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Towards the development of laboratory methods for studying drinking games: Initial findings, methodological considerations, and future directions

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Abstract

Background—Drinking games are prevalent among college students and are associated with increased alcohol use and negative alcohol-related consequences. There has been substantial growth in research on drinking games. However, the majority of published studies rely on retrospective self-reports of behavior and very few studies have made use of laboratory procedures to systematically observe drinking game behavior.

Objectives—The current paper draws on the authors' experiences designing and implementing methods for the study of drinking games in the laboratory.

Results—The paper addressed the following key design features: (a) drinking game selection; (b) beverage selection; (c) standardizing game play; (d) selection of dependent and independent variables; and (e) creating a realistic drinking game environment.

Conclusions—The goal of this methodological review paper is to encourage other researchers to pursue laboratory research on drinking game behavior. Use of laboratory-based methodologies will facilitate a better understanding of the dynamics of risky drinking and inform prevention and intervention efforts.

Keywords

Alcohol; college students; drinking games

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Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this paper.

Introduction

More than half of college students report recent drinking game participation (1–4), and students who play drinking games are more likely to binge drink and experience negative alcohol consequences than those who do not (3,5–7). The popularity of drinking games, and their link to negative outcomes, has resulted in a significant increase in research in the past decade. From 2004–2013, over 40 studies were published (8).

The purpose of this manuscript is two-fold. First, we will discuss the rationale for conducting laboratory-based research on drinking games. To do so, we will identify limitations of self-report and observational approaches, and discuss our work designing and implementing the Simulated Drinking Game Procedure (SDGP) which serves as an example of laboratory-based drinking game research. Second, we will highlight five design features researchers will encounter when conducting laboratory-based studies. For each feature, we outline the pros and cons of options that researchers must consider, raise cautionary points, and offer suggestions for future research.

Rationale for laboratory research on drinking games

As outlined in Table 1, each methodological approach is capable of addressing a range of research variables and has a set of relative strengths and weaknesses.

Self-report

The vast majority of studies on drinking games rely *solely* on self-report of dependent variables linked to drinking game behavior (e.g. frequency of play, alcohol consumption) and correlates of such behavior (e.g. motives, personality traits, use of protective behavioral strategies). Self-report research offers a number of advantages (e.g. cost and ease of administration; [9]) and participants generally provide valid data (10). Self-report research also includes a number of universal limitations (unexpected influences due to the item wording or format, participant bias; [9]) along with limitations specific to studying drinking games. First, drinking games may involve alcohol consumption outside the rules of game play (e.g. sipping on a separate drink during gameplay, having a drink in between rounds of a game). Therefore, it may be difficult for students to accurately recall the number of drinks consumed solely during game play. Second, drinking games make use of cups or pitchers, often involve sharing drinks, and encourage rapid consumption or chugging. Relatedly, a student's rate of consumption during a game may differ from their typical consumption rate. These factors can make it difficult for participants to report consumption in terms of "standard drinks" as researchers prefer. Third, specific effects of intoxication such as blacking out or episodic memory lapses may impact recall (11,12).

Observational

Field studies and naturalistic observation address several limitations of self-report research data by directly observing the participant behavior (13,14). For example, Clapp et al. (13) used observation and breath alcohol samples to study students attending parties. They reported that theme parties (e.g. costume parties) are associated with heavier drinking and increased likelihood of drinking game participation. Relatively few observational studies of

drinking games have been conducted (8) and have their own limitations. Most notably, observational studies do not allow researchers to exercise experimental control over the drinking environment. Observation studies are also limited with respect to external validity, as the data tend to be collected in specific locations. Furthermore, observational studies of drinking game behavior introduce logistic and ethical concerns, especially if the research requires the use of audio or video recordings that can limit the ability to systematically observe complex social behavior (i.e. potential need to intervene with alcohol-impaired participants, ability to obtain informed consent from intoxicated participants, use of sensitive recording equipment in drinking environments).

Laboratory

To address the inherent limitations of self-report and observational research, alcohol consumption and social behavior have been investigated in laboratory settings (e.g. 15). These studies allow researchers to directly observe dependent variables while controlling for extraneous factors that might impact measurement. Laboratory studies also allow researchers to observe a wider range of theoretically important dependent variables that might not be accessible through self-report or observational studies. For example, coding systems such as the Bar Observation Social Interaction Measure (BOSIM; 16,17) and the Facial Action Coding System (FACS; 18) measure a range of social behavior (e.g. facial expression, speech pattern, body language) during laboratory-based alcohol studies. These tools provide researchers with a wealth of options for conducting sophisticated studies that can increase our understanding of drinking game behavior. Finally, laboratory studies allow researchers to systematically manipulate various aspects of the environment that can function as independent variables. This unique feature of laboratory studies has tremendous potential to assess a wide range of behaviors that can have an impact on drinking game behavior and negative consequences. Factors that serve to limit consumption within a drinking game can also be modeled in the laboratory, and such research has the potential to inform prevention and intervention efforts.

Similar to observational studies, laboratory studies may be limited in their external validity. However, as noted, well-designed laboratory studies afford the experimenter greater control over variables otherwise uncontrolled in observational studies (e.g. amount of alcohol served, rules of drinking games, extraneous alcohol consumption). This control may offset the limits to external validity in exchange for greater internal validity. Moreover, the experimental control available in a laboratory study need not be at the exclusion of external validity. For example, the Behavioral Alcohol Research Laboratory (BARLAB; 15) was designed to simulate a tavern or cocktail lounge. Participants reported that their experiences in the BARLAB were similar to experiences in taverns, and that being in the BARLAB setting did not impact their level of alcohol consumption. These results suggest that findings from the BARLAB and other laboratory studies can be generalized to other more natural environments.

Despite the history and potential advantages of studying alcohol consumption in laboratory environments, we know of only three published studies that have done so (19–21), all of which have been conducted by our research team. We have referred to our methodology as

the Simulated Drinking Game Procedure (SDGP), and detailed descriptions of the key elements of this work can be found in Table 2. As our studies are not homogeneous in terms of methodology, we posit that the SDGP should not be thought of as a uniform set of procedures. Instead, we propose that the SDGP is an initial step towards modeling drinking game behavior in a laboratory setting. Although we do not wish to imply "ownership" over this multifaceted and evolving approach to studying drinking games, we *do* hope that our work developing and implementing SDGP studies will provide researchers with guidance in conducting their own laboratory-based studies. Specifically, we address the following design features: (a) drinking game selection; (b) beverage selection; (c) standardizing gameplay; (d) selection of dependent and independent variables; and (e) creating a realistic drinking game environment (see Table 3 for a brief overview).

Drinking game selection

Understanding the nature of specific drinking games and having clear research questions are key aspects of selecting an appropriate game. To facilitate this process, academic (e.g. 4,22,23), popular literature (24), and websites (25) are useful resources for understanding features of various drinking games. We encourage researchers to make use of these resources to learn more about the basic premise and specific rules associated with all of the games mentioned in this paper and other published studies. Basic research on the amount of alcohol consumed during a specific game could make use of any number of games; however, heavy consumption-based games (e.g. Power Hour) may not be appropriate, depending on the setting and feasible safety precautions. If the social dynamics of drinking games are of interest, one should select games that have opportunities for interpersonal interaction (e.g. Never Have I Ever). Finally, games with strong motor or cognitive components are more appropriate for studies on the "reversal of competence," or the tendency for intoxication to decrease game performance and result in additional alcohol consumption (26). Our initial laboratory study (19) used Beer Pong given its popularity on college campuses (4), and subsequent research included Three Man and Memory to compare behavior across game types (20); the specific rules for each game can be found in the original empirical articles. Additional research is needed to determine how a range of games impact behavior, and to determine the generalizability of results across those games.

Beverage selection

Non-alcoholic

When played in the natural environment, drinking games are almost always played with alcohol, with beer as the most commonly used beverage (23). However, in countries with specific drinking ages, it may be illegal or unethical to serve alcohol to underage participants. Furthermore, administering alcohol requires the assessment of other health-related factors that might contraindicate alcohol consumption (e.g. pregnancy, illnesses, medications). Water or other non-alcoholic beverages may be useful when piloting studies, estimating the risk of a game, or studying behaviors and variables that are not likely to be influenced by alcohol consumption. For example, our initial laboratory studies (19,20) used water instead of alcohol in part because they were designed as feasibility studies. Additional goals included developing an initial understanding of how much and at what rate liquid was

consumed during various drinking games. By substituting water for alcohol, we accomplished this goal without introducing the risks associated with alcohol. We were also able to include underage drinkers; being able to conduct laboratory studies with underage drinkers is particularly important given the prevalence of drinking game participation in this population (27,28).

Alcohol

Despite the potential benefits of using non-alcoholic beverages, there are a number of inherent limitations of using non-alcoholic beverages, including concerns about predictive and external validity (21,29). Our most recent study (21) served alcohol, permitting us to study behavior under more realistic conditions and to make use of handheld portable breath alcohol content (BrAC) measurement devices to assess intoxication. Furthermore, the use of an alcoholic beverage allowed us to study drink refusal, or the likelihood that participants would refuse an assigned drink. As a general rule, studies designed to assess social or motor behaviors likely to be impacted by the consumption of alcohol or intoxication will require the administration of alcohol.

Regarding safety and precautions, all studies involving alcohol administration expose participants to a certain degree of risk, and researchers conducting such studies will need to be in close collaboration with their local Institutional Review Board. Drinking games introduce specific risks beyond those encountered in other alcohol administration studies. Typical alcohol administration studies are designed to have participants consume a certain amount of alcohol or reach a specific blood alcohol concentration (BAC). However, drinking games often involve a variable amount of consumption that is driven by rules and/or participant behavior. In addition, certain games allow players to assign drinks to other players, which can lead to targeted intoxication. These factors make it difficult for researchers to predict *a priori* how much alcohol participants will consume and what BAC they will obtain. Steps can be taken to limit the amount of alcohol consumed, including limiting the amount of alcohol made available during the game, serving light beer to decrease BAC relative to liquid consumed, including clear statements that participants can refuse any assigned drinks, or including rules to address targeting specific players.

A note of caution: one of our previous studies (21) limited the amount of alcohol that could be consumed by a participant to 20 ounces of light beer. This amount helped mitigate the risk for participants. However, many of our participants reported that the amount of alcohol served in the lab was lower than what they normally consume when playing a drinking game. Researchers will need to determine the appropriate balance among the safety of the participants with appropriate precautions, the amount of alcohol that will be made available during game play, and the external validity of the study.

Standardizing game play

The rules of the game and all aspects of game play need to be standardized and operationalized to increase the internal validity of the study and allow for accurate reporting and replication. In developing our laboratory studies, we once again made use of various resources to identify common rules, the physical layout of the game, and the materials

needed. It is also important to note that many players make use of “house rules,” or variations on the more standard rules of a game. The popularity of house rules gives researchers latitude in adapting game play to fit the laboratory environment, without jeopardizing ecological validity and perhaps enhancing external validity. The popularity of house rules also introduces the possibility of conducting studies on how participants discuss and establish rules and other aspects of game play. As with any laboratory study, proper interpretation and replication of results depends on accurate reporting of all procedures. As such, we recommend that researchers conducting drinking game studies include the rules of play in their publications.

We recommend piloting the rules and all aspects of game play. During the Cameron et al. (20) study, we determined that Three Man was a particularly difficult game to learn, and that led to several revisions to our instructions prior to actual data collection sessions. Each data collection session started with research assistants reviewing the rules of the game with participants, and we allowed participants some practice time to familiarize themselves with game play. We also posted our rules so that they could be referred to throughout the session.

Selection of dependent and independent variables

Laboratory-based studies of drinking games can be used to assess and/or manipulate a variety of behaviors such as consumption, intoxication, social dynamics, and intervention-relevant behaviors. These suggestions are in no way exhaustive, and our hope is that researchers will address a wide range of questions.

Consumption

Perhaps the most basic question to be addressed is establishing how much alcohol is consumed during various drinking games. More specific questions, such as the rate of consumption, social or environmental behaviors that impact consumption, and decisions to not consume or end participation in the drinking game can also be incorporated into laboratory research. In our research, research assistants were trained to observe and code the length of gaming sessions along with a range of consumption behaviors, including the number of drinks assigned as per the rules of the particular drinking game, the number of drinks actually consumed vs. the number refused, and the total volume of liquid consumed. As previously noted, one of our previous studies (21) manipulated whether or not participants were served alcohol or water, and additional studies are needed to determine how various alcoholic beverages and non-alcoholic controls (e.g. water, placebo) influence consumption and other outcome variables.

Intoxication

BAC is a standard measure for assessing level of intoxication. Methods for measuring BAC include *in vivo* assessment tools such as BrAC devices and formulas designed to provide an estimate (eBAC). In assessing for BrACs, a number of protocols are available to increase the reliability and validity of the obtained results (14). Similarly, there are a number of guidelines for selecting eBAC formulas that accurately estimate BAC (e.g. 30). In studies using non-alcoholic beverages, eBACs are particularly useful for estimating the BAC that

would be achieved if actual alcohol was consumed (19,20). We have also compared the use of BrAC and eBAC to assess intoxication during games of Beer Pong (21), and recommend that future studies make similar comparisons across a range of drinking games.

In our previous studies in which water was served (19,20), participants were given the option of drinking the water assigned to them or pouring it into a pitcher. This option was provided to minimize the participants' discomfort if they became satiated, which can be an issue when participants are asked to play multiple games over an extended period of time (20). Pouring the liquid into the pitcher also prevented the timing of the game from being disrupted if they did not spend time drinking the liquid; we ensured that both drinking or refusing the water involved a distinct motor movement. When calculating eBAC, the focus was on the number of drinks the participant was instructed to consume, and not the amount of water they actually consumed. Thus, refused drinks were still counted, as the goal was to capture the number of drinks that would be consumed if participants followed the rules of the game. Our decision was based on the assumption that the social dynamics involved in accepting or refusing a drink of water were likely different than similar decision regarding alcohol. We believe the example highlights the need to consider how each decision a researcher makes needs to be considered in light of the goals of the study and the implication for both internal and external validity, and then clearly communicated in the results section.

In addition to directly assessing or estimating BAC, there are a variety of self-report measures that can be used to obtain participants' self-reported levels of intoxication. The Biphasic Alcohol Effects Scale (BAES; 31) measures stimulation and sedation associated with alcohol administration during the ascending and descending limbs of the blood alcohol curve. Survey research suggests that expectancies regarding alcohol effects are also important predictors of drinking game participation and negative outcomes (32). Future research incorporating elements of the balanced placebo design (see 33) could be especially useful in separating the pharmacological and expectancy effects associated with drinking game participation. For example, a recent laboratory study (34) using a balanced placebo design determined that alcohol expectancies, but not implicit associations, were predictive of actual alcohol consumption. It is currently unknown how drinking-game specific expectancies and implicit associations impact consumption and other outcomes during a drinking game.

Social dynamics

College students play drinking games for a variety of motives, including competition, social facilitation, and to flirt or facilitate sexual encounters (35). Various drinking games also directly incorporate various social dynamics into the rules; assigning drinks, verbal interactions, physical contact, and various forms of teamwork are common features. All of these behaviors are thought to enhance both the reinforcing value of drinking games and add to the potential for risky outcomes. However, there is very limited research on how the social dynamics of drinking games are linked to intoxication and other risky behaviors and consequences.

As previously noted, coding systems such as the BOSIM (16,17) and the FACS (18) have been used to assess a wide range of behaviors (e.g. facial expression, speech pattern, flirting behaviors, body language) during laboratory-based alcohol studies. Laboratory studies assessing social dynamics have indicated that strangers consuming alcohol within a group demonstrate more positive social behavior and are more likely to make risky decisions (36,37). Laboratory studies indicate that increased alcohol consumption can lead to changes in verbal and non-verbal social behavior that can be misperceived as signals of sexual attraction and interest (17,38). These studies shed light on the mechanisms that may be linked to negative alcohol-related outcomes. Incorporating these coding systems into laboratory studies of drinking games would provide a powerful tool for understanding the social benefits and the risks associated with drinking game participation.

The selection of participants will likely impact social behavior and the generalizability of the results. For example, recruiting acquaintances, groups of friends, or existing groups (e.g. members of a fraternity) as participants may be the most realistic arrangement. However, socially connected groups will be heterogeneous in terms of relatedness and will bring with them a history and set of expectations regarding their interaction that can be challenging to quantify and could potentially bias results. Using strangers or “unacquainted” participants also serves as a realistic arrangement, as drinking games are common means of facilitating initial social interaction and curbing social anxiety (39). Thus unacquainted groups allow for the study of initial group integration (e.g. 18) and related social phenomena. Controlling whether or not groups of participants are acquainted or unacquainted as an independent variable also introduces several lines of research on how various groups play drinking games.

Using confederates allows for direct manipulation and standardization of the social environment; this maximizes the internal validity of the laboratory procedures and again opens up a range of possible independent variables (e.g. composition of the group, alcohol consumption, and social behavior of the confederates). In a classic demonstration of social determinants of alcohol consumption (15), participants were paired with confederates who behaved in a social or unsociable manner while modeling either light or heavy alcohol consumption. Their results suggest that the effects of modeling could be enhanced or disrupted by the level of sociability of the confederate and the rapport established between drinking partners. Studies manipulating how confederates behave during drinking games (e.g. level of sociability, adherence to rules, drink acceptance vs. refusal, peer pressure to accept drinks) have yet to be conducted and would broaden our view of how social dynamics operate and impact outcomes. Using confederates can also introduce the risk of experimenter bias on the part of the confederates, and demand characteristics on the part of the participants if they begin to suspect the role of the confederates. Both of these negative outcomes can be mitigated through careful attention to standardization and fidelity to experimental conditions. Furthermore, the use of confederates typically involves deception, which opens up various ethical and logistical problems, such as the extent to which study details need to be revealed as part of the informed consent or debriefing procedures. Thus, choosing participants will once again depend on the goals of the study and the desired balance between internal and external validity.

Intervention-relevant behaviors

Neighbors and colleagues (40) proposed the development of specific prevention and intervention strategies for high-risk drinking events such as 21st birthday celebrations and pregaming (the consumption of alcohol prior to a primary social gathering or event; 41). We envision laboratory-based studies as an important source of data for such prevention efforts. For example, recent research has demonstrated that students have a difficult time estimating their current BAC levels (42). Drinking games and other contexts that promote higher BACs may exacerbate difficulties with estimation. Laboratory studies could provide a suitable medium for modeling and practicing a range of skills and protective behavioral strategies aimed at limiting harmful levels of intoxication (e.g. estimating BAC, drink refusal, sticking to limits). Once again, the use of confederates who model various strategies or behaviors during a drinking game could provide a powerful demonstration of how social dynamics influence the use of intervention-relevant behaviors. One such intervention is bystander intervention, in which individuals who observe a risky situation intervene or help the threatened individual (see 43). Bystander intervention has emerged as a promising strategy in the prevention of sexual assault by college men (44). Therefore, laboratory studies could be used to examine particular behaviors that facilitate or inhibit bystander interventions in the context of drinking games.

Creating a realistic drinking game environment

Throughout the paper we have discussed the need to balance internal and external validity. A realistic drinking environment can enhance ecological validity (e.g. 15), which in turn increases external validity (45). Therefore, in our most recent study, our laboratory was designed to replicate a living room that might be found in a college apartment or fraternity house (see Figure 1; 21). The laboratory included a large couch and chairs, drinking game and university-themed posters and wall decorations, music, and video games. Future laboratory studies should construct additional naturalistic drinking environments (e.g. bars, dorm room, theme parties) to extend external validity and compare behavior across environments. It is also worth noting that various aspects of the physical environment, such as the gender composition of the participants, the presence and behavior of non-players, and the presence or absence of drinking-related cues could all impact participants' behavior and warrant future research. Given the potential influence of contextual features in drinking behaviors, researchers should carefully document and describe the aspects of their environment when disseminating their work. We also highly recommend pilot testing the environment with the intended study population to ensure that it is comfortable and a realistic representation of an actual drinking game environment. Furthermore, a post-session assessment of the participants' experience in the laboratory can serve as a valuable check of ecological validity (e.g. 21).

Conclusion

Drinking games have been linked to excessive alcohol consumption and increased risk of negative consequences. A recent increase in research on drinking games among college students has contributed to our understanding of drinking game behavior. Laboratory studies designed to study drinking games have the potential to overcome limitations associated with

self-report and observation studies and offer researchers a complementary methodology. We hope that our experience designing and conducting laboratory studies will encourage other researchers to replicate and extend our efforts. This work will facilitate a better understanding of the dynamics of risky drinking, both theoretically and practically, and in turn inform prevention and intervention efforts.

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Figure 1.
Living room environment used in Silvestri et al. (2013) (21).

Table 1

Comparison of different approaches for assessing variables associated with drinking games.

Variables	Self-report	Observational	Laboratory
Dependent variables			
Self-reported frequency of playing drinking games (past month, year)	√*		
Self-reported quantity of drinks consumed during game	√*		
Actual quantity of drinks consumed during game play		√	√
Estimated time spent playing game	√*		
Actual time spent playing game		√	√
Self-reported consequences resulting from playing drinking games	√*		
Actual consequences resulting from playing drinking games		√	√
Self-reported use of harm reduction and protective behavioral strategies	√*		
Actual use of harm reduction and protective behavioral strategies		√	√
Estimated Blood Alcohol Content (BAC) achieved during drinking games	√*	√	√
Actual Blood Alcohol Content (BAC) achieved during drinking games		√	√
Self-reported consumption of additional drinks (e.g. “side drinks”)	√*		
Actual consumption of additional drinks (e.g. “side drinks”)		√	√
Adherence to rules of game by participants		√	√
Social behaviors during game		√	√
Verbal communication during game		√	√
Facial expressions		√	√
Independent variables			
Manipulation of participant groups (acquainted, unacquainted, degree of relatedness)			√
Manipulation of confederate behavior (drinking behavior, sociability, protective behaviors)			√
Manipulation of environment (lighting, music, alcohol-related cues)			√
Manipulation of beverage (alcohol v. non-alcohol, use of placebo)			√

* May be influenced by recall bias.

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Table 2

Design features and relevant findings of published laboratory studies.

Citation	Aim(s)		Sample	Drinking game(s) played	Liquid served	Measures	Relevant findings	
Correia and Cameron (2010) (19)	**1**	Initiate and describe the development of a laboratory protocol for studying DG behavior.	*n* = 52 Unacquainted college students aged 19 and over	Beer Pong	Water	Length of game Drinks consumed eBAC	**1**	Participation in Beer Pong can lead to rapid consumption of alcohol and an associated rise in eBAC.
	2	Measure amount of liquid consumed and eBAC.					**2**	DG participation has additional risks for female participants.
Cameron, Leon, and Correia (2011) (20)	**1**	Determine how behavior varies across three different types of DGs.	*n* = 92 Unacquainted college students aged 19 and over	Beer Pong Memory Three Man	Water	Drinks consumed eBAC	**1**	Total consumption and eBAC varied as a function of game type.
	2	Examine gender differences in eBAC.					**2**	eBACs were higher for female participants across game type.
	3	Determine whether previous experience playing DGs related to consumption and eBAC.					**3**	Previous experience playing the three DGs had no impact on total drink consumption or eBAC.
Silvestri, Cameron, Borsari, and Correia (2013) (21)	**1**	Measure and compare DG behavior across two beverage conditions: water vs. beer.	*n* = 40 Unacquainted college students aged 21 and over	Beer Pong	Beer Water	Length of game Drinks consumed Drinks refused eBAC BrAC Subjective rating of ecological validity	**1**	Participants viewed the laboratory procedure as a realistic simulation of actual DGs.
	2	Examine differences in BAC levels obtained between eBAC and BrAC, with the goal of determining how these measures relate to one another when used within the context of a DG.					**2**	Participants served beer consumed more drinks and refused fewer drinks than participants served water.
							3	Both measures of BAC were correlated with one another and with the amount of alcohol consumed.
							4	eBAC tended to be higher than BrAC, particularly among female participants.

DG, Drinking games; BAC, Blood alcohol concentration; eBAC, Estimated blood alcohol concentration, based on calculated formula; BrAC, Breath alcohol concentration, obtained via handheld portable breath alcohol instrument.

Table 3

Overview of key design features.

Design feature	Summary of feature
Drinking game selection	• Games vary in terms of cognitive and motor demands, social dynamics, expected alcohol consumption, and safety. The selected game should match the goals of the study. • Consult academic and popular literature to identify appropriate game.
Beverage selection	• Non-alcoholic beverages are necessary when participants are under the legal drinking age. • Non-alcoholic beverages are useful in pilot studies, when estimating consumption patterns in previously unstudied games, and when studying variables that are not likely to be influenced by alcohol consumption or intoxication. • The use of alcohol is likely to increase the external validity of the study, and allows researchers to address a wider range of variables. • The use of alcohol requires careful consideration of participant safety.
Standardizing game play	• Game rules are easily found in a variety of print and digital sources. Be aware of “house rules.” • Game rules should be standardized across sessions, clearly communicated to participants, and described in sufficient detail to allow replication. • Pilot testing can help ensure that rules are clear.
Selection of dependent and independent variables	• Laboratory studies can be used to address a wide range of dependent and independent variables. • Variables related to *consumption* can be measured to determine how much is alcohol is consumed during various drinking games. • Levels of *intoxication* can be assessed using BrAC devices and formulas designed to estimate BAC, or via self-report rating scales. • Balanced placebo design can be used to separate pharmacological and expectancy effects related to drinking game participation. • Social dynamics can be assessed as an outcome of game play, or manipulated to better understand aspects of game play that mediate potentially negative outcomes. • The selection and composition of the participants (e.g. acquainted, unacquainted, confederates) should depend on the goals of the study, and opens up a range of research possibilities. • Studying *intervention-relevant behaviors* (use of protective behaviors, participants’ estimates of BAC, bystander intervention) could directly benefit preventions and intervention efforts.
Creating a realistic drinking game environment	• A realistic drinking environment can enhance ecological and external validity. • Pilot testing and post-session ratings of participants’ experience in the study can be important steps towards increased validity. • Various aspects of the physical environment could be manipulated to determine how these factors influence drinking game behavior.