An Examination of Prepartying and Drinking Game Playing During High School and Their Impact on Alcohol-Related Risk Upon Entrance into College

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Abstract

Prepartying and drinking game playing are associated with excessive alcohol consumption and alcohol-related negative consequences in college populations; however, research exploring the prevalence of these high risk drinking contexts among high school students, and how such engagement may impact both high school and subsequent college drinking risk, is lacking. The current study, which is the first study to assess prepartying during high school, examined how engaging in either prepartying or drinking game playing during high school was associated with risky high school drinking as well as alcohol use and consequences during the transitional first month of college. The study involved 477 first-year college students, the majority of whom were 18 years old (94%), female (66%), and Caucasian (59%). Prepartying was found to be highly prevalent in high school (45%). Further, students who prepartied or played drinking games during high school drank significantly more in high school than students who did not engage in these high risk activities. Finally, prepartying and game playing during high school were associated with greater collegiate alcohol consumption (controlling for high school drinking) and consequences (controlling for both high school and college drinking). This study establishes prepartying and drinking games as common high risk activities among both high school and incoming first-year college students, and addresses implications for prevention and targeted interventions.

Keywords

Prepartying; Drinking games; High school; College students; Alcohol

Introduction

Excessive drinking among college students is a serious public health concern that not only adversely affects the individual (academic and psychological impairment, addiction, sexual victimization, car accidents, violence, death), but poses significant risks for other students as well as surrounding communities (Hingson et al. 2005; Wechsler et al. 2002). Recently,

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attention has been drawn to two high risk activities widely popular in this population: the playing of drinking games and prepartying (aka. *front-loading, pregaming*, or *pre-funking*) which is "the consumption of alcohol prior to attending a planned event or activity (e.g., party, bar, concert, sporting event) at which more alcohol may or may not be consumed" (Pedersen and Labrie 2007, p. 238). Although researchers and university administrators have linked these increasingly high risk activities to excessive collegiate alcohol consumption and problems, particularly among first-year college students (Adams and Nagoshi 1999; Borsari 2004; Borsari et al. 2007; Johnston et al. 1998; Pedersen and LaBrie 2007), research exploring the impact of initiating and engaging in these high risk drinking contexts while in high school on both high school drinking and subsequent college drinking is lacking. This is the first article to document, albeit retrospectively, prepartying while in high school as well as examine how engaging in prepartying or drinking games during high school may increase high school risk as well as prospective college risk (assessed during the first month after matriculation). Findings aim to illuminate the existing literature and help to better identify and target at-risk students.

Prevalence of Drinking Game Playing and Prepartying in High School and College Populations

An estimated 500 types of drinking games, including *Kings, Power Hour*, and *Quarters*, test players' drinking endurance and speed as they consume large amounts of alcohol in relatively short spans of time (see the "Appendix" for a detailed list of these drinking games). Self-reports have revealed that students most commonly play drinking games for social enhancement, for instance to act as a social lubricant or to intoxicate themselves or others (Borsari 2004; Polizzotto et al. 2007). The few studies to date that have examined high school drinking game participation have revealed high rates of game playing among teens. For example, an investigation of 1,230 Norwegian adolescents aged 14 to 17 showed that 52% of alcohol-using males and 37% of alcohol-using females had played drinking games in the previous 6 months (Pedersen 1990). Recently, data compiled from three consecutive years of precollege summer orientation surveys revealed that 63% of students had played drinking games and, of these, approximately one in five reported weekly and nearly one in two reported monthly or biweekly drinking game playing (Borsari et al. 2003). Evidence suggests that 47% to 65% of the college students who play drinking games (Borsari et al. 2003; DeJong and DeRicco 2007; Johnston et al. 1998) started game playing during high school (Borsari et al. 2003). Although prepartying has not been explored in high school populations, empirical studies using college samples yielded prevalence rates of 64% (Pedersen and LaBrie 2008) and 75% (Pedersen and LaBrie 2007) for the past month and 64% for the past 2 weeks (DeJong and DeRicco 2007). Thus, prepartying appears common among college students (Borsari et al. 2007; DeJong and DeRicco 2007; Pedersen and LaBrie 2007) and, like drinking games, it is likely that the drinking context may have initiated before college.

Based on a social learning theory paradigm, problem behavior theory (Jessor et al. 1991; Jessor and Jessor 1977) has demonstrated utility and empirical validity in explaining the etiology of adolescent and young adult problem behaviors, such as delinquency, cigarette smoking, and alcohol consumption (Chassin et al. 2007; Donovan et al. 1999; Hays et al.

1987; Myers et al. 2009). According to problem behavior theory, underage drinking, which is considered problematic in that it deviates from normative behavior and elicits social disapproval by society at large, is motivated by fundamental and interrelated influences: personality (e.g., value on independence, attitudinal tolerance of deviancy), perceived environment (e.g., parental/friend approval or modeling of problem behavior), and behavior (e.g., drinking). In this framework adolescents may engage in prepartying and drinking game playing due to a confluence of potential risk factors associated with the developmental period. These include the decreased salience of parents and increased salience of peers, greater exposure to the modeling of peer behavior, transition to adulthood and orientation toward autonomy and nonconventional behaviors, and emphasis on drinking as a social lubricant associated with fun (Jessor et al. 1991; Palmqvist et al. 2003; Palmqvist and Santavirta 2006). Problem behavior theory may promote a better understanding of prepartying and drinking games, both of which enable adolescents to reaffirm solidarity, status, and identification with a peer group.

Precollege Risk Factors for College Drinking

Although heavy drinking among college students has often been attributed to newfound freedom from parental monitoring and immersion into collegiate social cultures that condone and even revere unsupervised underage drinking (Hingson et al. 2005; O'Malley and Johnston 2002; Toomey et al. 2007; White et al. 2006; White and Jackson 2004), considerable evidence suggests that college drinking may actually be an extension of pre-established alcohol usage and problems that persist or intensify when students enter college environments (Baer et al. 1995; Hersh and Hussong 2006; Leibsohn 1994; Wechsler et al. 1994). For example, the amount of high school drinking has been found to predict drinking in college as well as increased drinking during the transition into college (LaBrie et al. 2007; LaBrie et al. 2009). This idea of continuity in pre-established behaviors is further supported by problem behavior theory which has found that "later outcomes" (i.e., collegiate drinking) "tend to be consistent with their earlier adolescent antecedents" (Jessor et al. 1991, p. 168). Moreover, extensions of problem behavior theory have conceptualized risk factors (i.e., models of problem behavior as well as greater opportunity and vulnerability to engage in problem behavior) that are particularly relevant to risky drinking in collegiate settings (Costa et al. 2005; Jessor et al. 2003). College transitions marked by heavy alcohol consumption, increased drinking opportunities, and unprecedented personal stressors (Hingson et al. 2002; White et al. 2006) are expected to be particularly risk-enhancing for incoming students with prior high school prepartying or game playing experience as these students may be inclined to perceive heavy drinking as a means by which to ease social discomfort and establish their identity amid unfamiliar peers. Still, although the contexts of college prepartying and drinking games are prevalent and linked with increased risk among college students, it is not known whether engagement in these behaviors during high school is related to increased college alcohol risk beyond other precollege correlates such as general high school drinking, norms, and deviant behaviors.

Drinking Game Playing and Prepartying on College Consequences

The rapid intoxication associated with drinking games and prepartying makes self-regulation appreciably more difficult and negative consequences more likely. Studies have linked game

playing to alcohol-related problems in high school students (i.e., DWI; Farrow 1987) as well as college students (e.g., hangovers, campus violations, reliance on alcohol, risky sexual behaviors, and car accidents; Borsari et al. 2007; Johnston et al. 1998; Nagoshi et al. 1994; Zamboanga et al. 2005). Fueled by high rates of drinking game involvement (Crawford and Nellis 1988), first-year undergraduates are found to face the greatest likelihood for adverse outcomes related to drinking game participation (Adams and Nagoshi 1999; Newman et al. 1991). Further, prepartying appears to predict increased drinking, both during and after prepartying, as well as numerous consequences among college students (e.g., academic neglect, hangovers, blacking out, passing out, fighting, and alcohol dependence; Pedersen and LaBrie 2007; Pedersen et al. 2009). These findings are not surprising considering that the goal of prepartying is to create a "buzz" or level of inebriation that will endure through the event or until more alcohol can be obtained. In fact, in an event-level study comparing a prepartying drinking day to a non-prepartying drinking day among college students, prepartying was associated with significantly greater consumption and higher BALs among female respondents and with greater alcohol-related consequences for both men and women (LaBrie and Pedersen 2008). Moreover, in the only known study to assess both drinking games and prepartying, Borsari et al. (2007) found that prepartying (but not game playing) predicted significantly higher BALs in a sample of students referred for mandatory alcohol intervention for violating alcohol policy and concluded that prepartying and game playing appeared to be distinct activities. In general, both drinking games and prepartying are linked to more problematic drinking and consequences. This may be particularly important with regard to incoming college students as risky drinking may compromise successful negotiation of the transition into college and therefore jeopardize overall collegiate success. Indeed, problematic patterns of drinking established during the first weeks on campus often persist throughout college (Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism 2002; Schulenberg et al. 2001), and approximately one-third of first-year students fail to enroll for their second year due to difficulties during their first year (Upcraft 1995).

Hypotheses

The current study examined the high risk contexts of pre-partying and drinking game playing while in high school to assess their relationships to high risk drinking both in high school and in the first month at college. This appears to be the first study to assess prepartying while in high school and, similar to research related to drinking game playing in this population, prepartying is expected to be a fairly common activity among students during their last months of high school. Further, it is predicted that the level of engagement in either drinking context will be related to greater alcohol consumption during high school as well as greater alcohol-related risks upon entering college. Even after controlling for high school drinking, a known predictor of collegiate drinking, as well as college drinking, a known predictor of college consequences, prepartying and game playing during high school are anticipated to be related to significantly greater alcohol consumption and alcohol-related negative consequences during the first month of college. Finally, prepartying and drinking game playing during high school are hypothesized to interact, such that high conjunctive levels should be most predictive of collegiate drinking and problems. Highlighting both the

high school level and college level impact of specific high school drinking contexts to collegiate drinking may help target at-risk incoming first-year students and benefit prevention and intervention efforts aimed at minimizing risky drinking in both high school and college undergraduate populations.

Method

Participants

All 1,014 incoming first-year students at a midsize private university on the West Coast were recruited to participate in a local Internal Review Board-approved social norms study to reduce misperceived peer drinking norms and alcohol consumption. Data collection for the current study came from the baseline survey and was completed before administration of an intervention. There were eight first-year residence halls with a total of 22 floors. Out of the recruited, 644 students completed the study, yielding a recruitment rate of 63.5%. This rate is comparable with other large-scale studies in this population (e.g. Marlatt et al. 1998; McCabe et al. 2002; Neighbors et al. 2007). As the purpose of the study was to compare drinking variables across groups, non-drinkers were excluded from analyses. Thus, the final sample for all analyses was comprised of 477 (74.1%) individuals who reported drinking on at least one occasion in the prior year. About 94% of respondents reported being 18 years or younger, 5% were 19 years old, and the remaining 1% were 20 years or older. Representative of the makeup of the institution where the research was conducted, the majority of the participants were female (65.7%) and Caucasian (59.0%). Other ethnic representations were as follows: 13.5% Hispanic/Latino, 11.5% Asian, 6.8% African American, 2.3% Hawaiian or Pacific Islander, 0.3% American Indian/Alaskan Native, and 6.5% reported 'other.'

Design and Procedure

After 4 weeks (1 month) on campus, each first-year resident student was electronically mailed an invitation to participate in the study. Students were informed that all responses were confidential and would not be released to any school administrator or residence hall advisor. If the student chose to participate, he/she clicked on a link to the online survey and was prompted to electronically sign an IRB approved consent form before being directed to the survey itself. As an incentive, every student who completed the survey was entered into a raffle for one of ten $100 credit gift cards. The survey assessed demographic and drinking variables. Standard drinks were defined for students as a drink containing one-half ounce of ethyl alcohol. Visual examples included a 12 oz. can and bottle of beer, 8 oz. of malt liquor shown in a 12 oz. glass, 4 oz. of table wine, and 1.25 oz. of spirits shown straight in a shot glass and in a highball glass with ice to show the level before adding mixer.

Measures

High School Drinking Behavior, Prepartying, and Drinking Game Playing—All participants responded to questions assessing overall drinking during their last months of high school. The questions assessed a quantity-frequency-maximum index and were preceded with the following prompt, "Think back over your last months of high school." The questions were, "On average, how many drinks did you have each time you drank?",

"On average, how many days per week did you drink alcohol?", and "What is the maximum number of drinks you drank at any one time?" A "total weekly drinks" variable was computed by multiplying "days per week" by "average drinks per occasion." Similar measures used in previous studies have been shown to be valid indices of alcohol consumption (Earleywine and Martin 1993).

Participants then responded to questions assessing pre-partying and drinking game behavior over the last months of high school (the same time period as above). For pre-partying, the participants first saw a prompt that included a definition of prepartying; "The following questions ask about your prepartying behavior. Prepartying refers to drinking before you go out to your planned destination (e.g., party, bar, or concert) at which more alcohol may or may not be consumed." Participants responded to the following questions: "How many days per month did you typically preparty?", "How many drinks did you typically consume when you prepartied?", "On occasions when you prepartied, how many drinks did you typically consume overall (includes drinks consumed during and after pre-partying)?" Next, drinking games were defined for participants as "games where drinking is part of the known rules, or where chugging is involved. The object of the game is either to avoid drinking or to show that you can drink a lot. A secondary aim is to get others to drink a lot." Participants then responded to the same three questions asked about prepartying but assessing drinking games instead.

Alcohol Use Behavior—Drinking during the college transition was assessed using the Daily Drinking Questionnaire (DDQ; Collins et al. 1985; Dimeff et al. 1999). Instructions asked participants to consider a typical week since entering college. Then, successive questions asked "How many drinks did you typically consume on a Monday? Tuesday? Etc." Students' responses were summed to form a "total drinks per week" variable that was used in the analyses.

Participants also responded to a question designed to assess the frequency of heavy episodic drinking occasions in the past 2 weeks. They reported on how many times they drank 4/5 (four for females, five for males) drinks within a two hour period.

Alcohol Consequences—Negative alcohol-related consequences were assessed with the Brief Young Adult Alcohol Consequences Questionnaire (BYAAC; Kahler et al. 2005) that included 24 "yes" or "no" items assessing past month consequences (e.g., "I have woken up in an unexpected place after heavy drinking," "I have felt badly about myself because of my drinking," "I have taken foolish risks when I have been drinking"). Scores reflect number of items endorsed ($\alpha = .91$). Skew and kurtosis for these variables were adequate (Kline 1998).

Results

Analytic Plan

We first examined descriptive statistics concerning pre-partying and drinking game participation during high school. Next, independent samples ANCOVAs assessed differences of means between participation and non-participation in each high school high risk drinking context on various alcohol-related dependent measures, including high school

alcohol consumption and collegiate drinking behaviors and consequences. Total weekly drinks during high school served as a covariate when testing college level differences. Finally, we implemented hierarchical multiple regression models to examine the extent to which prepartying and drinking game consumption during high school predicted collegiate drinking, while controlling for high school alcohol use, and the extent to which engaging in those activities during high school predicted negative consequences in college, while controlling for both high school and college alcohol use.

Descriptive Data

High school prepartying days per month and game playing days per month variables were dichotomized to denote participation or non-participation in each drinking activity and to compare the demographic characteristics of the total sample ($N = 477$). Two hundred sixteen participants were classified as *prepartiers* (45.3%) while the remaining 261 (54.7%) were classified as *non-prepartiers*. On average, those who prepartied during high school reported prepartying 4.05 (SD = 3.68) days per month, consuming 3.22 (SD = 1.68) alcoholic beverages while prepartying and 5.61 (SD = 4.64) total beverages per prepartying drinking day (including during and after prepartying), and prepartying in 35.83% (SD = 29.45) of drinking occasions. Results also revealed that 61.3% of prepartiers and 28.4% of non-prepartiers engaged in heavy episodic drinking on typical drinking occasions. Supplemental results show that 33.5% of high school non-prepartiers and 65.1% of high school prepartiers prepartied during the first month of college.

With respect to drinking games, we classified those participants who reported drinking game participation during a typical month in high school as *game players* ($N = 256$, 53.7%) and all others as *non-game players* ($N = 221$, 46.3%). Those who game played during high school reported an average 3.56 (SD = 3.44) game playing days per month, consuming 4.41 (SD = 2.41) drinks during typical game playing events and 6.32 (SD = 3.40) drinks overall (during and after playing the drinking game), and game playing in 43.86% (SD = 43.86) of drinking occasions. Respondents cited *Beer Pong/Beirut* (76.3%), *King's* Cup (41.6%), and *Flip Cup* (16%) among the most commonly played drinking games (see the "Appendix" for a detailed list of these drinking games). In addition, 63.7% of game players and 19.5% of non-game players engaged in heavy episodic drinking during typical drinking occasions. We found significant comorbidity between game playing and prepartying ($p < .001$) such that 37.7% of the sample was not involved in either drinking activity, 36.6% engaged in both, 17.2% played drinking games but did not preparty, and 8.6% prepartied but did not play drinking games. No significant demographic differences were found on sex, age, race/ethnicity, anticipated GPA, or family income between the high school prepartier and non-pre-partier groups. In regard to game playing, only race/ethnicity yielded significant differences ($p < .001$) such that among racial/ethnic subsamples whites were significantly more likely to be game players (62.5%) than non-game players (37.5%) during high school. In addition, 14.6% of respondents who did not report high school game playing and 37.1% of those reporting high school game playing engaged in game playing during the first month of college.

Alcohol-Related Behavioral Differences

ANCOVAs illustrated the alcohol-related behavioral differences between those who prepartied and those who did not preparty during high school as well as those who did and did not game play during high school (Table 1).

Prepartying—Compared to non-prepartiers, prepartiers consumed significantly more alcohol in the last few months of high school (total drinks per week, $p < 001$; drinking days per week, $p < 001$; drinks per occasion, $p < 01$; maximum drinks, $p < 001$). On average, prepartiers consumed over 3.6 times more drinks per week than non-prepartiers. Also shown in Table 1, after controlling for total weekly drinks in high school, respondents who had prepartied during high school consumed significantly more alcohol (total drinks per week, $p < .05$; maximum drinks, $p < 05$; heavy episodic drinking, $p < .01$) and experienced significantly more alcohol-related negative consequences ($p < .001$) in college than participants who did not preparty during the last few months of high school. An interesting finding was that high school prepartiers reported similar levels of past high school and current collegiate total weekly drinking while high school non-prepartiers reported drinking slightly more drinks per week in college than in high school. Further, drinks per occasion remained relatively stable while maximum drinks decreased from high school to college. However, it is important to note that the high school measure assessed maximum drinks per occasion during the "last few months" of high school, which not only gauged a larger window than the "past month" collegiate measure but likely involved heavy celebratory drinking surrounding high school graduation.

Drinking Games—Also shown in Table 1, respondents reporting game playing during high school consumed significantly more alcohol in the last few months of high school than non-drinking game respondents (total drinks per week, $p < 001$; drinking days per week, $p < 001$; drinks per occasion, $p < 001$; maximum drinks, $p < 001$). On average, game players reported consuming 5.4 times more drinks per week than non-game playing peers while in high school. Further, high school drinking game participation predicted riskier collegiate drinking behaviors, over and above high school drinking. Significant differences were exhibited in collegiate alcohol consumption (total drinks per week, $p < .01$; drinks per occasion, $p < 001$; maximum drinks, $p < 001$; heavy episodic drinking, $p < .05$) and alcohol-related negative consequences ($p < .05$). On average, high school game players' weekly drinking and drinks per occasion were comparable from high school to college, while non-game playing peers reported slightly increased weekly drinking as well as drinks per occasion from high school to college.

Models Predicting College Drinking and Negative Consequences—To investigate how involvement in prepartying and drinking games during high school impacted alcohol consumption and alcohol-related negative consequences upon entering college, we used two four-step hierarchical multiple regression models to examine the unique contributions of the variables in predicting collegiate drinking (total drinks per week) and alcohol-related negative consequences (BYAAC; Table 2). All predictors were standardized prior to computation of interaction terms; as such, we encountered no significant problems with multicollinearity or tolerance. In Step 1, demographic covariates

(sex and race/ethnicity) were entered. In Step 2, drinks per week during high school served as a covariate in the model predicting college drinking while both high school and college drinking were accounted for in the model predicting collegiate alcohol-related negative consequences. Prepartying and game playing consumption during high school were entered in Step 3, and at Step 4 a two-way interaction variable was entered (prepartying consumption × game playing consumption). Results were interpreted at the final step, respectively, and significant interactions were estimated, graphed, and interpreted in accordance with reliable statistical procedures (Aiken and West 1991). All predictor and moderator variables were plotted at one standard deviation below (low) and above (high) the mean.

The results of the hierarchical multiple regression models are contained in Table 2. First, with respect to college drinking, all blocks of predictors contributed significantly to the explained variance in college drinking at their respective steps of entry ($p < .01$). The final model accounted for 35.7% of the variance in early college drinking [$F(6, 468) = 43.28$, $p < .001$]. In the final model, we found the following predictors to be statistically significant: sex ($\beta = .09$, $p < .05$), race/ethnicity ($\beta = .11$, $p < .01$), high school drinks per week ($\beta = .38$, $p < .001$), high school prepartying consumption ($\beta = .19$, $p < .001$), and high school drinking game playing consumption ($\beta = .32$, $p < .001$). In addition, as illustrated in Fig. 1, the high school prepartying consumption × game playing consumption interaction emerged as statistically significant ($\beta = -.44$, $p < .001$), even after controlling for overall high school consumption, such that lower levels of both prepartying and game playing consumption in high school were related to reduced drinking during the transition into college. As shown, although higher levels of both prepartying and drinking game consumption during high school were related to the highest levels of alcohol consumption, these levels were not substantially greater than those predicted by higher reported levels of consumption related to just one of the drinking contexts independently. Therefore, it appears that engaging in just one of these risky contexts increases college risk and that there is no synergistic or additive impact for engaging in both risky contexts.

In the model predicting alcohol-related negative consequences during the first month of college (Table 2), Step 2 (drinking variables) and Step 4 (interaction) significantly explained variance at their respective steps of entry ($p < .001$). The final model accounted for 26.8% of the variance in consequences [$F(7, 438) = 22.89$, $p < .001$]. We found the following predictors to be statistically significant: sex ($\beta = -.09$, $p < .05$), race/ethnicity ($\beta = -.10$, $p < .05$), high school drinks per week ($\beta = .30$, $p < .001$), college drinks per week ($\beta = .20$, $p < .001$), high school prepartying drinking ($\beta = .14$, $p < .05$), and high school game playing drinking ($\beta = .17$, $p < .01$). The high school prepartying consumption × game playing consumption interaction emerged as statistically significant ($\beta = -.26$, $p < .001$) even after controlling for overall high school and college drinking. As illustrated in Fig. 2, higher levels of both high school prepartying and game playing consumption were associated with the greatest alcohol-related negative consequences in college while lower conjunctive levels were associated with the lowest levels of negative consequences. However, similar to the previous interaction predicting collegiate alcohol use, there appears to be no additive or synergistic effect related to engaging in high levels of both prepartying and game playing

consumption as higher levels of either prepartying or drinking game consumption in high school alone were associated with nearly as many consequences.

Discussion

This is the first study to examine prepartying during high school and explore how involvement in both prepartying and drinking game playing during high school contributes to alcohol risk during both high school and college. The current findings illuminate the previously unexamined context of prepartying during high school. First, prepartying during high school was found to be prevalent with approximately half of the present sample having engaged in prepartying during the last few months of high school. And on those days in which participants prepartied, they drank at risky levels (averaging 5.61 drinks). Second, prepartying during high school emerged as a high risk drinking context; prepartiers reported 3.6 times greater weekly drinking than non-prepartiers and 61.3% of prepartiers (as compared to 28.4% of non-prepartiers) engaged in heavy episodic drinking during typical drinking occasions. Likewise, drinking game playing during high school was both common (53.7% played drinking games) and risk-enhancing (game players consumed 5.4 times more weekly drinks than non-game players and 63.7% of game players engaged in heavy episodic drinking during typical drinking occasions). Thus, prepartying and drinking game playing among this age group appear to be a popular and dangerous drinking contexts that call for focused research attention.

Further, the present findings extend research on the high risk drinking contexts of prepartying and drinking game playing by examining how involvement in these activities during high school contributes to risky drinking and consequences during the transition into college, over and above overall consumption. Although engaging in drinking games during high school has been linked to increased precollege consumption (Borsari et al. 2003), and students who drink more during high school are more likely to engage in heavy drinking in college (e.g. Hersh and Hussong 2006; Read et al. 2002; Sher and Rutledge 2007), little is known of the prospective college risk associated with prepartying and drinking game playing while in high school. In this study, prepartying and game playing during high school, both in tandem and independently, were associated with significantly heavier consumption and more alcohol consequences among first-year students during the first month of college. Of particular interest are results illustrating that engaging in just one of the high risk contexts during high school appears to elevate alcohol-related risk to levels similar to those predicted by engaging in both prepartying and drinking game playing during high school. The results are strengthened by the inclusion of overall high school and college drinking covariates, established predictors of college risk, which help to demonstrate the unique influences of prepartying and game playing during high school, over and above general consumption levels. Further, although average weekly drinks remained stable from high school to college among high school prepartiers (8.61 to 8.59) and game players (8.43 to 8.39), average weekly drinking did increase significantly from high school to college among high school non-pre-partiers (2.44 to 3.07) and non-game players (1.53 to 2.34). Thus, the risk experienced by the high school prepartiers and game players does not necessarily involve an increase in drinking during the transition to college, but rather new collegiate environments lacking parental supervision and previous support systems may lead

to greater risk and consequences for these students. Moreover, although the high school low risk group (non-prepartiers and non-game players) do increase their consumption, it remains lower risk drinking. Nonetheless, it is possible that some of these lower risk drinkers do develop risky drinking patterns in college and therefore college personnel should implement programs targeted at these lower risk drinkers aimed at keeping them from beginning risky drinking practices (e.g., prepartying, drinking game playing, binge drinking).

The findings of the current investigation offer important implications for high school and college personnel as well as parents. That the majority of high school prepartiers and game players were found to engage in heavy episodic drinking while consuming alcohol is particularly disconcerting because these drinking behaviors enhance drinking-related risk quite substantially and may lead to hazardous drinking trajectories. Although the high prevalence rates are alarming, they are also somewhat not surprising given that alcohol typically is not readily available among high school students who may rely on prepartying or drinking game playing before attending social functions, such as high school dances or athletic games. Thus, early high school or junior high school educational initiatives may be best equipped to hinder or prevent dangerous drinking activities before risky patterns may be established. By targeting these high risk contexts during this developmental window, participation may be minimized as might the overall amount of high school drinking, both of which were found to contribute to prospective alcohol risk in college. Further, campaigns aimed at educating teachers and parents about the dangers associated with both pre-partying and drinking games may help raise awareness within schools and families concerning the risk associated with involvement in either one of the these high risk contexts. The present findings also highlight important predictor and contextual variables that can be incorporated into targeted intervention and prevention efforts at the college level. It is suggested that college student personnel, including both administrators and researchers, create novel ways to address these popular drinking contexts. For example, first-year college orientations, many of which already include components addressing high risk activities, such as drinking and drug use, may need to specifically address the high risk contexts of prepartying and drinking games both in order to deter students from engaging in these types of contextual drinking and to teach students harm reduction skills specific to these contexts. Lastly, non-judgmental and non-coercive interventions taking place during the first weeks of college could help experienced prepartiers and game players better understand the dangers associated with these drinking activities and how they may impair overall collegiate success.

Although the results from the present study provide valuable information with important practical implications, they also point to avenues for future research. Future studies should build on this initial investigation of pre-partying during high school to further explicate its role in high school and college alcohol risk. From the prospective of problem behavior theory, assessing students' motivations for prepartying and playing drinking games and examining the peer cultures in which they are embedded may assist in better understanding students' predispositions toward unsafe drinking behaviors. Qualitative studies or student focus groups may illuminate the extent to which socially learned peer group behavior or sensation-seeking personality styles, for instance, may contribute to engagement in these high risk drinking contexts as well as current and prospective alcohol risk. In addition, clarifying how the specific nuances of prepartying and drinking game contexts relate to

various outcomes may be constructive. For example, future studies could assess typical durations of prepartying/game playing events to determine how time constraints may intensify inebriation, particularly in terms of blood alcohol levels. By nature, prepartying is associated with limited time spent drinking (prior to attending the destination event) whereas drinking games can be played throughout the course of a day or night as an end goal unto itself. Examining the differential impact of drinks consumed before, during, and after prepartying and game playing, in addition to event-level experiments, would provide further insight into specific risks associated with these drinking styles. Although both activities necessitate drinking, prepartiers may be more likely to have a focused goal of becoming intoxicated while game players may also be incentivized by the intrinsic competition and social camaraderie of drinking games. Unique drinking motivations for engaging in these behaviors may elucidate distinctive mindsets, and hence risk, toward drinking.

Results should be interpreted in light of several methodological limitations. First, these data rely on self-report measures, which may carry response bias. However, we made great efforts to ensure respondents that surveys were confidential thereby conforming to methods considered valid and reliable in evaluating alcohol use and behavior (Maisto et al. 1995). Second, both high school and college drinking were measured retrospectively, although college drinking was measured more proximally as students reported their drinking in the past month (college) versus reporting their drinking several months ago (high school). Longitudinal studies that systematically collect data from cohorts of students through high school and into college and that assess both high risk contexts are needed. Future research may also benefit from examining longitudinally how college students' drinking patterns with respect to the high risk contexts of prepartying and drinking games change throughout college to determine if alcohol misuse and related problems witnessed in first-year college students are transitional or if they are indicative of hazardous trajectories. The role of prepartying and drinking games in establishing trajectories that may lead to alcohol dependence has yet to be explored and would be of significant interest. Finally, the current findings are limited by our sample, which consists of first-year college students from one mid-sized private university on the West Coast. Because rates of collegiate alcohol consumption are shown to be highest in Northeast and North Central regions and lowest in the Western region of the U.S., the current results may under represent the drinking behavior of typical college students in the United States (O'Malley and Johnston 2002). Further, although male students and white students exhibited heightened risk for college drinking in the present study, large multiple-site representative samples that are geographically and ethnically diverse are warranted to better understand how prepartying and game playing as well as drinking and consequences may differ by sex and race.

The present investigation demonstrates that exposure to prepartying or drinking games during high school was associated with riskier drinking in high school and greater consumption and consequences upon entering college, even after controlling for high school drinking and both high school and college drinking, respectively. Moreover, these findings are particularly enlightening in regard to prepartying as they document for the first time the high prevalence of prepartying during high school and the risks associated with it. Given the association of high school prepartying and drinking game playing with risky outcomes in college, both conjunctively and independently, it appears that harm reduction prevention and

intervention efforts should focus on these two high risk drinking contexts at the beginning of college and, perhaps most importantly, in junior high school or early high school.

Acknowledgments

Appendix

Kings

This card game is typically played by 4 or more players. The dealer shuffles the cards and begins dealing one card at a time, face up, to each player. The first person to be dealt a king picks a type of liquor. The second person to be dealt a king picks the mixer (if any). The third person makes the actual drink according to his/her discretion. And the fourth person who receives the final king consumes the drink that has been made.

Power Hour

This game, with its variant Centurion (or Century Club), is a drinking event in which every player consumes one shot of beer every minute for one hour. Each shot contains 1.5 fluid ounces, for a total of 90 fl. oz. of consumption during the "power hour." For purposes of blood alcohol content, this amount of beer is roughly equivalent to 7.5 drinks. In the Centurion variant, beer shots are consumed one per minute for 100 minutes, roughly equating to 10 drinks. All players successfully completing the total number of shots without retiring are considered winners.

Quarters

This game can be played with any number of players. All players sit around a table or other hard surface, with a single shallow glass placed in the middle. The goal is to try to bounce a quarter off the table and into the glass. If successful, the player selects any other player to have a drink, and receives another turn. If the player fails, play passes to the next in the circle. If the player successfully bounces a quarter into the glass three times in a row, this player may make a rule. As with other drinking games, the rule can be anything that includes drinking as an outcome. For example, nobody is allowed to say a chosen word, or everyone must drink before each attempted bounce, or perhaps no one is allowed to point with his or her fingers. If any rule is broken during the course of play, the violator must consume alcohol.

Beer Pong (Beirut)

This is one of the most popular drinking games. Beer Pong (also known as Beirut) is a game in which players throw a ping-pong ball across a table with the intent of landing the ball in a cup of beer on the other end. The game typically consists of two, two-player teams. Six to ten cups are set up on each side in triangle formation. The goal of the game is to eliminate the other teams' cups before one's own cups are eliminated. When a ball lands in a cup, which is generally filled with 2–3 oz of beer, that cup is eliminated and the defending team

must consume all of the beer inside that cup. Once a team has eliminated all of the opposing cups (with the opponents having consumed all the beer in the cups), the losing team must also consume all the beer remaining in the winning team's cups.

King's Cup

This game can be played with as few as four, or as many as 30, people. The game starts by placing either an empty cup or full beer in the middle of cards (spread around the cup to form a circle). From here, participants sit around the cards (in a circle) and begin to randomly select cards. Each card drawn corresponds to a specific rule. For example, if a person draws an Ace, the "waterfall" begins. The first person begins drinking, then the next person, and the next until everyone in the circle is drinking. However, each person cannot stop drinking until the person before him/her has stopped; thus the last person in line typically consumes the most. The 2 card is for "You," allowing the person choosing the card to elect someone to drink. The 7 card is for "Heaven" or "Social" and requires everyone to drink.

If the King card is drawn, the person must do two things: If there is an empty cup in the middle, the person must contribute some alcohol from his/her glass to that cup (choosing how much to pour) and then choose a rule. If a beer is in the middle, the King is placed on top of the beer and a rule is chosen. Rules can be whatever the individual desires, with the outcome of drinking if the rule is broken. For example, a common rule is the thumbs rule: Every time a player puts his/her thumb on the table, everyone has to do the same and the last person to do so (and slowest to respond) must drink. Finally, when the last King has been drawn, that person has to drink or chug whatever is in the middle. In effect, this person may be required to drink a tall glass comprised of several different kinds of liquors.

Flip Cup

This game (also known as Cups) is a team-based drinking game in which two teams stand on opposite sides of a table, facing one another. In front of each teammate is a plastic cup filled with a standard amount of beer (generally 2–4 oz.). At the start of the race, the first member of each team drinks his or her beverage. When finished, the cup is placed face up at the edge of the table, and the player who drank it attempts to flip the cup, by setting it on the edge of the table and flicking or lifting the bottom until it flips and lands face down on the table, sitting on its mouth. The player may not use two hands to help "guide" the cup to flip over. If he or she is not successful on the first try, the cup must be reset and re-flipped. Only after the first teammate is done flipping the cup successfully can the next person proceed. Whichever team finishes drinking and flipping all of their respective cups is the winner.

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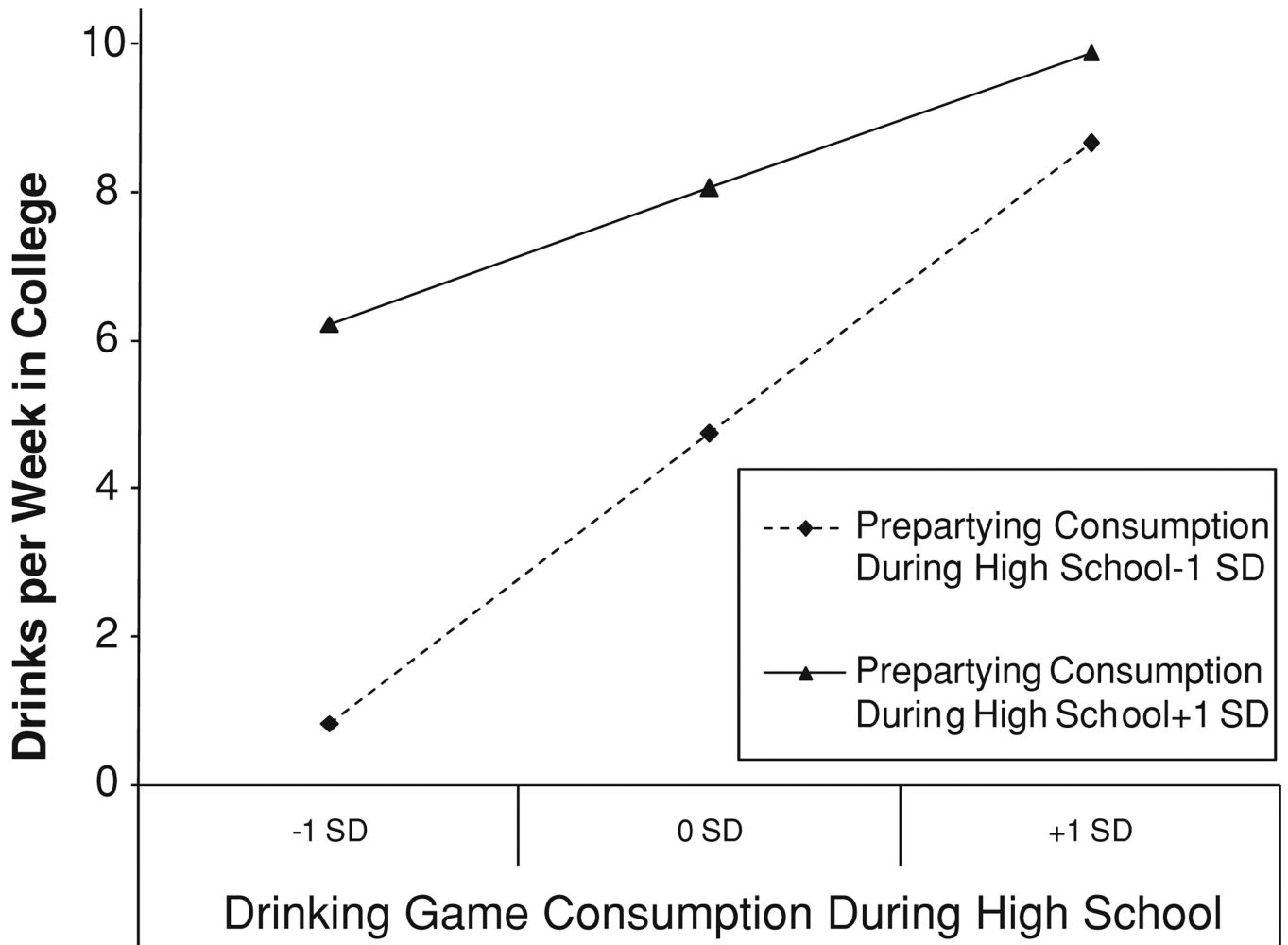
Fig. 1.
Drinking game drinks × prepartying drinks during high school on weekly drinks in college
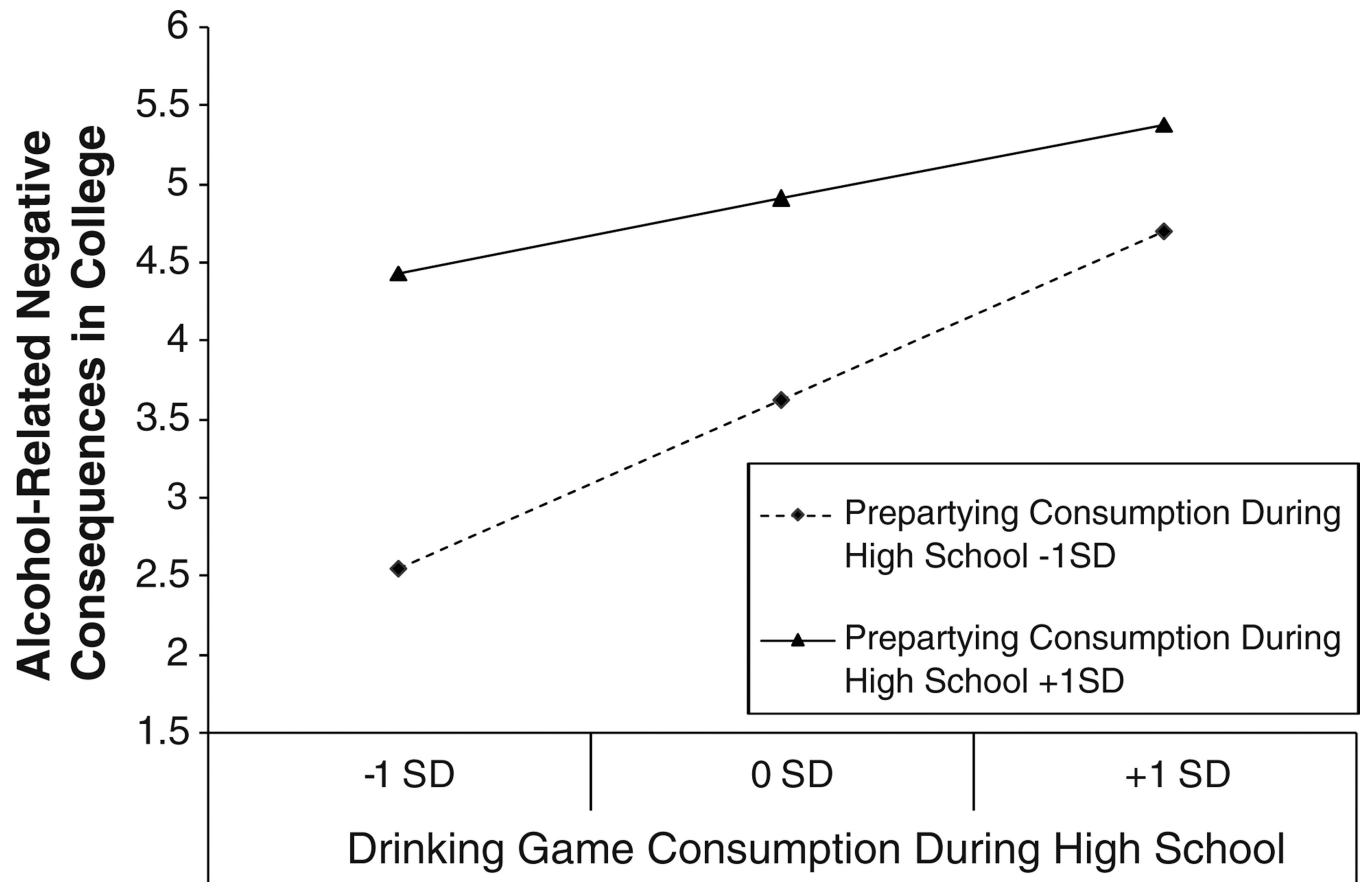
Fig. 2.
Drinking game drinks × prepartying drinks during high school on alcohol-related negative consequences in college

Table 1

Collegiate alcohol-related behavioral differences between high school prepartiers and non-prepartiers and high school drinking game (DG) players and non-drinking game players

	Prepartiers (N = 216)		Non-prepartiers (N = 261)		F-test	DG players (N = 256)		Non-DG Players (N = 221)		F-test
	Mean	SD	Mean	SD		Mean	SD	Mean	SD	
High school drinking										
Weekly drinking days	1.6	1.24	0.52	0.8	33.83***	1.55	1.16	0.38	0.76	72.28***
Drinks per ocassion	4.56	2.45	2.54	2.81	10.19**	4.82	2.67	1.87	2.11	88.04***
Maximum drinks	8.69	4.68	4.92	5.12	10.64***	9.17	5	3.69	3.86	87.26***
Total weekly drinks	8.61	10.29	2.44	4.69	16.04***	8.43	9.67	1.53	3.98	45.45***

	Prepartiers (N = 193)		Non-prepartiers (N = 244)		F-test	DG players (N = 229)		Non-DG players (N = 208)		F-test
	Mean	SD	Mean	SD		Mean	SD	Mean	SD	
College drinking behavior[a]										
Total weekly drinks	8.59	9.72	3.07	7.19	3.78*	8.39	10.42	2.34	5.04	7.86**
Heavy episodic drinking occasions	1.45	1.58	0.49	1.09	8.16**	1.37	1.61	0.41	0.92	5.98*
Drinking activity participation										
Prepartying days per week	1.4	1.55	0.43	0.98	17.18***	1.27	1.53	0.41	0.94	5.59*
Drinking game days per week	0.48	1.1	0.15	0.56	0.81	0.47	1.1	0.11	0.4	4.99*
Alcohol consequences (BYAAC)	5.97	4.88	2.41	3.5	19.56***	5.37	4.62	2.46	3.89	3.74*

[a] Includes high school total weekly drinks covariate

*
$p < .05$

**
$p < .01$

***
$p < .001$

Table 2

Hierarchical mulitple regression model predicting college drinking and alcohol-related negative consequences by high school (HS) prepartying and drinking game (DG) consumption

Predictor	Total drinks				Negative consequences			
	R^2	B	SE	β	R^2	B	SE	β
Step 1	.063***				.001			
Sex (male = 1, female = 0)		.806	.349	.088*		−.405	.195	−.088*
Race (White = 1, non-White = 0)		.953	.334	.107**		−.431	.189	−.095*
Step 2	.189***				.236***			
High school drinking		3.571	.541	.382***		1.389	.311	.297***
College drinking						.970	.251	.195***
Step 3	.018**				.006			
HS prepartying consumption		1.658	.509	.186***		.644	.291	.143*
HS drinking game consumption		2.822	.496	.317***		.774	.283	.174**
Step 4	.087***				.026***			
HS prepartying × DG consumption		−1.041	.131	−.438***		−.301	.077	−.256***
Multiple R	.357				.268			

Typical participation days per month × drinks consumed during drinking event R^2 = R-square change; B, SE, and β from the final step with all predictors entered

*
$p < .05$

**
$p < .01$

***
$p < .001$