009-9473-1 [PubMed: 19904593]
- Kenney, SR.; LaBrie, JW.; Hummer, JW. Drinking game playing: A prevalent and risky activity among youth. In: Levesque, RJ., editor. *Encyclopedia of Adolescence*. New York, New York: Springer; 2012. p. 771–777.
- LaBrie JW, Ehret PJ, Hummer JF. Are they all the same? An exploratory, categorical analyses of drinking game types. *Addictive Behaviors*. 2013; 38:2133–2139. DOI: 10.1016/j.addbeh.2012.12.002 [PubMed: 23435275]

- LaBrie JW, Hummer JF, Kenney SR, Lac A, Pedersen ER. Identifying factors that increase the likelihood for alcohol-induced blackouts in the prepartying context. *Substance Use and Misuse*. 2011; 46(8):992–1002. DOI: 10.3109/10826084.2010.542229 [PubMed: 21222521]
- Lawrence SA, Hall T, Lancey P. The relationship among alcohol consumption, tailgating, and negative consequences. *Journal of Child & Adolescent Substance Abuse*. 2012; 21(3):227–237. DOI: 10.1080/1067828X.2012.689805
- Pedersen W. Drinking games adolescents play. *British Journal of Addiction*. 1990; 85(11):1483–1490. DOI: 10.1111/j.1360-0443.1990.tb01632.x [PubMed: 2285845]
- Polizzotto MN, Saw MM, Tjhung I, Chua EH, Stockwell TR. Fluid skills: Drinking games and alcohol consumption among Australian university students. *Drug and Alcohol Review*. 2007; 26(5):469–475. DOI: 10.1080/09595230701494374 [PubMed: 17701509]
- Saltz RF, Paschall MJ, McGaffigan RP, Nygaard PMO. Alcohol risk management in college settings: The Safer California Universities Randomized Trial. *American Journal of Preventive Medicine*. 2010; 39(6):491–499. DOI: 10.1016/j.amepre.2010.08.020 [PubMed: 21084068]
- Saunders JB, Aasland OG, Babor TF, de la Fuente JR, Grant M. Development of the alcohol use disorders identification test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption: II. *Addiction*. 1993; 88(6):791–804. DOI: 10.1111/j.1360-0443.1993.tb02093.x [PubMed: 8329970]
- Wahl S, Sonntag T, Roehrig J, Kriston L, Berner MM. Characteristics of predrinking and associated risks: a survey in a sample of German high school students. *International Journal of Public Health*. 2013; 58(2):197–205. DOI: 10.1007/s00038-012-0409-2 [PubMed: 23007874]
- Zamboanga BL, Borsari B, Ham LS, Olthuis JV, Van Tyne K, Casner HG. Pregaming and its relevance to risky drinking practices, alcohol cognitions, and the social drinking context among high school students. *Psychology of Addictive Behaviors*. 2011; 25(2):350–354. DOI: 10.1037/a0022252
- Zamboanga BL, Pearce MW, Kenney SR, Ham LS, Woods OE, Borsari B. Are “extreme consumption games” drinking games? Sometimes it’s a matter of perspective. *The American Journal of Drug and Alcohol Abuse*. 2013a; 39(5):275–279. DOI: 10.3109/00952990.2013.827202 [PubMed: 23968169]
- Zamboanga BL, Tomaso CC, Haas AL, Olthuis JV, Borish S, Borsari B. Trouble brewing: Pregaming among high school and incoming students. *Journal of Psychosocial Nursing and Mental Health*. 2013b; 51:14–17. DOI: 10.3928/02793695-20130828-0

Table 1

Descriptive Statistics and Bivariate Correlations among the Study Variables.

Variable	M (SD) or %	1	2	3	4	5	6
1. Age	16.24 (1.07)	---					
2. Gender (% girls)	49%	-.04	---				
3. Grades	7.31 ^a (1.21)	-.05	-.17*	---			
4. Typical Alcohol Consumption ^b	4.75 (2.32)	.33**	.34*	-.12	---		
5. Prepartying Frequency ^c	1.38 (1.91)	.28*	.21**	-.19*	.50**	---	
6. Participation in Extreme Consumption Games (% reporting in past month)	21%	.19*	.22**	-.29**	.40**	.46**	---

Note. N=182.

^a 6 = B's and C's and 8 = A's and B's;

^b Indexed by the AUDIT consumption subscale;

^c Number of prepartying events in the past month, 55.5% (n=101) reported prepartying at least once in the past month; 39 students reported that they played extreme consumption games in the past month.

* p<.05,

** p<.01.

Table 2

Logistic Regression Predicting Extreme Consumption Gaming from Demographics, Typical Alcohol Consumption, and Frequency of Prepartying.

Variable	Model 1			Model 2		
	B	SE	OR	B	SE	OR
Block 1						
Age	0.20	0.21	1.22	0.15	0.23	1.02
Gender	-0.36	0.47	0.70	-0.27	0.49	0.76
Grades	-0.61**	0.18	0.54	-0.54**	0.19	0.58
Typical Alcohol Consumption ^a	0.44***	0.12	1.55	0.31*	0.12	1.37
Block 2						
Prepartying Frequency ^b				0.38**	.014	1.46
-2 Log Likelihood		142.06	***		133.11	***
Nagelkerke R ²		0.35			0.41	

Note. N=180. B=unstandardized coefficient, OR=Odds ratio based on Exp(B);

^aIndexed by the AUDIT consumption subscale;

^bNumber of prepartying events in the past month. The model correctly classified 85.6% of the students (false positive rate=4.5%; false negative rate=10.9%).

* $p < .05$,

** $p < .01$,

*** $p < .001$.