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## Drinking Games Participation Among High School and Incoming College Students: A Narrative Review

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### Abstract

The transition from high school to college has been characterized as a potentially vulnerable period due to decreased parental supervision and increased autonomy. This transition can increase participation in high-risk behaviors such as drinking games (DGs), which are a social drinking activity that encourages intoxication and are associated with negative alcohol-related consequences. To date, there has not been a narrative review of DG research that examines this activity among high schoolers and incoming college students specifically, and thus, the current review bridges this gap. Findings indicate that DG participation is consistently linked to negative consequences (e.g., passing out, becoming sick) and other high-risk behaviors, such as prepartying (drinking before going to a social event). In addition, DG participation was linked to demographic (e.g., age, gender), psychological (e.g., personality, alcohol cognitions), and contextual/cultural factors (e.g., the college drinking culture). These findings have implications for current prevention and intervention efforts and suggest promising directions for future research.

### Keywords

Drinking games; alcohol use; adolescents; high school students; incoming college students; college transition

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Students transitioning from high school to college are susceptible to increased involvement with alcohol use (Fromme & Corbin, 2008). National statistics indicate that one in five high schoolers report current binge drinking (i.e., five or more consecutive drinks in a row within a two hour time span on at least one day over the past 30 days; Centers for Disease Control, 2014), and longitudinal research indicates that rates of heavy consumption increase after the college transition (Sher & Rutledge, 2007). One way that high schoolers and college students partake in heavy consumption is by playing drinking games (henceforth referred to

as DGs). DGs are social drinking activities designed to promote intoxication, have rules specifying when and how much players drink, and involve doing some kind of cognitive and/or motor gaming tasks (Zamboanga et al., 2013a). Compared to other high-risk drinking behaviors, like prepartying (i.e., drinking before going out to a social event or gathering; Borsari et al., 2007) and 21<sup>st</sup> birthday celebrations (Neighbors et al., 2014), DGs are a unique high-risk activity because they are comprised of rules expressly designed to encourage drunkenness (Zamboanga & Tomaso, 2014). Participants may in turn use these rules to target specific players for their increased intoxication (Borsari, 2004; Zamboanga et al., 2015).

Prevalence rates of DG participation among high schoolers vary, and most are based on retrospective reports from current college students. For example, Douglas (1987) reported that 73 percent of college students reported first playing DGs during high school. Subsequent studies with incoming college students report that 63% endorse lifetime DG participation (Borsari, Bergen-Cico, & Carey, 2003), and 54% of students who indicate past year alcohol use played DGs during the last few months of high school (Kenney, Hummer, & LaBrie, 2010). These participation rates, spanning three decades, are alarming given that heavy consumption is inherent in DG participation (Pedersen, 1990) and that this activity is associated with a number of negative consequences (Borsari et al., 2013).

Many high schoolers eventually enter college; in October 2014, approximately 68% of students who graduated from high school enrolled in colleges or universities (U.S. Bureau of Labor Statistics, 2015). The college transition can be characterized by decreased parental control and supervision and increased access to alcohol and peers who drink (Borsari, Murphy, & Barnett, 2007), and during this time, students may establish and further refine their personal drinking habits. Participation in DGs appears to play a significant role in this process. Retrospective research with first-year college students indicates that high school DG participation and higher levels of alcohol consumption while gaming are significantly associated with increased negative alcohol-related consequences once students are in college (Kenney et al., 2010). Another recent study with first-year college students found that regardless of how often they play DGs, students are likely to consume more alcohol while playing, further underscoring the high-risk nature of this activity (Ray, Stapleton, Turrisi, & Mun, 2014).

Research indicates that high schoolers and incoming college students are therefore an important target for early intervention and education efforts. Unfortunately, past (Borsari, 2004) and recent (Kenney, LaBrie, & Hummer, 2012; Zamboanga et al., 2014) reviews of the DG literature have focused on the general college population, with little to no attention given to high schoolers and incoming college students. However, given the apparent prevalence of DG participation in this at-risk population, it is important for researchers to expand their understanding of students' DG participation leading up to and during the college transition. Thus, the purpose of this review is threefold: (a) to examine DG beliefs, behaviors, and risk factors among high schoolers and incoming college students, (b) to highlight implications for DG prevention and intervention, and (c) to discuss future research directions.

## Selection of Articles

We restricted this review to studies with samples of high schoolers and incoming college students (i.e., transitioning students surveyed during orientation or their first semester of college). We conducted searches for peer-reviewed articles examining DGs in our target sample using combinations of these keywords: drinking game, game, alcohol, high school student, adolescent, and incoming college student. Ancestry and descendency searches were also conducted. Studies published or in press through January 2015 were eligible for inclusion. Our search yielded 23 manuscripts, to which we added an in press project conducted by members of the current team. Studies that included DGs as part of the analyses, regardless of whether DGs were the focus of the study, were included. However, ten studies that included DGs in latent constructs, included non-freshmen or non-traditionally aged high school or college students, and/or assessed DG behaviors outside of the transition period (i.e., beyond the first semester) were excluded. Of the remaining 13 articles, seven studies were conducted with high schoolers (six of which used the same sample drawn from a Northeastern U.S. high school), and six studies were conducted with incoming college students.

## Literature Review

### Drinking Games, Negative Consequences, and Other High-Risk Behaviors

Consistent with the college DG literature (Zamboanga et al., 2014), research examining high schoolers links DG participation with negative drinking experiences (e.g., memory lapses, passing out, becoming sick, and engaging in regrettable sexual activities; Borsari et al., 2013). A recent study conducted latent class analysis to group high school gamers according to gaming-specific consequences (Borsari et al., 2013). Three classes emerged: “lower-risk” gamers who experienced comparatively few negative consequences as a result of playing DGs, “higher-risk” gamers who had difficulties limiting consumption and experienced negative physical/social outcomes, and “sexual regret” gamers who engaged in unplanned sexual activity that they later regretted as a result of playing DGs. “Higher-risk” and “sexual regret” gamers differed from “lower-risk” gamers with respect to their thoughts about the effects of alcohol, reasons for drinking, and impulsivity; these differences are discussed in greater depth in later sections. In sum, there appears to be a continuum of risk among high school gamers, such that not every player experiences similar types or severity of consequences. Although support for this notion has also been found among college students with respect to DG frequency and gaming consumption (Zamboanga et al., 2010), Borsari et al. (2013) provides a more in-depth understanding of this continuum among high schoolers.

Similar to studies with college students, research suggests that DG participation is also linked with prepartying (i.e., drinking before social events involving alcohol; Borsari et al., 2007) among high schoolers (Zamboanga et al., 2011; Zamboanga et al., 2013b) and incoming college students (e.g., Haas, Smith, Kagan, & Jacob, 2012; Kenney et al., 2010). Investigating whether involvement in both as opposed to one of these activities increases risk for negative consequences, Tomaso et al. (2013) found that high schoolers who reported past 30-day DG participation and prepartying did not significantly differ from those who only played DGs. Consistent with these data, incoming college students who report playing DGs

and prepartying during high school also report similar levels of negative drinking consequences during the first month of college as those who only participated in one activity (Kenney et al., 2010).

Certain types of DGs may be riskier than others (Zamboanga et al., 2013a). For example, extreme consumption games (e.g., *Chugging*) have been characterized as especially risky because of their emphasis on rapid, high-volume consumption (LaBrie, Ehret, & Hummer, 2013). Indeed, Tomaso et al. (in press) found that while controlling for typical alcohol consumption and participation in other types of DGs, high schoolers were more likely to play extreme consumption games if they also reported current, more frequent prepartying, compared to less frequent prepartying.

### Demographic Factors

Late adolescence (i.e., ages 17-19, which encompasses older high school students and younger college students) appears to be a period of peak risk for drinking games participation. For example, the general college DG literature suggests that younger college students (ages 18-19) are at higher risk for DG participation than their older peers (for review, see Zamboanga et al., 2014). Consistent with this suggestion, in the literature with high school students, descriptive statistics reported in Pedersen's (1990) study indicated that a higher percentage of older Norwegian high school students (ages 17-19) reported more frequent DG participation than their younger counterparts (ages 14-16), and a more recent study of high schoolers found that current gamers tended to be slightly older than non-gamers (Borsari et al., 2013). Borsari et al. (2003) also found that those who started drinking when they were younger (ages 13-15) were almost three times more likely to report DG participation than students who started drinking when they were older (ages 16 and up). Thus, individuals who initiate alcohol use early in adolescence may be at risk not only for problematic use later on in life (Grant, Stinson, & Harford, 2001), but also may be susceptible to high-risk styles of drinking such as DG participation.

Consistent with the general college DG literature (Zamboanga et al., 2014), findings regarding gender and DG participation among high schoolers and incoming college students are mixed. Pedersen (1990) found that overall, more high school boys than girls participated in DGs. However, in a sample of high schoolers who reported current drinking, Borsari et al. (2013) found no significant gender differences with regards to DG prevalence. Incoming college students demonstrate inconsistent patterns, as well. Haas et al. (2012) found that being male was modestly associated with increased DG participation on prior drinking occasions, whereas Borsari et al. (2003) reported that a slightly higher proportion of women reported lifetime participation in DGs compared to men. Finally, Borsari et al. (2013) found that a higher proportion of high school gamers reported varsity sports participation compared to non-gamers. Consistent with this finding, research suggests that sports participation is associated with increased alcohol use among adolescents (Kwan, Bobko, Faulkner, Donnelly, & Cairney, 2014) and college students (Lisha & Sussman, 2010).

## Psychological Factors

**Personality**—Borsari et al. (2013) did not find any significant differences with regard to levels of impulsivity between high school gamers and non-gamers; however, high schoolers who regretted sexual encounters as a result of gaming reported higher levels of impulsivity compared to the “lower-risk” and “higher-risk” groups (see above for descriptions of these groups). Thus, impulsivity does not appear to be associated with whether or not high schoolers report current DG participation; rather, impulsivity relates to negative consequences. With regard to incoming college students, one study found that after controlling for alcohol indices and other psychosocial variables, higher levels of sensation seeking (but not impulsivity) were associated with higher peak blood alcohol concentrations while playing DGs (Moser, Pearson, Hustad, & Borsari, 2014). Thus, in light of the novelty and excitement inherent in the first few weeks of college, students high in sensation seeking may be especially vulnerable for DG participation.

**Alcohol expectancies**—High schoolers’ thoughts regarding their beliefs about the effects of alcohol consumption, known as alcohol expectancies (e.g., “When I drink alcohol, I expect that I would feel dizzy”), and their evaluations of such effects, known as expectancy valuations (i.e., the extent to which an individual views a drinking outcome, such as feeling dizzy, as either good or bad), can influence drinking behaviors (Fromme, Stroot, & Kaplan, 1993; for reviews, see Jones, Corbin, & Fromme, 2001; Patel & Fromme, 2010). Participation in DGs is no exception. For example, in one study, bivariate analyses indicated that frequency of DG participation among in-season, high school athletes was positively associated with positive expectancies (e.g., “When I drink alcohol, I expect that I would be outgoing”) and negatively associated with negative expectancies (e.g., “When I drink alcohol, I expect that I would be clumsy”), including negative thoughts regarding the effects of alcohol on athletic-functioning (Zamboanga et al., 2012). Favorable evaluations of both positive and negative drinking outcomes were also associated with increased frequency of DG participation. In addition, Borsari et al. (2013) found that compared to higher risk classes of gamers, “lower-risk” gamers endorsed slightly fewer negative expectancies and valued these negative effects less favorably.

In the one study examining the bivariate relations among these variables in a sample of incoming college students, Haas et al. (2012) found that the beliefs that alcohol makes one attractive, social, and interested in having sex (i.e., “horny”) were each associated with increased DG participation on prior drinking occasions. Taken together, the literature examining DG participation and alcohol expectancies among high schoolers and incoming college students mirrors findings with general college students, such that if individuals expect good things to happen as a result of drinking and endorse favorable valuations of negative drinking outcomes, their risk for DG participation increases.

**Drinking motives**—Alcohol theory and research suggest that motives for drinking serve as the “final common pathway” to alcohol consumption, through which other predictors of alcohol use (e.g., environmental and situational factors) are mediated (Kuntsche, Knibbe, Gmel, & Engels, 2005). Among studies that have examined the association between drinking motives and DGs among high schoolers, Van Tyne et al. (2012) found that social (e.g., “to be

sociable”) motives were positively associated with DG participation. Moreover, the associations between positive expectancy outcomes/valuations and DG participation were partially mediated by social motives. Another study by Borsari et al. (2013) found that “higher-risk” high school gamers (i.e., those who had a hard time limiting their drinking and who experienced negative physical and social consequences from playing DGs) and “sexual-regret” high school gamers (i.e., those who engaged in unplanned sexual activity that they later regretted as a result of playing DGs) endorsed drinking for social and enhancement motives slightly more frequently than those in the “lower-risk” group (i.e., gamers who experienced comparatively few negative consequences as a result of playing DGs). Further, Tomaso et al. (2013) found that high schoolers who reported current participation in both DGs and prepartying endorsed enhancement motives more frequently than those who only played DGs and those who did not participate in either activity. Finally, in terms of studies with samples of incoming college students, Boekeloo, Novik, and Bush (2011) suggest that students who report drinking to get drunk are at increased risk for consuming alcohol as part of playing DGs. Another study by Borsari et al. (2003) found that the most commonly endorsed motive for playing DGs among incoming college students was to get drunk quickly (endorsed by 55% of the sample), followed closely by playing to socialize/meet new people (endorsed by 53% of the sample). Altogether, social (e.g., alcohol makes social gatherings more enjoyable) and enhancement (e.g., alcohol makes one feel pleasant or high) drinking motives are consistently associated with increased risk for DG participation, and this may be because DGs are a social drinking activity designed to promote drinking to intoxication.

### Contextual and Cultural Factors

Contextual and cultural factors can also influence incoming college students’ DG behaviors. For instance, one study found that incoming college students were more likely to endorse drinking while playing DGs in the context of a small gathering of friends compared to less controlled contexts involving heckling (i.e., where players being made fun of, perhaps as a result of performing poorly; Anderson, Duncan, Buras, Packard, & Kennedy, 2013). In addition, Moser et al. (2014) recently examined the cultural adjustment that takes place when students transition into college; those who internalized the college drinking culture (e.g., “college is a time for experimentation with alcohol”) had higher BAC estimates during DG participation.

### Implications for Prevention and Intervention

The literature on DGs among adolescents and transitioning college students has important implications for intervention and prevention that leaders in high school communities (e.g., school nurses, coaches, and PTA members) and health practitioners in college settings (e.g., doctors, physician’s assistants, registered nurses, or nurse practitioners) may find useful in their efforts to combat alcohol use and negative related outcomes:

- High school and college personnel could employ a more comprehensive approach to assessing students’ drinking behaviors by including measures of involvement in high-risk activities and assessing gaming-specific negative consequences (e.g., Hazardous Drinking Game Measure; Borsari et al., 2013) in order to map students onto a continuum of risk.



- Efforts to provide incoming college students with substance-free social alternatives, as well as incentives to participate in these events, could help deter involvement in DGs, especially among students who may be predisposed to sensation seeking.
- Colleges could incorporate DG-specific data and education into existing alcohol harm reduction interventions on campus, particularly during first-year summer orientations or early in college when many U.S. campuses already implement alcohol prevention/intervention programming. For example, many colleges require students to take AlcoholEdu, an empirically developed, online tutorial that educates students about the effects of alcohol and encourages them to reflect on their drinking behaviors (AlcoholEdu for College, 2015; see also Croom et al., 2009). Similarly, BASICs (Brief Alcohol Screening and Intervention for College Students; Dimeff, Baer, Kivlahan, & Marlatt, 1999) is a brief motivational intervention that combines empathetic, non-confrontational interviews with an online survey that creates customized feedback based on social norms, and has been shown to be effective at reducing students' alcohol use and mitigating negative alcohol-related consequences (Terlecki, Buckner, Larimer, & Copeland, 2015). Incorporating data about students' participation in high-risk drinking activities such as DGs may be ideally suited for normative reeducation. Indeed, Pederson and LaBrie (2008) found that students generally overestimate peers' DG participation and consumption and that, among men in particular, perceptions of same-sex DG behaviors are associated with higher levels of actual DG participation. Campus wellness efforts could also assess the efficacy of such programming and solicit student feedback in order to continuously improve their content and delivery.
- Interventions designed to challenge an individual's expectations about the effects of alcohol consumption (i.e., alcohol expectancy challenge interventions) that have been used with general populations of college students (Scott-Sheldon, Terry, Carey, Garey, & Carey, 2012) could be adapted for use with high schoolers and transitioning college students specifically. For example, colleges could administer personalized drinking feedback (i.e., feedback given to students that provides them with information about their self-reported drinking attitudes and behaviors) to student athletes to educate them about the negative effects of excessive alcohol use on athletic performance (Martens, Kilmer, Beck, & Zamboanga, 2010).
- Among incoming college students, perceptions of higher levels of parental monitoring, higher levels of disapproval toward heavy drinking, and lower levels of permissiveness toward alcohol use are associated with reduced levels of heavy episodic drinking (i.e., consuming five or more drinks in a row; Wood, Read, Mitchell, & Brand, 2004). These findings indicate that parents continue to exert influence on their children, even during late adolescence and the college transition. Prevention efforts could therefore capitalize on parental influence by including parents in college intervention efforts designed to address high-risk drinking behaviors such as involvement in DGs. Parents should be informed that



their influence matters and strive to maintain open lines of communication with their children, even after they leave for college (NIAAA, 2010). For example, providing parents with didactic information about the prevalence and risks of DG participation may facilitate important conversations with their children. Moreover, parental intervention efforts designed to correct misperceptions parents may have regarding (a) their children's alcohol use and (b) other parents' approval of drinking (in order to illustrate that not all parents endorse lenient attitudes toward alcohol use) could also prove useful in combatting college students' risk for high-risk drinking, such as DG involvement (LaBrie, Napper, & Hummer, 2014). Not only could such efforts encourage parents to engage in greater and more in-depth conversations with their children regarding their alcohol use, but they could also reduce the risk of "parental groupthink," whereby parents fall into the trap of thinking that other parents approve of drinking. Finally, parents should also familiarize themselves with the alcohol policies at their child's college and consider these policies as part of the college selection process (NIAAA, 2010).

## Future Research Directions

Compared to studies examining DG participation among college students broadly, the literature investigating this high-risk behavior among high schoolers and incoming college students is underdeveloped. Indeed, we acknowledge that among the seven papers examining high schoolers' DG participation, six used the same sample, highlighting the need for further research examining this high-risk behavior in current high schoolers. Moreover, although there is considerable overlap in terms of what is known about DGs and its correlates with high schoolers transitioning into college and the general college population, more research examining DGs among high schoolers and incoming college students is needed to corroborate these preliminary findings.

- Piecing together the cross-sectional high school and college DG literatures indicates that older high schoolers (i.e., ages 17-18) and younger college students (i.e., ages 18-19) are at greatest risk for DG participation, perhaps representing a one-to-three year window of vulnerability for these transitioning students. Although previous research has examined alcohol use in general during the transition from high school to college (Fromme & Corbin, 2008), to our knowledge there is currently no published research examining high schoolers' involvement in DGs during this period. As such, longitudinal, multivariate studies following younger samples are needed to derive specific classes of gamers and non-gamers in order to map drinking trajectories across high school, the college transition, and beyond.
- Research on contextual and cultural factors related to DG participation among high school and/or incoming college students is very limited. Drawing from studies with general college samples, students play DGs in a variety of contexts (e.g., Greek houses, bars), with private homes as the most common venue (Zamboanga et al., 2014). However, given that high school students are underage

and may still live with their parents, the context in which these students play DGs may differ from the general college population and therefore warrants examination. Studies that have examined cultural factors and their relevance to DG participation are also lacking. One important cultural correlate of alcohol use is acculturation, or how cultural groups adapt to a new social environment (Iwamoto, Kaya, Grivel, & Clinton, 2016; Zamboanga, Tomaso, Kondo, & Schwartz, 2014). Although only two studies thus far have examined the link between acculturation (or some proxy of it) and DG participation in general college students (Schwartz et al., 2014; Zamboanga, Iwamoto, Pesigan, & Tomaso, 2015), no studies to date have investigated these associations among ethnic minority high school and/or incoming college students. Investigating the relationships between both contextual and cultural factors and DG participation in this population is an important direction for future research.

- Future studies should assess negative consequences that are the direct result of DG participation in order to differentiate these outcomes from general negative consequences. Moreover, one of the limitations of the DG literature among high schoolers, incoming college students, and college students in general is that many studies do not use standardized measures specific to DGs (e.g., Hazardous Drinking Games Measure, Borsari et al., 2013), which makes comparisons across studies difficult. In addition, studies that have examined participation in both prepartying and DGs do not assess whether these behaviors co-occurred. Event-specific designs are needed to clarify the unique and combined effects of participation in these behaviors (e.g., Ray et al., 2014).
- To our knowledge, studies examining DG participation during young adulthood are limited to samples of college students, and as such, it is unclear how (if at all) high schoolers planning to attend college differ from those who do not attend college in terms of their DG participation. Given that a sizeable minority of the graduating class of 2014 either joined the workforce or the military (approximately 38 percent; U.S. Bureau of Labor Statistics, 2015), it is important to examine participation in high-risk drinking behaviors like DGs among young adults who do not attend college.
- A measure that assesses motives specific to playing DGs (see Johnson & Sheets, 2004) has been developed for college students, but its psychometric properties have not been examined with high schoolers. An important next step would be to examine whether DG-specific motives extend beyond general drinking motives in this population. In support of this suggestion, LaBrie, Hummer, Pedersen, Lac, and Chithambo (2012) found that college students' prepartying-specific motives, but not general motives, predicted participation in this behavior.
- As far as we know, studies examining DGs among high schoolers have relied solely on self-report measures. The Simulated Drinking Games Procedure (SDGP; Silvestri, Lewis, Borsari, & Correia, 2014) enables researchers to study DG participation in a laboratory setting by substituting alcohol with water. In addition to helping researchers overcome legal and ethical constraints in the

study of underage drinking, the SDGP allows them to systematically manipulate independent variables of interest and more reliably assess DG behaviors.

- We recognize that alcohol consumption patterns and drinking attitudes may not be uniform across all colleges/universities. As such, it is possible that rates of DG participation and attitudes/norms regarding this activity vary as a function of school type (i.e., private vs. public) and location (i.e., different regions across the U.S.). Future research investigating whether such differences exist is warranted (see Table 1).
- To our knowledge, there are no statistical reviews or meta-analyses examining DGs among high schoolers and/or incoming college students. As more DG research with this demographic continues to be published, researchers should consider conducting such analyses in order to strengthen our confidence in the patterns established here and in other reviews (e.g., Zamboanga et al., 2014; Kenney et al., 2012).

## Conclusion

The small but growing DG literature among high schoolers and incoming college students clearly indicates that participation in this high-risk behavior begins long before students start college. DG participation also appears to be a multi-faceted phenomenon, with a variety of factors linked with involvement. Fortunately, there are several promising intervention and prevention strategies that can be utilized to reduce DG participation before and during this transition, and additional research with this population will only continue to improve the efficacy of these efforts.

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**Table 1**

## Sample Characteristics of DGs Research

Authors	Region/Country	High School Students	Incoming College Students	Public School	Private School
Pedersen (1990)	Norway	✓		Did not report (multi-site sample)	
Zamboanga et al. (2011, 2012)					
Van Tyne et al. (2012)	Northeastern U.S.	✓		✓	
Borsari et al. (2013)					
Tomaso et al. (2013, in press)					
Borsari et al. (2003)	Northeastern U.S.		✓	Did not report	
Kenney et al. (2010)	West Coast, U.S.		✓		✓
Boekeloo et al. (2011)	Did not report		✓	Did not report	
Haas et al. (2012)	West Coast, U.S.		✓		✓
Anderson et al. (2013)	West Coast, U.S.		✓	✓	
Moser et al. (2014)	Mid-Atlantic U.S.		✓	✓	