Intention-Behavior Discrepancies for Alcohol Consumption Among College Students

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INTENTION-BEHAVIOR DISCREPANCIES FOR ALCOHOL CONSUMPTION
AMONG COLLEGE STUDENTS

by

Emily K. Junkin
B.A. December 2018, Auburn University

A Thesis Submitted to the Faculty of Old Dominion University in Partial Fulfillment of the Requirements for the Degree of

MASTER OF SCIENCE
PSYCHOLOGY

OLD DOMINION UNIVERSITY
December 2021

Approved by:

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ABSTRACT

INTENTION-BEHAVIOR DISCREPANCIES FOR ALCOHOL CONSUMPTION AMONG COLLEGE STUDENTS

Emily K. Junkin
Old Dominion University, 2021
Director: Dr. Cathy Lau-Barraco

Unplanned drinkers may experience elevated risk for drinking-related harm. Research examining unplanned drinking focuses on the unplanned nature of a drinking episode (i.e., did the student drink when no drinking was planned), yet this does not capture the importance of the unintended quantity consumed. For instance, a discrepancy between drinking intentions and actual consumption has the potential to differentially impact alcohol-related outcomes beyond what is accounted for by unplanned drinking episodes. Further, research has not investigated how college students’ unintended drinking is associated with alcohol-related consequences.

Moreover, utilization of protective behavioral strategies (PBS) has been shown to decrease negative outcomes and is theorized to explain the disproportionate consequences experienced by unplanned versus planned drinkers, yet PBS have not been evaluated within the drinking discrepancy literature. Thus, the present study utilized data from a typical drinking occasion to (1) describe the occurrence of intention-inconsistent drinking, (2) determine the association between discrepancies and consequences, (3) and evaluate the impact of unplanned drinking, PBS use, and their combined effects on this relationship. Additionally, we (4) assessed the influence of social factors (i.e., active and passive peer influence) on quantity discrepancies.

Participants were 44 (28 females; \(M_{\text{age}} = 21.91\)) heavy drinking college students who completed two surveys (one pre-weekend and post-weekend) on their drinking behaviors for Friday and
Saturday. Results indicated that the majority of drinking episodes were not consistent with participants’ intended quantities, and drinking less than intended occurred most prevalently. Additionally, among planned drinkers with low PBS, larger discrepancies associated with lower alcohol-related consequences. Finally, social factors did not significantly predict discrepancy size. Overall, this study was among the first to assess discrepancy statistics for U.S. college students on typical drinking events. Additionally, we were the first to utilize discrepancy statistics as unique predictors of consequences, and our findings shed light on the influence of unintended drinking for a subset of drinkers. However, the present study’s analyses were severely influenced by low sample size and COVID-19-related factors, and results should be interpreted with caution. Additional research with adequate power is needed to replicate the present study under conditions outside of COVID-19.
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This thesis is dedicated to Julie Rodil (1995-2021).
ACKNOWLEDGEMENTS

I sincerely express my deepest gratitude to my mentor and advisor, Cathy Lau-Barraco. Her guidance, aid, and patience throughout the entirety of this project was unrivaled. My budding skills and confidence as a researcher in the field of psychology have grown considerably under her mentorship. While graduate school and thesis projects can be daunting, Cathy has provided unmatched advice and support, and I am grateful to acknowledge the contributions that she has made in my successes as a psychologist in training. Additionally, I extend this gratitude to my committee members, Drs. Robin Lewis and Abby Braitman. Throughout this project, as in other domains of my graduate training, their expertise and support are greatly appreciated.

I am also grateful to acknowledge the contributions of my colleagues and lab members. Specifically, Douglas Glenn and Ryan Collier have extended their support and time throughout this project. I am most appreciative of their voluntary involvement in the success of data collection during the COVID-19 pandemic.

Lastly, my sincerest thanks are extended to my cohort members, family, and friends, who keep me sane throughout this journey. My parents, Bobby and Karen Junkin, have encouraged me every step of the way; I am eternally grateful for their love and support. I end with a final thank you to Douglas Glenn, whose confidence in my academic abilities and personal successes is far greater than my own. You are my biggest inspiration.
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CHAPTER I
INTRODUCTION

College student populations are at an elevated risk for heavy drinking. Heavy drinking is defined as drinking at least four/five standard drinks for women/men during a drinking occasion (Substance Abuse and Mental Health Services Administration [SAMSHA], 2016). College student engagement in heavy drinking has remained elevated across the previous five years, with roughly 55% of students reporting a heavy drinking episode in the previous 30 days during 2019 (SAMSHA, 2020). Drinking at these elevated levels has been linked with increased alcohol-related problems, such as academic consequences, heightened occurrences of injury, and death (Hingson et al., 2005; Weschler et al., 1994). Given the gravity of alcohol misuse on college campuses, understanding why college students drink at these higher, more dangerous levels is of pressing concern.

One reason that may explain the association between college students’ overdrinking behavior and subsequent negative consequences is whether alcohol consumption is planned or unplanned. Unplanned drinking events, or consuming alcohol when no drinking was planned, has been linked to experiencing more alcohol-related consequences (Fairlie et al., 2019; Pearson & Henson, 2013). Yet, research on unplanned drinking, in general, has neglected to consider the importance of the number of unintended alcoholic beverages, or the degree of unintended drinking. Unlike the notion of planned versus unplanned, which focuses on the unplanned nature of an overall drinking episode (i.e., did not plan to drink on Saturday but ended up drinking), the degree of unintended drinking reflects a quantifiable number of consumed drinks that were unaccounted for by drinking intentions (i.e., intended to drink 5 alcoholic beverages but ended up drinking 10). Underestimating one’s anticipated alcohol consumption may result in reaching
an unexpected level of intoxication and, consequently, students may experience additional alcohol-related consequences based on the number of unintended drinks. Thus, understanding the occurrence of intention-inconsistent drinking (i.e., drinking behavior that does not align with intentions or plans) among college students, as well as key factors related to intention-behavior alignment, may guide intervention efforts aimed to reduce drinking-related harms. Consequently, the present study seeks to further our understanding of intention-inconsistent drinking. We aim to determine the association between intention-inconsistent drinking and alcohol-related consequences among a sample of college heavy drinkers. We also seek to examine if the planned or unplanned nature of the drinking event, and if using strategies to minimize drinking-related harms (i.e., protective behavioral strategies [PBS]), may impact the strength of association between intention-inconsistent drinking and experience of negative consequences from drinking. Lastly, we seek to examine whether key social factors, such as peer drinking factors, are associated with drinking past intended amounts.

**Unintended Drinking**

The discrepancy between how much a person intends to drink versus how much they actually drink (i.e., unintended drinking) may be a key indicator of problematic alcohol use. Consuming more alcohol than intended has clear implications for diagnostic purposes. For instance, one of the criteria for Alcohol Use Disorder (AUD) in the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5; American Psychiatric Association [APA], 2013, p. 490), states “Alcohol is often taken in larger amounts or over a longer period than intended” (referred to hereafter as the “longer/larger criterion”). Approximately 39% of college students endorse the longer/larger criterion of AUD (Boness et al., 2019). This endorsement by college students increases to 92% in heavy drinking samples (Rinker & Neighbors, 2015), suggesting
that heavier drinkers may be at an increased risk for unintended drinking. Yet, assessing the longer/larger criterion as a subjective agreement to a statement often leaves room for misinterpretation and recall bias, especially within young adult populations who frequently drink more than intended (Slade et al., 2013). In response to this, a few longitudinal studies have investigated the occurrence of unintended drinking during specific drinking events, finding that anywhere from 23.5 to 68% of college students engage in unintended drinking (Brister et al., 2010; Lee, Patrick et al., 2017; Trim et al., 2011). Further, longitudinal studies indicate that the average number of unintended drinks consumed during special occasions (i.e., 21st birthdays, Spring Break, etc.) ranges from one-to-four drinks (Brister et al., 2010; Labhart et al., 2017). However, gaps remain in the literature regarding unintended drinking during typical drinking occasions.

Unplanned drinking episodes may result in more alcohol-related consequences in comparison to planned drinking episodes. In a study with college students, individuals who reported unplanned drinking behaviors experienced more alcohol-related consequences than planned drinkers, even when the same amount of alcohol was consumed (Pearson & Henson, 2013). Similar findings from Fairlie and colleagues (2019) indicated that unplanned heavy drinking episodes (i.e., engaging in heavy drinking when only non-heavy drinking was intended) resulted in more alcohol-related consequences for college students than planned heavy drinking episodes, especially when such unplanned heavy drinking occurred on weekends. The differences in alcohol-related consequences between those with planned and unplanned drinking episodes may be due to better preparation among those who plan their drinking event. For instance, those who planned to drink in excess may be better prepared to prevent alcohol-related consequences by employing PBS that minimize adverse outcomes (Pearson & Henson, 2013).
Given the frequency of endorsement of the longer/larger criterion among college heavy drinkers, this population may be particularly susceptible to increased alcohol-related consequences due to unplanned drinking and its subsequent impact on PBS utilization. While there is some support for the association between unplanned drinking episodes and alcohol-related consequences, the impact of the *degree of unintended drinking* is unclear. The size of the misalignment between intended number of drinks and consumed drinks could differ vastly (e.g., 2 unintended drinks versus 8 unintended drinks), and this difference could be related to the extent of negative alcohol-related consequences experienced. Thus, efforts to understand unintended drinking and its impacts among college students is needed, and findings could aid in refining interventions for this group.

**Theory of Planned Behavior**

Understanding the relationship between one’s intention and subsequent behavior has been the focus of decades of research, but obtaining accurate predictions of behavior has proved a difficult task. The Theory of Planned Behavior (TPB; Ajzen, 1988, 1991) was developed to extend beyond the current theories of the time (e.g., The Theory of Reasoned Action; Fishbein & Ajzen 1975; Ajzen & Fishbein 1981) to improve our ability to predict individual behavior. This popular theory indicates specific factors that predict an intention and subsequent behavior. The TPB indicates three factors that predict an intention to perform a behavior: attitudes, subjective norms, and perceived behavioral control (Ajzen 1988, 1991). Attitudes towards a behavior (i.e., favorable or unfavorable views on a behavior, typically based on beliefs about the outcome; Ajzen, 2006), are theorized by the TPB to predict a general intention to perform a certain behavior. Similarly, the TPB poses that subjective norms (i.e., perceived social pressure to perform a behavior) and perceived behavioral control (i.e., beliefs about one’s ability to perform
a behavior) both predict intention. Further, the TPB includes intention and perceived behavioral control as the key predictors of whether or not an individual will actually perform the intended behavior.

The TPB has been successfully applied to multiple behavioral domains, including vaccination (daCosta DiBona Ventura & Chapman, 2005), condom use (Kashima et al., 1993), voting behavior (Pieters & Verplanken, 1995), healthy eating (Rhodes & de Bruijn, 2013), and sexual behavior (Turchik & Gidycz, 2012). Multiple meta-analyses focusing on the utility of the TPB factors indicate that attitudes, subjective norms, and perceived behavioral control account for between 40 and 60% of the variance in general intentions (Armitage & Conner, 2001; Ajzen, 1991; Trafimow et al., 2002). However, these meta-analyses consistently determined that the TPB was less precise in behavior prediction; specifically, intention and perceived behavioral control only accounted for around 20 to 30% of the variance in behavior. Initially, researchers attributed this lack of alignment between intention and behaviors to problems of control. Examples include intentions to vote ($r = .75$ to .80; Fishbein & Ajzen, 1981) and the decision to breastfeed versus bottle feed newborn babies ($r = .82$; Manstead et al., 1984), which are both behaviors that are considered to be under an individual’s volitional control. Other behaviors, such as drinking, can be thought of as being more subject to problems of control (e.g., as intoxication increases, control may decrease). Using the TPB constructs, intention and perceived behavioral control account for 45% of the variance in drinks consumed (Glassman et al., 2010). Thus, even with perceived behavioral control accounted for, intentions and behaviors do not align perfectly under the TPB. Consequently, the completeness of the TPB model has been called into question (Bagozzi & Warshaw, 1990; Trafimow et al., 2002) and researchers have attempted to add factors into the TPB to improve behavior prediction (e.g., habit [Rise et al., 2010].
belongingness [Pelling & White, 2009], and self-identity [de Brujin et al., 2009]). With regard to alcohol use, efforts to improve our understanding of the intention-behavior relationship (i.e., the alignment of intention and behavior) remains an area in need of further research.

**Intention-Behavior Relationship**

In both research and clinical domains, the intention-behavior relationship helps provide information on the likelihood of behavior performance and how this likelihood can be optimized. For example, some clinical interventions target clients’ intentions as a mechanism for instigating behavior change, as is the case in Motivational Interviewing (MI; Rollnick & Allison, 2004), which is used to increase clients’ motivation for change. Research on the alignment of intentions and behavior helps to inform interventions like MI to improve client outcomes. Further, understanding the relationships between intentions and behavior allows for improved understanding of the occurrence (or nonoccurrence) of target behaviors. By using intention to predict behavior before it happens, interventionists can better determine who is at risk for problem behavior and subsequent consequences.

Research focusing on intention-behavior relationships for alcohol use suggests that drinking behavior can be predicted by drinking intentions (Baumann et al., 2015; Glassman et al., 2010; Mullan et al., 2011). Drinking intentions (i.e., intentions regarding alcohol consumption amounts) and drinking behavior (i.e., number of drinks consumed) share an important relationship that helps explain overdrinking. For instance, when intentions and behaviors align, individuals can accurately prepare for their intended level of intoxication beforehand, and thus can implement protective strategies (i.e., PBS), such as having a designated driver, planning to alternate alcohol and water, or setting a safe drinking pace (Pearson & Henson, 2013). However, Pearson and Henson (2013) explain that when drinking plans and
actual consumptive behavior do not align, individuals are more likely to experience an increase in alcohol-related consequences. Some researchers have determined that students’ drinking behavior exceeds intentions on a given occasion more often than not (Brister et al., 2010; Rinker & Neighbors, 2015), indicating that college students may experience increased alcohol-related consequences due to frequent episodes of intention-inconsistent drinking and its association to lower PBS use.

Thus, despite intention being one of the most proximal predictors of behavior, the relationship between intentions and behavior is not perfect (Ajzen, 1985, 1991; Cooke & Sheeran, 2013; Courneya, 1994; Fishbein, 2007; Sheeran & Webb, 2016; Warshaw & Davis, 1985). With regard to drinking behavior, intention remains an important predictor, yet research indicates that college students are prone to consuming more alcohol than intended (Brister et al., 2010; Lee, Patrick et al., 2017; Trim et al., 2011). As such, this gap between intentions and behaviors (e.g., a mismatch between one’s intended behavior vs. one’s actual behavior) is often referred to as an intention-behavior discrepancy (Sheeran, 2002), and research has aimed to determine why such discrepancies occur (Sheeran & Abraham, 2003).

**Intention-Behavior Discrepancies**

Intention-behavior discrepancies result when an individual’s behavior diverges from original intentions. As previously discussed, the TPB accredits intention-behavior discrepancies to a lack of behavioral control. Others have searched for additional reasons that explain the occurrence of intention-behavior discrepancies. According to Sheeran (2002), intention-behavior discrepancies can be attributed to two groups of individuals: (1) those whose performed behavior falls below their intentions and (2) those whose performed behavior exceeds their intentions. Within health behavior research (e.g., condom use, cancer screening, and exercise), it is the
former group (i.e., those who intended to act but did not) that makes up for the majority of intention-behavior discrepancies (Sheeran, 2002). For example, an individual may plan to exercise three times a week, but, instead, only exercises once. Thus, they would be classified as having an intention-behavior discrepancy due to a failure to perform a behavior as intended.

With alcohol use, on the other hand, it is the latter group (those who drank but did not intend to do so) who account for most intention-behavior discrepancies (Brister et al., 2010), and research on this group is critical for informing interventions that aim to reduce the occurrence of unintended drinking and subsequent alcohol-related consequences. Research in this domain is in the early stages, as there is uncertainty regarding the prevalence of alcohol intention-behavior discrepancies. For instance, most longitudinal studies have focused on unintended drinking occurring during special occasions, and special events may not be representative of typical drinking episodes (Brister et al., 2010; Fairlie et al., 2019; Lee, Patrick et al., 2017; Trim et al., 2011). Additionally, there is variability in researchers’ definitions of alcohol intention-behavior discrepancies, and, consequently, conclusions are limited due to incongruence surrounding what intention-inconsistent drinking is.

**Defining Alcohol Intention-Behavior Discrepancies.** Variability in intention-behavior discrepancy definition and measurement may result in misunderstandings regarding the occurrence of unintended drinking. While the broader literature often uses the term “unintended drinking” to refer to this general area of research, it is important to note that this broader term is broken down further to reflect *planning* versus *intentions*. Specifically, alcohol intention-behavior discrepancies are most often depicted in one of two ways: *unplanned* drinking (i.e., consuming alcohol when no intention to drink was present; Pearson & Henson, 2013) or the degree of *unintended* drinking (i.e., consuming more alcoholic beverages than intended,
regardless of if the drinking event was planned or not; Brister et al., 2010; Henslee et al., 2016; Labhart et al., 2017; Lee et al., 2017). *Unplanned* drinking would occur if an individual did not plan to drink (i.e., responded “No” to “Do you intend to drink?”) but consumed alcohol anyways (i.e., responded “Yes” to “Did you drink alcohol?”). The degree of unintended drinking, on the other hand, is represented by a numerical value that explains the quantity of *unintended* drinks (i.e., an individual consumed X drinks more than their intended amount). The degree of unintended drinking could reflect a drinking episode that was planned or unplanned. An unplanned drinker (i.e., has no plan to drink) and a planned drinker (i.e., has plans to drink), could both consume X drinks more than intended; thus, while both were unintended drinkers because they both consumed a specific quantity of unintended drinks, only one was considered an unplanned drinker because an unplanned drinker must have zero drinking intentions.

The distinction between *unplanned* versus *unintended* drinking definitions has implications for the conclusions that can be drawn. For instance, literature on unplanned drinking is concerned with the broader concept of an unplanned drinking episode rather than the degree of unintended drinking. Consequently, an individual who intends to consume two drinks (i.e., is a planned drinker), but actually consumes 10, would not be included in analyses evaluating unplanned drinking, despite clearly consuming more than intended, because this line of research is only interested in the general unplanned nature of a drinking episode and not the number of unintended drinks. Alternatively, research on the degree of unintended drinking provides information on the impact of drinking two versus eight drinks past the intended amount, for example (Labhart et al., 2017). Research on unplanned drinking helps explain more basic alcohol intention-behavior discrepancies, yet determining how many unintended drinks a person consumes provides more descriptive information about the drinking episode. To date, the
majority of the literature in this area focuses on unplanned drinking, and thus, additional research that focuses on the degree of unintended drinking is warranted.

**Problems with intention-behavior measurement.** Concerns have been raised regarding the accuracy of researchers’ representations of intention-behavior discrepancies in prior research (Sheeran, 2002). In particular, some of these concerns are related to: (1) a lack of scale correspondence, (2) a lack of continuous scales of measurement, and (3) the variability in the time between intention and behavior assessments. Addressing these issues of intention-behavior measurement is important for maximizing the information gained from such research.

Scale correspondence is critical for obtaining the strongest relationship between intentions and behaviors (Courneya, 1994). Scale correspondence occurs when there are consistent scales of measurement for the assessment of both intentions and behaviors. Some types of scales are the continuous-open scale (i.e., the respondent has the option to enter any numerical value), continuous-closed scale (e.g., predetermined options in the form of ranges, such as 0-4, 5-9, 10-15, etc.), or dichotomous-closed (e.g., yes or no). When intentions and behaviors are both assessed using the same scale of measurement, the correlation between the two is maximized (Courneya, 1994). In fact, Sheeran (2002) and Courneya (1994) suggest that neglecting scale correspondence has an attenuating effect on the intention-behavior relationship, and thus may lead researchers to draw incorrect conclusions about the presence of an intention-behavior discrepancy. Consequently, scale correspondence is key for developing less biased conclusions regarding intention-behavior discrepancies. Prior research on alcohol intention-behavior discrepancies has largely neglected scale correspondence (Baumann et al., 2015; Glassman et al., 2010; Johnston & White, 2003; Mullan et al., 2011; Shim & Maggs, 2005; Trim et al., 2011), and thus, limited conclusions can be drawn about intention-inconsistent drinking.
Regarding the concern of a lack of continuous scales of measurement in prior literature, researchers are recommended to use a continuous-open or continuous-closed scale, as continuous scales provide a better representation of variability in participant responses (Courenya, 1994). The utilization of a continuous scale of measurement allows for the collection of more detailed data. For instance, a dichotomous measure of drinking intention only provides the most basic understanding of an individual’s drinking intention (i.e., whether an intention is present or not). A continuous measure, on the other hand, elaborates on this information to provide details on how much an individual intends to drink (“How many drinks do you intend to consume tonight?”). Thus, continuous measurements allow for a better understanding of the degree of discrepancy between intentions and behaviors. Most research on intention-behavior relationships neglects to measure intention on a continuous-open scale, and this is especially true with regards to research on alcohol use. A common measurement of alcohol intention or behavior is aggregated scores on multi-item measurements assessing intentions (see Baumann et al., 2015; Conner et al., 1999; Glassman et al., 2010; Grazioli et al., 2015; and Mullan et al., 2011). Other studies have opted to use Likert-type scales (Johnston & White, 2003; Moshier et al., 2013; and Trim et al., 2011) and dichotomized yes-or-no formats (see Shim & Maggs, 2005).

The last major issue with intention-behavior measurement is related to variability in the amount of time between intention assessment, behavior performance, and behavior assessment. Intentions may be subject to change over time (Ajzen 1985, 1991), and thus, measuring intention too far in advance of behavior performance may contribute to intention-behavior discrepancies. To combat this, Fishbein and Ajzen (1975) have long suggested that intentions should be measured as close to behavioral performance as reasonably possible. Additionally, one could relate this recommendation to the measurement of behavior. Recall bias has the potential to
impact the intention-behavior relationship if the assessment of behavior is delayed. Researchers have attempted to determine a window of time that is appropriate for intention assessment, but no clear answer exists. In support of temporally proximal measurements of intention, Randall and Wolff (1994) found that the intention-behavior relationship for alcohol significantly declines as the time between measurements increases. Measurement of intention has varied across the literature, with some researchers measuring intention months ahead of the drinking event (Henslee et al., 2016; Lee, Patrick et al., 2017) to a week/a few days in advance (Brister et al., 2010; Johnston & White, 2003; Mullan et al., 2011; Shim & Maggs, 2005; Trim et al., 2011). To the best of our knowledge, three studies measured intention on the day of the drinking event (Fairlie et al., 2019; Labhart et al., 2017; Lauher et al., 2020), yet there is not clear evidence of incremental validity for daily intention-behavior measurement ($r = 0.54 – 0.72$; Labhart et al., 2017) versus a few days prior (e.g., $r = 0.55$, Shim & Maggs, 2005; $r = 0.69$, Johnston & White, 2003). Regarding behavior assessment, one study investigating recall of past 7-day alcohol consumption indicated that recall bias begins on the second day of recall and significantly increases on the third day; recall bias showed similar increases during the remaining 4 weekdays (Gmel & Daeppen, 2007). Such results suggest that intention-behavior measurement may provide the most accurate estimates when measured within 1-to-2 days surrounding the drinking event. In short, to improve research on intention-behavior discrepancies, researchers should aim to obtain temporally stable estimates of intention by assessing intention as temporally close as possible to behavioral performance (Ajzen, 1985).

In summary, to reduce the incongruencies surrounding the definition of alcohol intention-behavior discrepancies, researchers must consider the impact of measurement choices. Such measurement choices directly impact the researchers’ definition of an intention-behavior
discrepancy. Studies using aggregated scores, Likert scales, or dichotomous responses are most often limited to the definition of unplanned drinking, while research that utilizes continuous-open and continuous-closed scales can answer questions regarding the impact of the number of unintended drinks. Despite this, research on alcohol-related intention-behavior discrepancies disproportionately focuses on unplanned drinking episodes instead of the degree of unintended drinking by utilizing continuous-open scales of measurement.

**Event-level Assessment for Intention-behavior Discrepancies.** An event-level method of assessing alcohol intention-behavior discrepancies (i.e., assessing the number of intended drinks and number of consumed drinks for a specific drinking episode) may be more useful than cross-sectional designs for determining the degree of unintended drinking. Discrepancies in intended amount versus actual consumption are most commonly evaluated across two timepoints via *discrepancy statistics* (i.e., consumed amount, measured after the drinking episode, minus intended amount, measured before the drinking episode), where a positive value indicates consuming more than intended, a zero indicates consuming the exact amount that was intended, and a negative value indicates consuming less than intended (Brister et al., 2010; Henslee et al., 2016; Labhart et al., 2017; Lee, Patrick et al., 2017). This type of measurement maximizes the information obtained by providing discrete values representing the degree of drinking that is unintended.

A benefit of using event-level assessments and discrepancy statistics is the opportunity to minimize participant subjectivity or reporting bias impacting intention-behavior measurement. Research has indicated that individuals are less likely to acknowledge unintended drinking when their intention-behavior discrepancies are moderate versus when the discrepancy is large (Labhart et al., 2018). Thus, event-level assessments may capture variability in intention-
behavior relationships for individuals who would have otherwise not acknowledged their unintended drinking. Moreover, the majority of research evaluates general intentions that are not specific to a single drinking event (e.g., “I intend to drink five or more standard alcoholic beverages in a single session in the next two weeks;” Johnston & White, 2003) and then assesses whether that general intention was upheld. This non-event level assessment neglects to consider the impact of each unintended drinking event. Further, this assessment does not capture the nature of unintended drinking; for example, this measurement leaves researchers with no way of differentiating a person who drank as intended during all but one drinking episode and a person who drank more than intended during every drinking episode.

Only a few studies evaluate intention-behavior discrepancy statistics for alcohol consumption (Brister et al., 2010; Fairlie et al., 2019; Henslee et al., 2016; Labhart et al., 2017; Lee, Patrick et al., 2017). Brister and colleagues (2010) evaluated intention-behavior discrepancies for alcohol consumption on 21st birthday events. Results indicated that 68% of participants consumed more drinks than intended, with men consuming more excess drinks than women (4.00 drinks versus 1.87 unintended drinks, respectively). Other studies have investigated alcohol quantity intention-behavior discrepancies for different special occasions, such as Spring Break and Saint Patrick’s Day. For example, in one study, actual consumption exceeded intentions to drink for Spring Break but not for Saint Patrick’s Day (Henslee et al., 2016). In another study, Lee and colleagues reported that 29% of undergraduate participants consumed more than intended on their peak drinking day during Spring Break. Overall, these studies expanded our knowledge on the occurrence of alcohol consumption that exceeds intentions as well as the degree to which unintended drinking occurs on special occasions. However, lengths of time between assessment periods (e.g., one-week to seven-weeks before the drinking event)
may pose concerns for intention modification and accurate behavior recall. Additionally, it is possible that intention-behavior discrepancies are not generalizable from special celebrations to typical weekends, given that research has indicated that special occasions are associated with a lower likelihood of unplanned heavy drinking (Fairlie et al., 2019). Thus, studies focusing on special events may result in underestimates of alcohol intention-behavior discrepancies for non-special events.

We identified only one recent event-level investigation utilizing discrepancy statistics that addressed some of these methodological concerns. Labhart and colleagues (2017) investigated intention-behavior discrepancies for general drinking days outside of special events by utilizing an ecological momentary assessment (EMA) approach. Their study sample consisted of 16- to 25-year-olds recruited outside of nightlife hubs in Zurich. Researchers collected data on Fridays and Saturdays for seven weekends. Alcohol quantity intentions were assessed in the early evening, again later in the evening, and the next morning. Results indicated that men drank more than intended on 51.0% of the nights while women drank more than intended on 44.1% of the nights. This study provides more generalizable results than those previously mentioned due to the researchers’ focus on typical drinking days as opposed to celebratory occasions. Additionally, this study utilized temporally appropriate assessments of intention and behavior measurement (i.e., intention-behavior assessment the day of the event as opposed to a month in advance [e.g., Lee, Patrick et al., 2017]). However, it remains unclear if such findings are representative of individuals residing in the United States and of college student drinkers. It should be noted that one additional study collected event-level data and was considered for inclusion in this review of research evaluating unintended quantities (Fairlie et al., 2019); however, researchers categorized drinking episodes as unplanned heavy drinking episodes.
instead of leaving the discrepancy statistic continuous, and thus a true discrepancy statistic was not examined as a predictor or outcome within the design. Consequently, there is a need for additional research that investigates the occurrence of intention-behavior discrepancies for alcohol consumption amount during regular drinking events within the U.S. college student population.

**PBS and Intention-Inconsistent Drinking**

Given the common occurrence of intention-inconsistent drinking, its impact and outcomes have been of interest to researchers. As previously stated, intention-inconsistent drinking has been linked with elevated alcohol-related consequences. Specifically, unplanned heavy drinking episodes (i.e., reporting heavy drinking episodes when only non-heavy drinking was planned) were associated with more negative alcohol-related consequences (Fairlie et al., 2019). Pearson and Henson (2013) argue that unplanned drinkers experience more alcohol-related consequences because those who planned to drink in excess can better prepare for the subsequent negative consequences by employing PBS. PBS are a set of plans that work to minimize hazardous drinking consequences; examples of PBS include alternating alcoholic and nonalcoholic drinks, avoiding trying to “keep up” with drinking buddies, or having a trusted friend accompany you home (Martens et al., 2007b).

Literature supports the benefits of PBS (Pearson, 2013). Specifically, PBS use is consistently associated with fewer negative alcohol-related consequences at the event-level and within the previous year (Araas & Adams, 2008; Pearson, 2013). Further, the association between heavy drinking and alcohol-related consequences is lessened when more PBS are used (Borden et al., 2011). PBS utilization has shown to be an important factor that explains the association between alcohol-risk factors (e.g., poor self-regulation, drinking motives, and age of
first use) and problematic use (D’Lima et al., 2012; Palmer et al., 2010; Martens et al., 2007a). Other risky alcohol behaviors, such as prepartying, are minimized when PBS are used by the drinker (Montes et al., 2016). Such findings suggest that the impact of PBS extends across multiple types of alcohol risk. Additionally, findings indicated that PBS utilization may vary based on sex. Specifically, some evidence suggests that women are more likely than men to use PBS (Benton et al., 2004; LaBrie et al., 2011). A more recent review of the PBS literature supports the notion that females use PBS more than males (Pearson, 2013), however, a small handful of studies have reported non-significant findings regarding the impact of sex (Pearson et al., 2012; Sutfin et al., 2009; Walters et al., 2007).

While PBS can help reduce the number of alcohol-related consequences associated with heavy and risky drinking, individuals who underestimate their intended alcohol consumption will likely underestimate the need for PBS (Pearson & Henson, 2013). Preliminary research supports a relationship between intentions and PBS. For example, lower PBS use has been linked with higher alcohol consumption, and this is especially true when drinking intentions are high (Grazioli et al., 2015). Similarly, but outside of the alcohol literature, intentions to engage in safe sex (i.e., condom use) and behavioral follow through were explained by protective strategies (Bryan et al., 2001). The role of PBS in intention-inconsistent drinking is currently limited to theory (Pearson & Henson, 2013). Consequently, future research is needed to examine the influence of PBS with regards to intention-inconsistent drinking and alcohol-related consequences, especially given the role of PBS in other relationships of risky alcohol use and negative outcomes.
Predictors of Alcohol Intention-Behavior Discrepancies

There are key factors that may influence the degree of misalignment between a person’s intended drinking amount and their actual drinking amount on a given occasion. Social context has been identified as a critical component of the drinking environment within multiple prominent theories and frameworks explaining alcohol misuse, such as Social Learning Theory (Bandura & Walters, 1977), Social Norms Theory (Berkowitz, 2003), Theory of Planned Behavior (Ajzen, 1988), social-ecological framework (Freisthler et al., 2014), and others (see Clapp et al., 2007; Beck et al., 2008). Such theories highlight peer influence, or the impact of peers, as a key contributor to alcohol misuse. Indeed, peer influence factors consistently predict drinking behavior among college students (Roberson et al., 2018). Additionally, peer influence may disproportionately influence college students compared to their nonstudent peers (Quinn & Fromme, 2011). Consistent with this notion, Social Learning Theory posits that individuals develop drinking behaviors through direct and indirect observations of others’ drinking behaviors (Bandura & Walters, 1977), and given that college students are exposed to heavy drinking within the college environment (Carter et al., 2010; Dawson et al., 2004; Slutske, 2005), they may be susceptible peer influences (Quinn & Fromme, 2011).

Graham and colleagues (1991) suggested that direct and indirect factors of peer influence can be thought of as encompassing two domains: passive peer influence (i.e., indirect forms of influence) and active peer influence (i.e., direct forms of influence). Indeed, a model incorporating factors of passive and active peer influence has been shown to significantly predict college student alcohol consumption (Read et al., 2005). Given the support for the influence of social context, and specifically a framework of peer influence that consists of passive and active
domains, such factors could be further explored for their impact on the drinking intention-behavior relationship.

**Passive Peer Influence**

An individual experiences passive peer influence when they feel indirectly pressured to behave a certain way (Read et al., 2005). A key form of passive peer influence is alcohol normative beliefs. Alcohol normative beliefs (i.e., beliefs about the drinking behaviors of others) have unique effects on an individual’s alcohol consumption (Berkowitz, 2003). Alcohol normative beliefs may be categorized as descriptive norms or injunctive norms. Descriptive norms are beliefs about others’ alcohol use, while injunctive norms are beliefs about others’ approval of alcohol use (Cialdini et al., 1991; Park et al., 2009). According to Social Norms Theory (Berkowitz, 2003), individuals behave in ways that are congruent with their perceptions of peers, regardless of whether or not perceptions are accurate. Research indicates that stronger alcohol normative beliefs, or greater misperceptions, have been linked with increased alcohol use severity (Cunningham et al., 2012). Further, perceiving higher alcohol consumption among peers is related to increased heavy drinking among college students (Fairlie et al., 2012).

**Descriptive Norms.** Research has indicated that college students consistently overestimate peers’ alcohol consumption, and such misperceptions are related to an increase in one’s own alcohol consumption (Agostinelli et al, 1995; Baer, 1994; Baer & Carney 1993; Halim et al., 2012; Kypri & Langley, 2003; Perkins et al., 1999). Within the intention-behavior literature, college students who predicted that friends would consume a higher number of alcoholic beverages during Spring Break had a higher likelihood of drinking beyond their own intended amount (Lee, Patrick et al., 2017). Similarly, students who predicted that peers consume larger amounts of alcohol during 21st birthday celebrations were also more likely to consume
higher quantities (Brister et al., 2010; Day-Cameron et al., 2009). In the aforementioned studies, descriptive norms were generally assessed at the event-level by asking participants to estimate the number of drinks that their peers will consume during specific drinking events (Brister et al., 2010; Lee, Patrick et al., 2017). However, the previous studies focused on celebratory occasions (i.e., 21st birthdays and Spring Break). It is possible that college students’ predictions of peer alcohol consumption during celebratory events, and the association between this prediction and personal drinking, does not generalize to ordinary drinking occasions. Thus, there is a need for research evaluating the impact of event-level descriptive norms on unintended drinking during typical drinking episodes.

**Injunctive Norms.** Similar to descriptive norms, research on injunctive norms has indicated that perceptions of stronger peer approval of drinking are common among college students, and stronger perceived approval is related to increased alcohol consumption (Perkins & Berkowitz, 1986; Trockel et al., 2003). It is not uncommon for college students to perceive their peers as being more accepting of alcohol than they actually are (Borsari & Carey, 2003). According to Social Norms Theory, students use these misperceptions of peer alcohol acceptance to inform their own behavior choices, often in an attempt to conform to the expected social norm (Berkowitz, 2003). Thus, individuals may end up drinking more alcohol than intended to conform to their misperceptions of peer approval of heavy drinking. To the best of our knowledge, research on alcohol quantity intention-behavior discrepancies has yet to incorporate event-level perceptions of peer approval of drinking as a predictor of unintended drinking.

**Active Peer Influence**

Unlike passive peer influence, which involves indirect forms of pressure, active peer influence is characterized as direct forms of pressure that require an immediate response
(Graham et al., 1991). It has been suggested that active peer influence can occur through explicit drink offers and through drinking games via enforced drinking rules (Cullum et al., 2012). Social Learning Theory includes direct influences as key contributors to alcohol use (Berkowitz, 2003), and others have found active peer influence to significantly predict alcohol outcomes (Capone et al., 2007; Cullum et al., 2012; Read et al., 2005). Additional evidence suggests that active peer influence is linked with drinking intentions and future heavy drinking episodes (Testa et al., 2009).

**Drink Offers.** Graham and colleagues consider drink offers (i.e., explicit offers to consume alcohol) as the ultimate form of active influence. Drink offers are most commonly extended via simple questions (i.e., “Do you want a drink?” Harrington, 1997). Research has indicated that drink offers are associated with higher levels of alcohol consumption and alcohol-related consequences (Graham et al., 1991; Read et al., 2005; Schwinn & Schinke, 2014; Turrisi et al., 2007). Further, studies have indicated that roughly half of all drink offers involve pressure, either initially or in response to resistance to the offer (Hecht et al., 1992). This suggests that drink offers may be difficult to refuse, especially if declining a drink offer is met with added social pressure. Consequently, drink offers may uniquely challenge an individual’s adherence to initial drinking intentions.

**Drinking Games.** Active peer influence includes encouragement to consume alcohol, such as engaging in drinking games that require players to follow certain rules that result in alcohol consumption (Borsari & Carey, 2001). Drinking games are an activity that has rules governing the consumption of alcoholic beverages (Borsari et al., 2014). Engaging in drinking games has been consistently linked with increased alcohol consumption and elevated alcohol-related consequences (for a review, see Borsari, 2004). The main goal of drinking games is to
increase the level of inebriation at a quick pace (Zamboanga et al., 2014). Research indicates that the relation between drinker status and pregaming increases as drinker status becomes more severe (Fairlie et al., 2016). Further, Fairlie and colleagues (2015) investigated the effects of drinking game engagement at the daily level and determined that extreme forms of heavy drinking, or high-intensity drinking (i.e., alcohol consumption that doubles the heavy threshold), is more likely to occur on days when drinking games were played. Such levels of alcohol intoxication have been linked with poorer impulse control (Filmore, 2003), and thus intoxicated players may unintentionally consume more drinks than intended.

The Current Study

Theoretical models (Ajzen, 1991, Pearson & Henson, 2013) and empirical evidence (Sheeran & Webb, 2016; Cooke & Sheeran, 2013; Fishbein, 2007; Courneya, 1994; Ajzen, 1991; Warshaw & Davis, 1985) support behavioral intentions as key predictors of behavioral performance and outcomes. Yet, research consistently indicates that intentions and behaviors do not align perfectly (Brister et al., 2010; Glassman et al., 2010; Lee, Patrick et al., 2017; Sheeran, 2002; Sheeran & Abraham, 2003; Trim et al., 2011). As such, one aim of the current study was to describe the phenomenon of intention-inconsistent drinking among college students, with particular importance placed on underestimations of intended drinking amount. Intention-behavior discrepancies for drinking amounts have been investigated as a mechanism that may explain college student hazardous drinking. However, these studies have primarily focused on special events, such as 21st birthdays (Brister et al., 2010), Spring Break (Henslee et al., 2016; Lee, Patrick et al., 2017), and Saint Patrick’s Day (Henslee et al., 2016). Less is known about college students’ levels of unintended alcohol consumption outside of special occasions.

Collection of drinking information during typical weekends allows for results that generalize to
the majority of drinking episodes and captures drinking that is more representative of participants’ typical drinking habits (Fairlie et al., 2019). Consequently, the present study sought to address this gap by assessing drinking intentions and behavior on typical weekends that are not associated with a particular holiday or special event.

Further, we assessed the alignment of alcohol quantity intentions and actual drinking behaviors to determine the extent to which the degree of discrepancy may be associated with event-level negative alcohol-related consequences. Previous literature has suggested that unplanned drinking may be associated with increased alcohol-related consequences, especially when utilization of PBS is low (Pearson & Henson, 2013); however, this has not been extended to alcohol quantity intention-behavior discrepancies. Thus, we aimed to determine the association of alcohol quantity discrepancies with negative-alcohol related consequences and how this relation may vary across planned versus unplanned drinkers. As previously stated, even when consuming the same amount as planned drinkers, unplanned drinkers experience more consequences, and this is thought to be due to lower utilization of PBS (Pearson & Henson, 2013). Similar relations may exist for alcohol quantity discrepancies, such that larger discrepancies yield larger consequences when PBS use is lower. As such, the role of PBS in this association was examined.

Another major aim of the present study was to examine social factors that relate to drinking intention-behavior discrepancies. Guided by Social Learning Theory (Bandura & Walters, 1977) and Social Norms Theory (Berkowitz, 2003), social aspects of the drinking context (i.e., peer influence) were examined as factors influencing the degree that individuals drink past their intended amounts. Given the theoretical support for a two-domain model of social context (Bandura & Walters, 1977; Read et al., 2005; Graham et al., 1991), peer influence
was examined in the form of passive (descriptive and injunctive norms) and active (drink offers and drinking games) influences.

The current study assessed alcohol intentions and use over a single, typical weekend of drinking (i.e., Friday and Saturday) for each participant. This study consisted of two assessment time points: one prior to the weekend (i.e., Wednesday), to assess drinking intentions, and one following the weekend (i.e., Sunday), to assess actual weekend consumptive behavior. Only one day was evaluated for each participant to address the occurrence of unintended drinking during a typical drinking episode. Participants were college students enrolled in psychology courses who were between ages 18-to-25 years and were current heavy drinkers (i.e., at least one episode of 4+/5+ standard drinks for women/men over the past 14 days). Specific aims and hypotheses are as follows:

**Aim 1**

To explore the rate of intention-inconsistent drinking behaviors during specific drinking events (i.e., percentage of planned versus unplanned drinking episodes; percentage of episodes that were underestimated, overestimated, or accurately estimated by intended drinking quantity; and average number of unintended drinks consumed) for a college student sample using an event-level research design whereby drinking intentions are assessed pre-weekend and actual drinking behaviors are assessed post-weekend.

**Hypothesis 1.** Research has suggested that it is not uncommon for college drinkers to consume more alcoholic beverages than intended during special occasions (Brister et al., 2010; Labhart et al., 2017; Lee, Patrick et al., 2017; Henslee et al., 2016). Some findings suggest that less unplanned drinking occurs during special occasions (Fairlie et al., 2019), and thus, such special occasions may not be representative of typical drinking behavior. Further, there is
evidence to support that young adults commonly drink more than intended on non-special occasions in a sample from Switzerland (Labhart et al., 2017), but it is unclear whether these findings generalize to United States college students. Only one study has evaluated the rate of intention-inconsistent drinking with a college student sample residing in the U.S., and findings suggest that unintended drinking is common during typical drinking events, with drinking beyond intended amounts occurring on at least 27% of drinking days (Fairlie et al., 2019), however these findings have not been replicated or reproduced. Thus, the goal of Aim 1 was to explore the rates of typical intention-inconsistent drinking among a United States college population by assessing drinking intentions pre-weekend and actual consumption post-weekend. Given the previous literature on intention-inconsistent drinking, we hypothesized that unintended drinking would be the most prevalent form of intention-inconsistent drinking (i.e., drinking a quantity larger than intended), but that the majority of drinking events would be planned (i.e., initial intentions greater than zero). No hypothesis was made regarding the average number of unintended drinks due to variability within the existing literature.

**Aim 2**

To evaluate, among college students consuming more than their intended amount on a given weekend day, the association between the degree of unintended drinking (i.e., size of the discrepancy statistic, or consumed drinks minus intended drinks) and event-level negative alcohol-related consequences, after controlling for event-level alcohol consumption.

**Hypothesis 2.** Research assessing event-level alcohol use and outcomes has found that consuming alcohol at heavy drinking levels when only sub-heavy drinking levels were intended is associated with more negative alcohol-related consequences (Fairlie et al., 2019). Yet, this association has not been evaluated with respect to unintended drinking quantities measured on a
continuum, given that Fairlie and colleagues (2019) dichotomously grouped participants based on heavy drinking intentions. Thus, to the best of our knowledge, no previous research has examined the influence of discrete alcohol quantity discrepancies (i.e., X drinks more than intended) on alcohol-related consequences. Based on Fairlie and colleagues’ preliminary findings, it was predicted that the degree of participants’ intention-behavior discrepancies would be positively related to the number of event-level negative alcohol-related consequences experienced from the drinking event, after controlling for the impact of total alcohol consumed (i.e., consequences would be predicted solely from the size of the discrepancy and beyond the effects of the total number of drinks consumed). Further, given the lack of evidence surrounding sex-related differences in discrepancy sizes (yet literature consistently links sex with differences in alcohol consumption; Erol & Karpyak, 2015), differences in discrepancy size based on biological sex were assessed. If discrepancies significantly differed based on participant sex, we planned to include a covariate representing sex in subsequent analyses. Lastly, we provided results for the association between discrepancy size and consequences with and without controlling for total quantity consumed at the event level, to determine its relative impact.

**Aim 3**

To determine, among college students consuming more than their intended amount on a given weekend day, if two factors of the drinking event (i.e., planned or unplanned; PBS utilization) moderate the relation between the degree of intention-behavior discrepancy and the number of event-level negative alcohol-related consequences, after controlling for event-level alcohol consumption and sex. Similar to Aim 2, each component of Aim 3 was assessed with and without total quantity consumed at the event level as a covariate.
**Aim 3a.** To determine, among college students consuming more than their intended amount on a given weekend day, if the planned (i.e., intention greater than zero) versus unplanned (i.e., no intention to drink) nature of the drinking event moderates the relation between the degree of intention-behavior discrepancy and the number of event-level negative alcohol-related consequences, after controlling for event-level alcohol consumption.

**Hypothesis 3a.** While the relation between the degree of the intention-behavior discrepancy and the number of alcohol-related consequences has not been evaluated in previous literature, the association of unplanned drinking and alcohol-related consequences is supported (Fairlie et al., 2019; Pearson & Henson, 2013). It is possible that the association between discrepancy size and consequences varies based on planning of that drinking event. Given the established association between unplanned drinking and consequences, it is possible that larger discrepancies result in more consequences, particularly when drinking is unplanned. Thus, it was hypothesized that the positive association between the discrepancy statistic and event-level negative alcohol-related consequences would be stronger when the drinking event was unplanned, after controlling for event-level alcohol consumption. Similar to Aim 2, if differences in discrepancies existed based on participant sex, then sex would be included as a covariate.

**Aim 3b.** To determine, among college students consuming more than their intended amount on a given weekend day, if PBS utilization for the drinking event moderates the relation between the degree of intention-behavior discrepancy and the number of event-level negative alcohol-related consequences, after controlling for event-level alcohol consumption.

**Hypothesis 3b.** The use of PBS has been shown to decrease adverse alcohol outcomes, such as use level and negative alcohol-related consequences (Araas & Adams, 2008; Grazioli et al., 2015; Pearson, 2013). Additional research has indicated that individuals with higher drinking
intentions consume more alcohol when PBS utilization is low (Grazioli et al., 2015), which suggests that PBS use is associated with the alcohol intention-behavior relationship. It is possible that the association between alcohol intention-behavior discrepancies and negative alcohol-related consequences is impacted by PBS use. Thus, it was hypothesized that the positive relation between the discrepancy statistic and event-level negative alcohol-related consequences would be reduced when PBS use is high. It was planned that sex would be included as a covariate given the strong support for differences in PBS utilization between women and men (Pearson, 2013). However, we recognize that some evidence does not support this sex-based difference (Pearson et al., 2012; Sutfin et al., 2009; Walters et al., 2007). Additionally, while it is possible that PBS has a mediating role within the discrepancy/consequences relationship, given the lack of any research in this domain and the possibility of bidirectionality between discrepancies and PBS utilization, PBS was included as a moderator.

**Aim 3c.** To determine, among college students consuming more than their intended amount on a given weekend day, the interactions among PBS utilization, planned/unplanned drinking, and the degree of intention-behavior discrepancy in accounting for event-level negative alcohol-related consequences, after controlling for event-level alcohol consumption.

**Hypothesis 3c.** The aforementioned association between unplanned drinking and alcohol-related consequences has been hypothesized to exist based on the lack of PBS utilized by unplanned drinkers (Pearson & Henson, 2013). Similarly, the impact of unplanned drinkers on the discrepancy in quantity/negative consequences relation may differ based on PBS utilization. Previous theories, such as that developed by Pearson and Henson (2013), indicate PBS as a key component in the association between unplanned drinking and consequences, however, previous literature has not incorporated the discrepancy size as a factor in this association. Based on this
theory, it is likely that unplanned drinkers experience more consequences because they do not have a chance to plan for safe drinking (e.g., via use of PBS). Thus, it was hypothesized that a 3-way interaction exists, such that the relation between the degree of the intention-behavior discrepancy and event-level negative alcohol-related consequences would be moderated by unplanned drinking (Aim 3a), and that the impact of unplanned drinking would depend upon PBS use. For instance, larger discrepancies would result in more consequences for unplanned drinkers, and this is especially true when unplanned drinkers utilize low levels of PBS. Additionally, it was proposed that this association exists even when controlling for event-level alcohol use.

**Aim 4**

To evaluate, among college students consuming more than their intended amount on a given weekend day, the unique association between each of four social factors (i.e., passive peer influence [descriptive norms and injunctive norms], active peer influence [alcohol offers and drinking games]) and the degree of participants’ intention-behavior discrepancies, after controlling for event-level alcohol consumption and sex.

**Hypothesis 4.** Research supports the importance of social factors on levels of alcohol consumption (Berkowitz, 2003; Graham et al., 1991; Read et al., 2005). Specifically, passive and active peer influence, consisting of misperceptions of peer behavior and beliefs of peer approval (e.g., descriptive norms and injunctive norms) and direct forms of pressure (i.e., drink offers and drinking game involvement), act to influence an individual’s alcohol consumption (Barry et al., 2013; Fairlie et al., 2015; Graham et al., 1991). Within the alcohol intention-behavior discrepancy literature, descriptive norms have been linked with larger discrepancy statistics. Therefore, it was predicted that all four social factors (i.e., descriptive norms, injunctive norms,
drink offers, and drinking game engagement) would be significant predictors of participants’ intention-behavior discrepancies, even after controlling for the effects of event-level alcohol consumption and sex.
CHAPTER II

METHOD

Participants and Recruitment

Participants ($N = 44$) for the present study were undergraduate students at Old Dominion University. Participants were 63.6% female ($n = 28$), and the average age was 21.91 ($SD = 1.95$). Participants’ ethnicities were 63.6% ($n = 28$) White, 20.5% ($n = 9$) African American or Black, 6.8% ($n = 3$) Asian or Pacific American, 6.8% ($n = 3$) Hispanic or Latino, and 2.3% ($n = 1$) “Other.” Regarding class standing, 20.5% ($n = 9$) were freshman, 6.8% ($n = 3$) were sophomores, 25% ($n = 11$) were juniors, 34.1% ($n = 15$) were seniors, and 13.6% ($n = 6$) identified as “Other.” Additionally, 13.6% ($n = 6$) reported participating in Greek life. The final sample reported consuming an average of 12.20 ($SD = 8.54$) standard drinks during a typical week. Participants reported an average of 3.25 ($SD = 1.51$) drinking occasions per typical week. Regarding engagement in heavy drinking, participants reported an average of 1.27 ($SD = 1.21$) heavy drinking episodes per typical week.

Participants were recruited through an online subject pool (i.e., Sona) through the Department of Psychology and through advertisements posted in the daily university announcements. Additionally, due to a lack of responses, advertisements were posted to Monarch Groups, a web forum for all student government associations at Old Dominion University. Participants were required to be between the ages of 18 and 25 years to be eligible to participate in the study. Additionally, in order to increase the chances of capturing participant drinking during the study target days, participants must have had at least one episode of heavy drinking (i.e., four/five or more drinks on one occasion for women/men) in the past 14 days. Participants were not excluded based on biological sex or gender. Participants recruited through
Sona received extra credit for an undergraduate psychology course as compensation for participation, while participants recruited through university announcements who completed surveys at both timepoints were compensated with the chance to win one of ten $20 Amazon gift cards. All measures and procedures were reviewed by an Institutional Review Board and followed the APA guidelines (APA, 2017).

Procedure

Overview of Study Design

The current study utilized an event-level design with pre- and post-measures for drinking behavior occurring during a typical weekend. Friday and Saturday (hereafter referred to as the drinking weekend) were chosen as the focal drinking days for the current study given findings that the majority of college student drinking occurs on these days (Del Boca et al., 2004; Greene & Maggs, 2017; Maggs et al., 2011). Each participant completed measures at two time points: baseline (pre-weekend) and follow-up (post-weekend). Because this study focused on intention-behavior discrepancies occurring during a single, typical drinking event, only one drinking weekend was assessed for each participant. To further ensure that participant responses represented typical drinking episodes, data collection did not occur on weekends when national holidays or other known celebratory occasions (e.g., Superbowl weekend) were occurring. Data collection began in the Spring of 2021 (i.e., February 1st, 2021), and no national holidays or special occasions on Fridays or Saturdays were noted to occur during this time. Data collection for the present study ended on July 30th, 2021.

When signing up through Sona, interested individuals responded to a brief screening survey, and if determined eligible, participants were directed to a page that allowed them to sign up for an assessment weekend. Participants were contacted through email prior to the selected
weekend with a link for the baseline survey. Baseline surveys were sent on the Wednesday prior to the participant’s selected weekend and assessed participants’ drinking intentions for the upcoming weekend and basic demographic factors. Follow-up surveys were sent the Sunday following the drinking weekend and assessed all event-level measures regarding their weekend drinking episodes. Surveys were completed through an online survey platform (i.e., Qualtrics), and were available to anyone with access to the internet. An overview of study procedures is provided in Figure 1.

Figure 1

Study Procedures

Note. Participant numbers at screening (N = 833), participants eligible/completed informed consent (n = 90/46), baseline (n = 46), and follow-up (n = 44).
Screening. The study advertisement on Sona and in the university student announcements included a link to a brief (i.e., five-minute) screening survey that assessed eligibility before participants were directed to sign-up. The study’s advertisement informed interested individuals that the present study was investigating college students’ weekend drinking behavior and required online survey responses at two timepoints. The screening survey determined if participants were between 18 and 25 years of age and were heavy drinkers (i.e., consumed 4+/5+ standard drinks for women/men at least once in the previous 14 days; Wechsler et al., 1998). Individuals who meet all eligibility criteria were asked to review a more detailed description of the study before proceeding with study sign-up. Information on the current study included the current study aims (i.e., to explore alcohol intentions and use during a single weekend’s drinking episodes, as well as protective and risk factors surrounding alcohol use). Additionally, the importance of answering surveys for both of the two timepoints (i.e., on Wednesday prior to the weekend and Sunday following the weekend) was reiterated. Information on the amount of time required to complete both surveys as well as the allotted amount of Sona credits that could be earned were provided. Interested individuals were directed to a sign-up page to select a weekend to begin the study. Participants were given the option to select a single weekend from the upcoming three weeks. Before selecting a weekend to participate, they were informed that if they had knowledge of planned celebratory events (e.g., personal birthday celebrations or friends’ birthday celebrations), they should select a different weekend to participate. Contact information (i.e., email address and cell phone number) for each participant was obtained. To keep participants’ sensitive information secure, email addresses and phone numbers were stored in a separate file from the rest of their survey responses. Approximately 833 individuals completed the screening survey; however, some of these responses appeared to
be automated bots. Ninety individuals were eligible, and 51% \( (n = 46) \) completed informed consent via an individual Zoom session with a researcher. The other 44 individuals who were interested in participating but did not complete informed consent were contacted three times (via email and text message, if opted in) to schedule a Zoom session before researchers removed them from the contact list. A total of six individuals scheduled a Zoom session, but canceled or no-showed.

**Baseline Data Collection.** Participants who completed informed consent \( (N = 46) \) were emailed a survey link to the baseline study survey for completion prior to the chosen study weekend. Participants also received a text message notification with a reminder to complete the survey. Consistent with previous research (Trim et al., 2011), and to allow for a sufficient response window, all baseline surveys were sent two days prior to the focal weekend (i.e., on Wednesday) at 9:00 A.M. and remained open until Thursday at midnight. Participants who did not complete the baseline survey within the first 24 hours received a reminder via email and text message on Thursday morning. Participants who did not complete the baseline survey within the allotted time were withdrawn from that week’s assessment and contacted again during the following week’s cycle. If participants still had not completed the baseline survey after the third attempt, they were removed from the study. During the baseline survey, participants were asked to provide information on their demographics and their drinking intentions for the upcoming Friday and Saturday. The baseline survey took approximately 15 to 20 minutes. At the conclusion of the survey, participants received a reminder to complete the follow-up survey on the upcoming Sunday.

**Follow-up Data Collection.** Follow-up surveys were sent to participants via email on Sunday of the focal weekend, with a text message notification sent shortly after. Of the 46
participants who participated in the baseline survey, 96% (n = 44) completed the follow-up survey. To reflect the baseline survey format, and to allow for a sufficient response window without increasing recall bias (Gmel & Daeppen, 2007), follow-up surveys were sent at 9:00 A.M on Sunday morning and closed the following Monday at midnight. Participants who did not complete the follow-up survey within the first 24 hours received a reminder on Monday morning via email and text message. During the follow-up survey, participants were asked to provide event-level information about their alcohol consumption on Friday and Saturday, and, for control purposes, their drinking on Thursday. To observe drinking that occurs during a single, typical drinking event, and to reduce the impact of nonindependence of samples, only one day out of the drinking weekend was analyzed, per participant. Selection of participants’ focal days is discussed in further detail in the Results section. Other event-level measures included negative alcohol-related consequences, PBS, perceived norms (injunctive and descriptive), and measures of alcohol offers and drinking games. Participants completed all event-level assessments in reference to Friday, and then again for Saturday. If a participant did not endorse drinking, time-balance questions were added to reduce the potential for differences in the length of surveys for drinkers and non-drinkers (Appendix A). Time-balance questions assessed participants’ reasons for not drinking, but responses were not included in any of the present study’s analyses. The follow-up survey took approximately 30 to 40 minutes. Participants who did not answer the follow-up survey were excluded from the primary analyses; however, differences in baseline characteristics (i.e., demographics and typical alcohol use) between those who completed the survey at both timepoints and those who did not were examined.

**Retention Strategies.** To reduce attrition, retention strategies were utilized. Based on strategies developed to maintain research participation in studies with longitudinal designs,
requirements for the study were clearly explained to all participants during the informed consent process (i.e., responses required at two timepoints; Zweben et al., 2009). Also following these suggestions, flexible scheduling was offered, such that participants had the option to choose the weekend that they would like to participate, with options spanning over three weekends and virtual informed consent sessions were offered each day of the week. Multiple sources of contact information were collected, including email addresses and cell phone numbers. Participants received text message and email reminders when survey links were shared, as well as 24 hours after survey links were distributed (if responses were still missing).

**Measures**

**Screening Survey Measures**

**Eligibility Criteria.** To assess for participant eligibility, three screening items were utilized (Appendix B). Firstly, interested individuals were asked to report their age. Only individuals whose reported age is between 18 and 25 were screened through. The screening survey also assessed for heavy drinking occasions over the past 14 days. Heavy drinking was defined as consuming four/five drinks for women/men (Wechsler et al., 1998). Participants were be provided with the following definitions of a standard drink: one 12 oz beer (5% alc/vol), one 8-9 oz craft beer (~7% alc/vol), one 4-5 oz glass of wine (~13% alc/vol), one 12 oz hard seltzer (5% alc/vol), one 1.5 oz 80 proof shot (40% alc/vol), and 1.5 oz liquor in mixed drink. Response options were yes (1) or no (0). Only participants with at least one episode of heavy drinking in the previous 14 days (i.e., a yes response) were eligible to participate. Decoy questions were added to the screener survey (i.e., “What is your college major” and “How many hours do you spend studying each week?”) to reduce the likelihood that participants would identify the
specific screening criteria. Additionally, steps were taken during survey creation to only allow one survey completion per Sona ID/IP address.

**Baseline Measures**

**Drinking Intentions.** Intention to drink was measured for the upcoming Friday and Saturday (Appendix C). Derived from research conducted by Trim and colleagues (2011), intended number of drinks was assessed by the participant’s response to one item: “How many standard alcoholic beverages do you intend to drink on Friday?” This question was repeated with regard to drinking intentions for Saturday. The following standard drink equivalents were defined for the participant: one 12 oz beer (5% alc/vol), one 8-9 oz craft beer (~7% alc/vol), one 4-5 oz glass of wine (~13% alc/vol), one 12 oz hard seltzer (5% alc/vol), one 1.5 oz 80 proof shot (40% alc/vol), and 1.5 oz liquor in mixed drink. Responses were kept on a continuous scale. Additionally, in order to reduce nonresponses among those with no drinking intentions, those who did not intend to drink were instructed to leave to enter a “0”. Measuring intention by this single question is consistent with previous research in this area (Brister et al., 2010; Glassman et al., 2010; Henslee et al., 2016; Lee, Patrick et al., 2017; Trim et al., 2011). Additionally, this method of intention measurement has shown good discriminant validity with other measures of potential action, such as behavioral expectations (Armitage et al., 2015).

**Typical Alcohol Consumption.** The Daily Drinking Questionnaire (DDQ; Collins et al., 1985; Appendix D) assessed typical alcohol use. Participants were provided with a 7-day calendar and asked to report the typical number of standard drinks consumed on each day of the week, averaged over the previous three months. Participants were provided with the following definitions of a standard drink: one 12 oz beer (5% alc/vol), one 8-9 oz craft beer (~7% alc/vol), one 4-5 oz glass of wine (~13% alc/vol), one 12 oz hard seltzer (5% alc/vol), one 1.5 oz 80 proof
shot (40% alc/vol), and 1.5 oz liquor in mixed drink. Participants’ typical drinking behavior was described using two alcohol use indices derived from the DDQ: typical alcohol quantity (i.e., the total number of drinks reported) and drinking frequency (i.e., the total number of days on which drinking was endorsed). The DDQ demonstrates good test-retest reliability ($r = .72$; Collins et al., 1985) and concurrent validity with similar constructs ($r = .72$; Marlatt et al., 1998).

**COVID-19-Related Changes in Drinking.** Six items were utilized to assess for COVID-19-related changes in drinking behavior to provide descriptive information regarding the sample (Appendix E). Items were derived from preliminary work evaluating the impacts of COVID-19 on drinking behavior. Examples of questions include “Compared to before the pandemic, would you say you are drinking *more OFTEN, less OFTEN*, or *About the same*” and “Are you drinking with others *IN PERSON* (*yes or no*)”.

**Demographics.** Participant demographic information, including sex, age, and class standing, was collected (Appendix F).

**Follow-up, Event-level Measures**

**Alcohol Consumption.** Based on prior literature (Trim et al., 2011; Lee, Patrick et al., 2017; Leigh et al., 2008), participants’ alcohol consumption for Thursday, Friday, and Saturday was measured via four questions (Appendix G). To ensure scale correspondence (Courneya, 1994), participants’ level of alcohol consumption was assessed using a continuous-open scale that was reflective of the assessment of drinking intentions. The first item asked participants if they consumed alcohol on Thursday. Then, participants were asked to enter time at which drinking began and ended, as well as the total number of drinks consumed that day. The same four-question sequence was repeated with respect to Friday and Saturday. Similar event-level measures have been utilized to assess alcohol use (Butler et al., 2010; Lee, Patrick et al., 2017;
Trim et al., 2011). Participants were provided with the following definitions of a standard drink: one 12 oz beer (5% alc/vol), one 8-9 oz craft beer (~7% alc/vol), one 4-5 oz glass of wine (~13% alc/vol), one 12 oz hard seltzer (5% alc/vol), one 1.5 oz 80 proof shot (40% alc/vol), and 1.5 oz liquor in mixed drink. Participants’ total number of drinks reported were utilized as an estimation of event-level alcohol consumption. Further, event-level alcohol consumption was utilized to create two indices of intention-inconsistent drinking for each drinking day. Firstly, a dummy variable was created to represent whether drinking was planned or unplanned, where 0 = planned drinkers (i.e., intentions greater than zero and consumption greater than zero) and 1 = unplanned drinkers (i.e., intention equal to zero and consumption greater than zero). Individuals who had no drinking intentions or alcohol consumption were not included in the calculation of this dummy code. Secondly, a discrepancy statistic was calculated by subtracting participants’ reported drinking intentions from baseline from the event-level total alcohol consumption to represent the number of unintended drinks. The discrepancy statistic yielded a positive value (e.g., +4 unintended drinks), negative (i.e., -4, or consumed 4 drinks less than intended), or zero (i.e., drank exactly as intended).

Alcohol Problems. Alcohol-related problems were assessed using the daily alcohol-related consequences and evaluations (DACE) for young adults (Lee, Cronce et al., 2017; Appendix H). The DACE asks participants to consider their drinking event yesterday and endorse drinking consequences with yes (1) or no (0) response options. For the purposes of this study, the prompt was adapted to reflect the participants’ primary drinking events (i.e., Friday and Saturday). Seven items from the DACE representing potential negative consequences were utilized (e.g., “I did something that embarrassed me,” and, “I had a hangover”). The consequences endorsed were summed to create a total score representing the total number of
negative consequences resulting from the drinking event for each day. This measure demonstrates good reliability and validity (Lee, Cronce et al., 2017), and previous research has utilized the negative consequences subscale as a singular measure of event-level alcohol-related problems (Fairlie et al., 2019; Lee, Cronce et al., 2017).

**Protective Behavioral Strategies.** PBS use was assessed using the Strategies Questionnaire (SQ; Sugarman & Carey, 2008; Appendix I). The SQ is a 21-item measure that assesses the utilization of PBS across three domains: Selective Avoidance (e.g., “Choose not to do shots when available.”), Strategies while Drinking (e.g., “Spacing drinks over time.”), and Alternatives (e.g., “Finding other ways besides drinking to reduce stress.”). Response options were adapted to reflect event-level use of each PBS (i.e., 0 = no and 1 = yes) for Friday and Saturday. Responses were summed with higher scores indicating utilization of more PBS. Previous research has included similar adaptations for daily PBS use (Frank et al., 2012; Lau-Barraco & Linden-Carmichael, 2019). The SQ was chosen for this particular study due to the inclusion of PBS representing alternatives to drinking, which is not assessed for in other, more popular measures (e.g., the PBSS; Martens et al., 2005). Alternatives to drinking may be particularly important for unplanned drinkers (i.e., those who do not plan to drink). Previous literature has suggested that the SQ results in curvilinear relations with alcohol use and consequences (Sugarman & Carey, 2007), however, it has since been suggested that the relationships are linear when the number of drinking episodes considered are controlled for (Braitman et al., 2015). Given that the SQ was used at the daily level, it was expected that curvilinearity would not be of issue. The SQ showed good internal consistency ($\alpha = .96$) in prior work and demonstrated predictive validity with measures of alcohol outcomes, such as use and consequences (Braitman et al., 2015).
**Descriptive Norms.** An event-level measure of descriptive norms was derived from work by O’Grady and colleagues (2011). If participants indicated they were drinking with others (i.e., a “Yes” response to “Were you with other people who were drinking on Friday/Saturday?”), they were asked to estimate the average number of standard drinks consumed by their three closest friends present during the drinking event on Friday/Saturday (Appendix J). If participants drank with less than three people, they were asked to consider the one or two friends present. Participants were provided with the following definitions of a standard drink: one 12 oz beer (5% alc/vol), one 8-9 oz craft beer (~7% alc/vol), one 4-5 oz glass of wine (~13% alc/vol), one 12 oz hard seltzer (5% alc/vol), one 1.5 oz 80 proof shot (40% alc/vol), and 1.5 oz liquor in mixed drink. Participant responses were kept on a continuous scale. This measure of descriptive norms has been utilized in event-level research (Cullum et al., 2010, 2012; Lee, Patrick et al., 2017).

**Injunctive Norms.** Event-level injunctive norms were measured via adapted versions of four items developed by Baer (1994; Appendix K). This measure, which usually reflects the beliefs for three closest friends of the same sex, was adapted to reflect the perceived beliefs of the three closest friends present at the drinking events. If participants drank with less than three people, they were asked to consider the one or two friends present. Participants responded on a 7-point scale representing varying levels of peer approval (1 = *Strongly Approve* and 7 = *Strongly Disapprove*) regarding four behaviors: “drinking alcohol that weekend,” “drinking alcohol each day that weekend,” “driving a car after drinking that day,” and “drinking enough to pass out that day.” Event-level injunctive norms were separately assessed for Friday and Saturday drinking events. Responses were reverse coded, such that higher scores indicate greater injunctive norms, and averaged to reflect an overall event-level injunctive norm score. The original version of this measure has good internal reliability ($\alpha = .73-.79$; LaBrie et al., 2010; Lee
et al., 2007; Osberg et al., 2011) as does the version used in this study \((\alpha = .76)\). Further, this measure demonstrates convergent validity with other measures of peer influence such as descriptive norms and other measures of injunctive norms, such as drink-based injunctive norms (Krieger et al., 2016).

**Drink Offers.** Following previous literature, event-level drink offers were assessed using two questions (Cullum et al., 2012; Graham et al., 1991). Participants were asked, “On Friday, did others offer you any alcoholic drinks?” with response options being “yes” (1) and “no” (0). Participants who endorsed drink offers then responded to “How many drinks did you accept?” (Appendix L). Responses were assessed using a continuous scale. The previous two questions were repeated with respect to Saturday’s drinking event. This measure of compliance with drink offers has shown predictive validity with measures of alcohol consumption (Cullum et al., 2012; Graham et al., 1991).

**Drinking Games.** One item from the Hazardous Drinking Games Measure (HDGM; Borsari et al., 2014; Appendix M) was utilized to assess event-level drinking game participation. Drinking games were defined as “an activity that has rules governing the consumption of alcoholic beverages.” The original item, which measured participants’ drinking game involvement over the past 30 days, was adapted to reflect event-level drinking game involvement for Friday and Saturday \((0 = no \text{ and } 1 = yes)\). Previous research has assessed event-level drinking game involvement with similar single items (Ray et al., 2014). Further, the original measure demonstrates adequate criterion-related validity and test-retest reliability, and the specific item on drinking game frequency shows convergent validity with other measures of drinking game involvement, such as drinks consumed during drinking game participation and drinking game related consequences (Borsari et al., 2014).
CHAPTER III
RESULTS

Power Analysis

A power analysis was conducted using G*power to estimate an appropriate sample size (Faul et al., 2007). Based on .80 power and an effect size of $f^2 = .15$, 118 days where unintended drinking occurred are needed for the present study. This power analysis assumes that the largest model includes nine predictors (Aim 3c). Given the lack of previous research investigating the effects of the degree of intention-behavior discrepancies and event-level negative alcohol-related consequences, with unplanned drinking and PBS as moderators, the estimation of effect size was based on a medium effect. When considering a small-to-medium effect size, 201 unintended drinking days were needed.

Data Cleaning

Analyses for the current project were completed using SPSS 27 and PROCESS (Hayes, 2012). PROCESS was selected given the surplus of models available (i.e., moderation, three-way moderation, etc.). Additionally, PROCESS offers the Johnson-Neyman technique for determining ranges of significance within moderation analyses, as opposed to selecting arbitrary values to test for significance of simple slopes. For the present study, all interaction terms were created by PROCESS. Data were cleaned prior to conducting analyses. Regarding dropout rates, 4.55% ($n = 2$) of participants did not complete the follow-up survey and were removed from analyses. Because dropout rates were low (i.e., two people), differences between study completers and non-completers were examined visually. The average typical drinking quantity and frequency for completers was 12.20 ($SD = 8.54$) drinks and 3.25 ($SD = 1.51$) drinking episodes per typical week. For the two non-completers, typical drinking quantity was 3.00 and
9.00 drinks. Further, two drinking episodes were reported by both non-completers for a typical week. Given that the typical drinking behaviors of the two non-completers is within one standard deviation of the completers’ averages, problematic differences between completers and non-completers were not assumed. Of those who completed both timepoints, zero data were missing; thus, multiple imputation was not needed. One outlier was present for descriptive norms and was consequently Winsorized to the next highest, non-outlier value.

Prior to running analyses, the assumptions of linear regression were assessed and checked for each model. For each regression analysis, multivariate outliers were assessed using values of influence (Cooks D and standardized DFBETAs), discrepancy (studentized deleted residuals), and leverage (Mahalanobis distances). No influential, multivariate outliers were present for any of the analyses. One case was flagged as a potential multivariate outlier with regards to discrepancy within multiple analyses; however, this case did not yield significant influence in any of the models and was thus left as is. Additionally, linearity was assessed and confirmed using scatterplots with LOWESS lines. All continuous variables were normally distributed with the exception of descriptive norms. Descriptive norms were slightly bimodal; however, given our low sample size, normality is harder to achieve. Regarding the completeness of the model and potential for measurement error, a thorough review of the previous research and literature was conducted and valid and reliable measures were selected for each construct. Homoscedasticity assumptions were assessed by predicting the standardized, squared, studentized deleted residuals from the predictors and visually through scatterplots depicting each predictor and the unstandardized residuals. For each regression model, the prediction yielded nonsignificant results, which suggested that homoscedasticity assumptions were met. Independence assumptions were evaluated using scatterplots and the Durbin-Watson test. No violations were
noted, as all Durbin-Watson statistics were close to two and all were below three. Multicollinearity was assessed for each regression model using variance inflation factor (VIF) statistics. VIF values were less than five for each model’s predictors, which suggested that multicollinearity was not of issue. Finally, normality of the residuals was checked visually using Q-Q plots of the unstandardized residuals and expected normal values. Several models yielded Q-Q plots that were slightly non-normal. However, deviations were not extreme and results are likely still valid. Specific issues that arose during assumption checks (i.e., cases with significant discrepancy or varying Q-Q plots) are further detailed in the subsequent results for each aim.

Given that the current study only analyzed one drinking day for each participant (hereafter referred to as primary study days), multilevel modeling was not needed. While some researchers have opted to exclude drinking events that are preceded by a consecutive drinking day due to an assumed non-independence of samples (i.e., drinking today may be biased by drinking yesterday; Trim et al., 2011), many daily diary studies evaluate consecutive drinking days without this concern (e.g., Fairlie et al., 2015; Lauher et al., 2020, etc.). Thus, the present study utilized the first drinking day for each participant as the primary study day for analyses. The first drinking day was chosen given its closer proximity to assessment of drinking intentions, given that literature supports a strong relationship between intention stability and certainty and actual behavioral outcome (Sheeran & Abraham, 2003). Furthermore, there is less of a need to seek proximity to behavior recall (i.e., follow-up surveys), because evidence suggests that recall bias does not significantly impact recall accuracy until around day three of recall (Gmel & Daeppen, 2007), which is the final day of the follow-up survey in the present study. Thus, while only the first day of drinking was assessed in analyses evaluating the influence of/predictors of
the discrepancy size, Aim 1, which explores rates of intention-inconsistent drinking, provided descriptive information for all study days and for primary study days separately.

Potential covariates were assessed prior to examining aim-related analyses. Sex was unrelated to discrepancy size, $F(1, 13) = 0.11, p = .108$, and was consequently not included as a covariate in analyses that evaluate discrepancy size as an outcome. Additionally, event-level alcohol consumption was not significantly related to consumption levels on the prior day, $F(1, 37) = 1.23, p = .274$, and thus, prior day drinking was unanalyzed in all analyses.

**Event-level Drinking**

A total of 88 days were assessed at the event-level (i.e., two days per participant). Of all assessed days, baseline reports of drinking intentions indicated that 77.27% ($n = 68$) of study days were intended drinking days. On days where an intention to drink was present, an average of 5.26 ($SD = 3.10$) and 4.53 ($SD = 2.45$) drinks were intended to be consumed on Friday and Saturday, respectively. Based on follow-up survey responses, alcohol was consumed on 68.18% ($n = 60$) of assessed days. At the event-level, on days when drinking occurred, an average of 5.08 ($SD = 2.95$) standard drinks were consumed. Additionally, 63.33% ($n = 38$) of drinking days were heavy drinking episodes.

**Statistical Analyses for Study Aims**

**Aim 1**

To explore the rate of intention-inconsistent drinking behaviors (i.e., percentage of planned versus unplanned drinking episodes; percentage who underestimated, overestimated, or accurately estimated their intended drinking quantity; and average number of unintended drinks consumed) of a college student sample using an event-level research design whereby drinking intentions are assessed pre-weekend and actual drinking behaviors are assessed post-weekend.
Hypothesis 1. It was hypothesized that unintended drinking would be the most prevalent form of intention-inconsistent drinking (i.e., drinking a quantity larger than intended), but the majority of drinking events would be planned (i.e., initial intentions greater than zero).

Descriptive statistics were utilized for Aim 1. A discrepancy statistic was created for each study day. To create the discrepancy statistic, participants’ intended number of drinks (measured before the drinking event) was subtracted from their total number of consumed drinks (measured after the drinking event). Results yielded positive values (indicating the individual consumed more than intended), negative values (indicating the individual consumed less than intended), and zeros (indicating the individual consumed the exact number of drinks that they intended). For the descriptive purposes of Aim 1, a categorical variable was created to classify those who drank the same (0), less (1), or more (2) than intended. Additionally, a dummy variable was created to differentiate unplanned drinking episodes (i.e., intention was equal to zero but reported consumption was greater than zero; coded as 1) and planned drinking episodes (i.e., intention was greater than zero and consumption was greater than zero; coded as 0). Given that only one day was analyzed per participant for aims two through four, a dummy code was created to determine which study day (i.e., Friday [1], Saturday [2], or neither [0]) would be analyzed for each person. If drinking occurred on Friday, then Friday’s data was utilized \( (n = 32) \). If no drinking occurred on Friday, but the participant drank on Saturday, then Saturday’s data was utilized \( (n = 7) \). If the participant did not consume alcohol on either day, then they were not included in analyses \( (n = 5) \). Thus, drinking occurred on 39 of the 44 potential primary study days. Of the 39 days where drinking occurred, 34.10\% \( (n = 15) \) were characterized by consuming more than intended and were thus included in Aims two through four. Consequently, Aim 1 results are provided twice; first, we provide descriptive statistics reflecting all study days \( (N = \)
and second, we provide statistics on only the primary study days that were included in aims two through four.

**Aim 1 Results for All Study Days.** A summary of participants’ intention-inconsistent drinking behaviors is provided in Table 1. Of all assessed drinking episodes (i.e., \( n = 60 \) drinking days out of 88 observed days), approximately 15.00% \( (n = 9) \) were unplanned and 85.00% \( (n = 51) \) were planned. Regarding the alignment between intended quantity and consumed quantity, 38.63% \( (n = 34) \) of drinking episodes were characterized by consuming less than intended, while 31.81% \( (n = 28) \) of drinking episodes were characterized by consuming more than intended and 29.55% \( (n = 26) \) were the same as intended amounts. On days where drinking quantity was underestimated, an average of 2.79 (\( SD = 1.36 \)) unintended drinks were consumed. Further, participants consumed an average of 3.18 (\( SD = 1.95 \)) drinks less than intended on days where quantity was overestimated. On days when drinking occurred, 50.00% \( (n = 30) \) were binge episodes and 13.33% \( (n = 8) \) were high-intensity drinking episodes (e.g., 8/10+ drinks for women/men).

**Aim 1 Results for Primary Study Days.** Of the drinking episodes that occurred on primary study days (i.e., \( n = 39 \) out of 44 potential primary study days), 17.90% \( (n = 7) \) of drinking episodes were unplanned. Regarding discrepancy statistics, participants engaged in unintended drinking on 38.50% \( (n = 15) \) of days. These 15 days are included in Aims two through four. Furthermore, participants consumed less than intended on 35.90% \( (n = 14) \) of days and consumed exactly as intended on 25.60% \( (n = 10) \) of days. On unintended drinking days (i.e., consumed amount exceeded intentions), participants reported consuming an average of 2.73 (\( SD = 1.83 \)) standard drinks above their intended amount. On primary days when drinking was overestimated, participants consumed an average of 2.57 (\( SD = 1.55 \)) drinks less than their
intended amount. On primary study days when drinking occurred, 46.15% \((n = 18)\) were binge episodes and 7.70% \((n = 3)\) were high-intensity drinking episodes. Thus, moderate drinking occurred on 46.20% \((n = 18)\) of primary study days.

### Table 1

*Descriptive Information on Intention-Inconsistent Drinking Behaviors*

<table>
<thead>
<tr>
<th></th>
<th>All Days ((N = 88))</th>
<th>Primary Study Days ((N = 44))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N (%) / M (SD))</td>
<td>(N (%) / M (SD))</td>
</tr>
<tr>
<td>Drinking Episodes</td>
<td>60 (68.18%)</td>
<td>39 (88.63%)</td>
</tr>
<tr>
<td>Event-level Drinking Quantity</td>
<td>5.08 (2.95)</td>
<td>4.51 (2.79)</td>
</tr>
<tr>
<td>Unplanned Drinking</td>
<td>9 (15.00%)</td>
<td>7 (17.90%)</td>
</tr>
<tr>
<td>Binge Drinking</td>
<td>30 (50.00%)</td>
<td>18 (46.15%)</td>
</tr>
<tr>
<td>High-intensity Drinking</td>
<td>8 (13.33%)</td>
<td>3 (7.70%)</td>
</tr>
</tbody>
</table>

Discrepancy Statistics

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Drank <em>more</em> than intended</td>
<td>28 (31.81%)</td>
<td>15 (38.50%)</td>
</tr>
<tr>
<td>Drank <em>less</em> than intended</td>
<td>34 (38.53%)</td>
<td>14 (35.90%)</td>
</tr>
<tr>
<td>Drank as intended</td>
<td>26 (29.55%)</td>
<td>10 (25.60%)</td>
</tr>
</tbody>
</table>

*Note. Primary study days reflect the one day per participant included in study analyses.*
**Aim 2**

To evaluate, among college students consuming more than their intended amount on a given weekend day, the association between the degree of unintended drinking (i.e., size of the discrepancy statistic, or consumed drinks minus intended drinks) and event-level negative alcohol-related consequences, after controlling for event-level alcohol consumption.

**Hypothesis 2.** It was hypothesized that the degree of participants’ intention-behavior discrepancies would be positively related to the number of event-level negative alcohol-related consequences experienced from the drinking event, after controlling for the impact of event-level alcohol consumption.

Prior to conducting analyses for Aim 2, statistical assumptions for multiple regression were assessed. No assumption violations were noted for Aim 2 analyses. It should be noted, though, that one case was flagged as a multivariate outlier, with regards to discrepancy. Upon further evaluation, it was clear that this case had been flagged due to a combination of a low discrepancy statistic (i.e., 1) and a large number of consequences (i.e., 5). Both, however, were reasonable values and were likely flagged as a multivariate outlier given our small sample size. Additionally, the same case was neither flagged as a multivariate outlier with regards to influence nor as a univariate outlier on either variable. Given the low sample size and the smaller range of scores for consequences (i.e., one to seven), this case, with a reasonable score of five, was left as is. Additionally, Q-Q plots suggested that the discrepancy statistic was nonnormally distributed. However, given that the data was truncated to only represent discrepancy statistics above zero (i.e., resulting in a positive skew), this is expected.

For Aim 2, and all following aims’ analyses, only those consuming more than intended (i.e., discrepancy statistic was greater than zero) during the primary drinking episode were
included ($N = 15$). For Aim 2, two separate linear regression analyses were conducted to
determine, among those consuming more than intended, if the size of the centered discrepancy
statistic predicts the number of negative alcohol-related consequences experienced. In the first
linear regression, event-level quantity was not controlled for while the variable was included as a
covariate in the second regression analysis to determine its impact on the association.

Results from the first regression analysis indicated that the overall model was not
statistically significant in predicting the number of negative alcohol-related consequences, $F(1,$
$13) = 0.03, p = .859$. The model accounted for 0.30% of the variance in negative alcohol-related
consequences. The discrepancy size did not significantly predict number of consequences ($B =$
$0.04, p = .859$).

In the second regression analysis, when event-level quantity was included as a covariate,
the model maintained its nonsignificance yet accounted for 19.30% of the variance in
consequences, $F(2, 12) = 1.43, p = .276, R^2 = .193$. The discrepancy statistic was not a
significant predictor of event-level consequences ($B = -0.08, p = .727$). Information on the
regression statistics for Aim 2 are presented in Table 2.
Table 2

Aim 2 Regression Predicting Event-level Consequences

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Without Event-level Quantity Covariate</th>
<th>With Event-level Quantity Covariate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>(Intercept)</td>
<td>0.88</td>
<td>0.77</td>
</tr>
<tr>
<td>Discrepancy Size</td>
<td>0.04</td>
<td>0.24</td>
</tr>
<tr>
<td>Event-level Quantity</td>
<td>0.29</td>
<td>0.17</td>
</tr>
</tbody>
</table>

Note. N = 15; without event-level quantity covariate: $R^2 = .003$; with event-level quantity covariate: $R^2 = .193$.

*p < .05.
**Aim 3**

To determine, among college students consuming more than their intended amount on a given weekend day, if two factors of the drinking event (i.e., planned or unplanned; PBS utilization) moderate the relationship between the degree of intention-behavior discrepancy (i.e., discrepancy statistic) and the number of event-level negative alcohol-related consequences, after controlling for event-level alcohol consumption.

**Hypothesis 3a.** It was hypothesized that the positive relationship between the discrepancy statistic and event-level negative alcohol-related consequences would be stronger when the drinking event was unplanned, after controlling for event-level alcohol consumption.

Assumptions for linear regression were mostly met for both regression models in Aim 3a. For both regression models, one case was noted as a multivariate outlier with regards to discrepancy; however, this case’s influence was not statistically significant. Thus, the case was left in. Additionally, Q-Q plots indicated that the residuals were slightly non-normally distributed. Again, given that the discrepancy statistic was truncated to only represent positive values, the positive was expected. All other variables met this assumption check.

Model 1 in PROCESS (Hayes, 2012) was utilized to conduct two separate moderation analyses to address Aim 3a. Event-level drinking quantity was not included in the first moderation analysis but was added in the second to determine if its inclusion in the model impacted the influence of the discrepancy statistic. For the first regression analysis, the centered discrepancy statistic was entered as the predictor, and the number of event-level negative alcohol-related consequences was entered as the criterion. The moderator for this relationship was unplanned drinking, which was represented by a dummy variable (i.e., 0 = planned drinking episode and 1 = unplanned drinking episode).
The first model, not controlling for event-level drinking quantity, was nonsignificant, $F(3, 11) = 0.83, p = .505$, and accounted for 18.40% of the variance in consequences. The interaction between the discrepancy statistic and unplanned drinking was not statistically significant, $B = 0.71, p = .446$. All main effects were nonsignificant predictors of negative alcohol-related consequences (discrepancy size: $B = -0.36, p = .682$; unplanned drinking: $B = -0.85, p = .499$).

The second model, with centered event-level quantity included as a covariate, was nonsignificant $F(4, 10) = 1.04, p = .434$. The model accounted for 29.40% of the variance in event-level consequences. Further, all main effects and the interaction coefficient were nonsignificant (discrepancy size: $B = -1.08, p = .312$; unplanned drinking: $B = 0.86, p = .647$; event-level quantity: $B = 0.35, p = .242$; interaction between discrepancy and unplanned episode: $B = 1.09, p = .270$). See Table 3 for regression model statistics.
### Table 3

**Aim 3a Moderation Results Predicting Event-level Consequences**

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Without Event-level Quantity Covariate</th>
<th>With Event-level Quantity Covariate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>(Intercept)</td>
<td>1.02</td>
<td>1.01</td>
</tr>
<tr>
<td>Discrepancy Size</td>
<td>-0.36</td>
<td>0.85</td>
</tr>
<tr>
<td>Unplanned Episode</td>
<td>-0.85</td>
<td>1.22</td>
</tr>
<tr>
<td>Int (discrepancy x unplanned)</td>
<td>0.71</td>
<td>0.90</td>
</tr>
<tr>
<td>Event-level Quantity</td>
<td></td>
<td>0.35</td>
</tr>
</tbody>
</table>

*Note. N = 15; without event-level quantity covariate: $R^2 = .184$; with event-level quantity covariate: $R^2 = .294$.***
**Hypothesis 3b.** It was hypothesized that the positive relationship between the discrepancy statistic and event-level negative alcohol-related consequences would be stronger when less PBS were utilized, after controlling for event-level alcohol consumption.

All regression assumptions were met for Aim 3b models with and without the event-level quantity covariate. Similar to Aim 3a, one case was flagged as a multivariate outlier with regards to discrepancy; however, this case’s influence was not statistically significant, and it was left in analyses.

Model 1 in PROCESS (Hayes, 2012) was utilized to conduct two separate moderation analyses to address Aim 3b, with and without event-level drinking quantity as a covariate. For the first regression analysis, the discrepancy statistic was entered as the predictor, and the number of event-level negative alcohol-related consequences was entered as the criterion. The moderator was total number of event-level PBS endorsed, with higher values indicating more PBS. All continuous predictors (i.e., the discrepancy statistic and event-level PBS) were centered prior to creating interaction terms and running analyses.

The first model, not controlling for event-level drinking quantity, was nonsignificant, $F(3, 11) = 0.58, p = .640$, and accounted for 13.70% of the variance in consequences. The interaction between the discrepancy statistic and PBS use was not significant, $B = 0.07, p = .418$. All main effects were nonsignificant predictors of negative alcohol-related consequences (discrepancy size: $B = 0.22, p = .487$; PBS: $B = -0.06, p = .562$).

The second model, with centered event-level quantity was included as a covariate, and was nonsignificant $F(4, 10) = 1.52, p = .269$. The model accounted for 37.80% of the variance in event-level consequences Further, all main effects and the interaction coefficient were nonsignificant (discrepancy size: $B = 0.13, p = .638$; PBS: $B = -0.05, p = .591$; event-level
quantity: \( B = 0.34, p = .077; \) and the interaction between discrepancy and PBS: \( B = 0.10, p = .228 \). See Table 4 for regression model statistics.

Table 4

\textit{Aim 3b Moderation Results Predicting Event-level Consequences}

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Without Event-level Quantity Covariate</th>
<th>With Event-level Quantity Covariate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( B )</td>
<td>( SE )</td>
</tr>
<tr>
<td>(Intercept)</td>
<td>0.95*</td>
<td>0.43</td>
</tr>
<tr>
<td>Discrepancy Size</td>
<td>0.22</td>
<td>0.30</td>
</tr>
<tr>
<td>PBS use</td>
<td>-0.06</td>
<td>0.10</td>
</tr>
<tr>
<td>Int (discrepancy x PBS use)</td>
<td>0.07</td>
<td>0.09</td>
</tr>
<tr>
<td>Event-level Quantity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\textit{Note.} \( N = 15; \) without event-level quantity covariate: \( R^2 = .137; \) with event-level quantity covariate: \( R^2 = .378. \)

\(*p < .05.\)
Hypothesis 3c. It was hypothesized that a three-way interaction exists, such that the positive relation between the discrepancy statistic and event-level negative alcohol-related consequences would be stronger when less PBS were utilized and when drinking was unplanned, after controlling for event-level alcohol consumption.

All regression assumptions were met for both regression analyses. Similar to the prior components of Aim 3, one case was flagged as a multivariate outlier with regards to discrepancy; however, this case’s influence was not statistically significant, and it was left in analyses.

For Aim 3c, model 3 in PROCESS (Hayes, 2012) was utilized to conduct a multiple linear regression analysis with a three-way moderation term (i.e., moderated moderation). The main predictor was the discrepancy statistic and the outcome was the number of event-level negative alcohol-related consequences endorsed. Moderators included a dummy variable representing unplanned drinking episodes (i.e., 0 = planned and 1 = unplanned) and the total number of event-level PBS strategies endorsed. The analysis included a total of eight coefficients: 1 three-way interaction (discrepancy statistic x unplanned drinking episode dummy variable x event-level PBS), 3 two-way interactions (discrepancy x unplanned dummy variable; discrepancy x PBS; and unplanned dummy variable x PBS), 3 main effects (i.e., discrepancy statistic, unplanned dummy variable, and PBS), and an intercept. As in previous aims, the analysis was conducted twice: once without and once with event-level quantity included as a covariate. All continuous predictors (i.e., the discrepancy statistic, event-level PBS use, and event-level quantity) were centered prior to creating interaction terms. Correlations between the individual variables are presented in Table 5.
### Table 5

*Intercorrelations Between Aim 3c Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>M / %</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Discrepancy Size</td>
<td>2.73</td>
<td>1.83</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Unplanned Drinking</td>
<td>46.70%</td>
<td>.59*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Number of PBS</td>
<td>8.80</td>
<td>4.66</td>
<td>.09</td>
<td>-.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Event-level Quantity</td>
<td>4.80</td>
<td>2.46</td>
<td>.32</td>
<td>-.37</td>
<td>.04</td>
<td></td>
</tr>
<tr>
<td>5. Number of Alcohol-related Consequences</td>
<td>1.00</td>
<td>1.56</td>
<td>.05</td>
<td>-.27</td>
<td>-.28</td>
<td>.43</td>
</tr>
</tbody>
</table>

*Note. N = 15; Discrepancy Size and Event-level Quantity measured in number of standard drinks; Unplanned Drinking represents the percentage of participants reporting drinking when no use was planned for their primary study day.*

*p < .05

The first model, without including event-level drinking quantity as a covariate, was nonsignificant, $F(7, 7) = 0.76, p = .638$, and accounted for 43.10% of the variance in consequences. All main effects were nonsignificant (discrepancy size: $B = 0.37, p = .764$; unplanned drinking: $B = -1.31, p = .464$; and PBS use: $B = 0.03, p = .910$). The three-way interaction representing the relation between discrepancy size, PBS use, and unplanned drinking was nonsignificant ($B = -0.17, p = .514$). Further all two-way interactions were nonsignificant (see Table 6).

When event-level quantity was included as a covariate, the overall model maintained nonsignificance and accounted for 75.60% of the total variance in consequences, $F(8, 6) = 2.32, p = .161, R^2 = .756$. However, the three-way interaction among discrepancy size, unplanned
drinking, and PBS use was significant ($B = -0.70$, $p < .05$). The Johnson-Neyman technique in PROCESS was utilized to probe this three-way interaction. Results suggested that when controlling for event-level drinking quantity, as PBS use decreases, the interaction between discrepancy size and planned drinking increases (see Figure 1). In other words, regardless of the event-level drinking quantity, for participants with low PBS use, smaller discrepancy sizes were associated with more negative alcohol-related consequences when drinking was planned, $t(6) = -2.80$, $p = .031$. More specifically, the Johnson-Neyman technique indicated that the region of significance for the three-way interaction consisted of scores at or lower than 0.41 points below the average PBS score (i.e., when centered PBS use = -0.41, $B = 3.80$, $p = .050$). Because of the significant three-way interaction, the two-way interactions and main effects were not interpreted (See Table 7).
Table 6

Aim 3c Three-way Moderation Results Predicting Event-level Consequences

Without Event-level Drinking Quantity Covariate

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>SE</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>1.31</td>
<td>1.49</td>
<td>.410</td>
</tr>
<tr>
<td>Discrepancy Size</td>
<td>0.37</td>
<td>1.18</td>
<td>.764</td>
</tr>
<tr>
<td>Unplanned Drinking</td>
<td>-1.31</td>
<td>1.69</td>
<td>.464</td>
</tr>
<tr>
<td>PBS use</td>
<td>0.03</td>
<td>0.26</td>
<td>.910</td>
</tr>
<tr>
<td>Int (Discrepancy x Unplanned Drinking)</td>
<td>0.16</td>
<td>1.26</td>
<td>.904</td>
</tr>
<tr>
<td>Int (Discrepancy x PBS use)</td>
<td>0.24</td>
<td>0.23</td>
<td>.327</td>
</tr>
<tr>
<td>Int (Unplanned Drinking x PBS use)</td>
<td>-0.05</td>
<td>0.31</td>
<td>.868</td>
</tr>
<tr>
<td>Three-way Interaction</td>
<td>-0.17</td>
<td>0.25</td>
<td>.514</td>
</tr>
</tbody>
</table>

Note. N = 15; $R^2$ = .431.

*p < .05.
Table 7

Aim 3c Moderation Predicting Consequences with Event-level Drinking

Quantity Covariate

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>SE</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>-10.76</td>
<td>4.41</td>
<td>.050</td>
</tr>
<tr>
<td>Discrepancy Size</td>
<td>-4.13</td>
<td>1.80</td>
<td>.062</td>
</tr>
<tr>
<td>Unplanned Drinking</td>
<td>7.66</td>
<td>3.40</td>
<td>.065</td>
</tr>
<tr>
<td>PBS use</td>
<td>0.84*</td>
<td>0.34</td>
<td>.048</td>
</tr>
<tr>
<td>Int (Discrepancy x Unplanned Drinking)</td>
<td>3.52</td>
<td>1.49</td>
<td>.056</td>
</tr>
<tr>
<td>Int (Discrepancy x PBS use)</td>
<td>0.76*</td>
<td>0.24</td>
<td>.021</td>
</tr>
<tr>
<td>Int (Unplanned Drinking x PBS use)</td>
<td>-0.87</td>
<td>0.36</td>
<td>.054</td>
</tr>
<tr>
<td>Three-way Interaction</td>
<td>-0.70*</td>
<td>0.26</td>
<td>.036</td>
</tr>
<tr>
<td>Event-level Quantity</td>
<td>1.13*</td>
<td>0.40</td>
<td>.030</td>
</tr>
</tbody>
</table>

Note. N = 15; $R^2 = .756$.

*p < .05.
Figure 2

Three-way Interaction Predicting Negative Alcohol-Related Consequences
Aim 4

To evaluate, among college students consuming more than their intended amount on a given weekend day, the unique association between each of four social factors (i.e., passive peer influence [descriptive norms and injunctive norms], active peer influence [alcohol offers and drinking games]) and the degree of participants’ intention-behavior discrepancies, after controlling for event-level alcohol consumption and sex.

Hypothesis 4. It was hypothesized that four social factors (i.e., descriptive norms, injunctive norms, drink offers, and drinking game engagement) would be significant predictors of participants’ intention-behavior discrepancies, even after controlling for the effects of event-level alcohol consumption and sex.

All assumption checks for multiple regression were met for Aim 4. For this aim, a two-block hierarchical linear regression analysis was utilized to examine which social factors uniquely predicted the size of participants’ discrepancy statistic. Two covariates (sex and event-level alcohol quantity) were included in the first block. Our four main predictors were included in the second block: two passive peer influence factors (event-level descriptive norms and event-level injunctive norms) and two active peer influence factors (event-level drink offers and event-level drinking game involvement). Participants’ primary discrepancy statistic was included as the outcome. The intercorrelations between predictors are reported in Table 8.
### Table 8

**Intercorrelations Between Aim 4 Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>M/SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Discrepancy Size</td>
<td>2.73</td>
<td>1.83</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Descriptive Norms</td>
<td>5.33</td>
<td>2.61</td>
<td>.39</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Injunctive Norms</td>
<td>3.29</td>
<td>0.93</td>
<td>-.15</td>
<td>-.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Drink Offers</td>
<td>66.70%</td>
<td>-.06</td>
<td>.17</td>
<td>.23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Drinking Games</td>
<td>41.70%</td>
<td>.59*</td>
<td>.43</td>
<td>-.18</td>
<td>.24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Sex (Male)</td>
<td>26.70%</td>
<td>.09</td>
<td>.15</td>
<td>-.13</td>
<td>.41</td>
<td>.29</td>
<td></td>
</tr>
<tr>
<td>7. Event-level Quantity</td>
<td>4.80</td>
<td>2.46</td>
<td>.32</td>
<td>.76**</td>
<td>-.07</td>
<td>.44</td>
<td>.70*</td>
</tr>
</tbody>
</table>

*Note. N = 12; Discrepancy Size = drinks consumed minus intended amount; Descriptive Norms = estimated quantity consumed by three closest friends at drinking event; Event-level Quantity = number of standard drinks consumed during the drinking episode; Injunctive Norms = average of four items (range 1-7); Drink Offers and Drinking Games = 0 (no) and 1 (yes); and Sex = 0 (female) and 1 (male).*

*p < .05; **p < .01
Results from the first block of predictors indicated that the two covariates (sex and event-level quantity) did not yield a significant model when predicting discrepancy size, $F(2, 9) = .837, p = .464$. The two covariates accounted for a total of $15.70\%$ of the total variance in discrepancy size.

When the four social factors were included in the second block, the overall model maintained its nonsignificance, $F(6, 5) = .634, p = .704$. The overall model including the two covariates and the four social factors yielded an $R^2$ of $.432$, indicating that the amount of variance accounted for by our model when including the four social factors increased by $.275$, or $27.50\%$; however, this change in $R^2$ was not significant, $p = .676$. All six individual predictors, including descriptive norms ($\beta = 0.30, p = .627$), injunctive norms ($\beta = 0.01, p = .977$), drink offers ($\beta = -0.18, p = .716$), drinking game engagement ($\beta = 0.65, p = .264$), sex ($\beta = 0.03, p = .947$), and event-level quantity ($\beta = -0.22, p = .797$), were each nonsignificant predictors of discrepancy size when controlling for the effects of each of the other predictors. Results from the hierarchical regression are reported in Table 9.
Table 9

Summary of Aim 4 Hierarchical Regression Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>β</th>
<th>p value</th>
<th>R²</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>1.18</td>
<td>1.42</td>
<td>.427</td>
<td>.927</td>
<td>.157</td>
<td>.157</td>
</tr>
<tr>
<td>Sex</td>
<td>0.35</td>
<td>1.40</td>
<td>0.08</td>
<td>.810</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Event-level Quantity</td>
<td>0.32</td>
<td>0.27</td>
<td>0.37</td>
<td>.261</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>1.81</td>
<td>3.09</td>
<td>.583</td>
<td>.947</td>
<td>.432</td>
<td>.275</td>
</tr>
<tr>
<td>Sex</td>
<td>0.13</td>
<td>1.84</td>
<td>0.03</td>
<td>.977</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Event-level Quantity</td>
<td>-0.19</td>
<td>0.69</td>
<td>-0.22</td>
<td>.797</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Descriptive Norms</td>
<td>0.24</td>
<td>0.46</td>
<td>0.30</td>
<td>.627</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injunctive Norms</td>
<td>0.03</td>
<td>0.81</td>
<td>0.01</td>
<td>.977</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drink Offers</td>
<td>-0.76</td>
<td>1.98</td>
<td>-0.18</td>
<td>.716</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drinking Games</td>
<td>2.59</td>
<td>2.05</td>
<td>0.65</td>
<td>.264</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 12; Discrepancy Size = consumed minus intended amount; Descriptive Norms = estimated quantity consumed by three closest friends at drinking event; Event-level Quantity = number of standard drinks consumed during the drinking episode; Injunctive Norms = average of four items (range 1-7); Drink Offers and Drinking Games = 0 (no) and 1 (yes); and Sex = 0 (female) and 1 (male).*
CHAPTER IV
DISCUSSION

A vast amount of prior work and theory has implicated intentions as one of the best predictors of behavior (e.g., Ajzen, 1988, 1991; Armitage & Conner, 2001; Fishbein & Ajzen 1975). Yet, extensive literature notes that there is often a misalignment between individuals’ intentions and actual behaviors (e.g., Cooke & Sheeran, 2013; Sheeran, 2002). Within the alcohol-use literature, research has supported the notion that drinking more than intended is not uncommon and associates with negative alcohol-related outcomes (Fairlie et al., 2019; Lee, Patrick et al., 2017; Pearson & Henson, 2013). While many have evaluated the construct of intention-inconsistent drinking (i.e., alcohol use that diverges from intended amounts or plans; e.g., Brister et al., 2010; Fairlie et al., 2019; Pearson & Henson, 2013), the majority of these studies focus on unplanned drinking episodes (i.e., drinking when no drinking was planned) or on alcohol use occurring during special occasions. Consequently, information on the importance of the number of unintended drinks consumed and on intention-inconsistent drinking during typical drinking episodes is lacking. The present study sought to address these limitations by evaluating event-level discrepancy statistics (i.e., a continuous representation of the size of the discrepancy between intended and consumed amounts) resulting from college students’ drinking episodes during non-special occasions. Specifically, we aimed to (1) describe the occurrence of intention-inconsistent drinking behaviors, (2) evaluate discrepancy size as a predictor of event-level, negative alcohol-related consequences, (3) explore the moderating role of two factors (unplanned drinking and PBS) on the association between discrepancy size and consequences, and (4) determine the role of peer influence factors (i.e., descriptive and injunctive norms, drinking game engagement, and drink offers) in predicting discrepancy size. In examining the
present study’s aims, it is important to note that all analyses were significantly impacted by extremely low power. Our low sample size likely resulted in increased type 2 errors (i.e., falsely nonsignificant findings), and thus results should be interpreted with caution (see Limitations).

**Aim 1 – Occurrence of Intention Inconsistent Drinking**

Literature that evaluates intention-inconsistent drinking disproportionately focuses on special occasions (i.e., Spring Break, Saint Patrick’s Day, 21st birthdays, etc.; Brister et al., 2010; Henslee et al., 2016; Lee, Patrick et al., 2017), and the importance of the quantitative discrepancy between intentions and behaviors (i.e., a discrepancy statistic representing the exact difference between intended and actual consumption) is often neglected (Pearson & Henson, 2013; Shim & Maggs, 2005; Trim et al., 2011). Only two studies have evaluated discrepancy statistics for typical drinking episodes (Fairlie et al., 2019; Labhart et al., 2017), yet, due to generalizability issues, it is unclear how representative these findings are to college students in the U.S. Given this significant gap in the literature, the first aim of the present study was to describe the occurrence of multiple intention-inconsistent drinking behaviors, including rates of unplanned drinking and an exploration of quantitative discrepancy statistics.

One aspect of Aim 1 was to determine the percentage of drinking episodes that were unplanned versus planned. It was hypothesized that the majority of drinking episodes would be planned. Our results were consistent with this hypothesis, as more than three-fourths of all drinking episodes were planned. This finding was consistent with prior work that has suggested that the majority of drinking episodes are planned (Fairlie et al., 2019; Lauher et al., 2020). Furthermore, Lauher and colleagues found that this was particularly true for weekend days, which may aid in explaining the present study’s findings as data was collected on Fridays and Saturdays.
The second aspect of Aim 1 focused on utilizing discrepancy statistics to describe the percentage of drinking days on which quantity was over, under, and accurately estimated. It was hypothesized that the majority of typical drinking episodes would be characterized by drinkers underestimating the amount they would drink. The results did not support this hypothesis, as roughly 39% of drinking episodes were overestimated in quantity and, consequently, participants drank less than intended. This is in contrast to the 32% of drinking episodes that were underestimated in quantity, resulting in participants drinking more than intended. These findings were inconsistent with prior work in this domain, which has suggested that the majority of individuals consume more than intended during special occasions (Brister et al., 2010; Henslee et al., 2016; Lee, Patrick et al., 2017) and typical drinking episodes (Fairlie et al., 2019; Labhart et al., 2017). It should be noted, however, that the present study differed from those listed above given our sample of U.S. college students and our observation of non-special occasions. It is possible that unintended drinking is a phenomenon that is much more common during special occasions and was, consequently, not captured by our assessment of typical drinking episodes. Further, given that data collection occurred during the COVID-19 pandemic, it is possible that participants had less opportunity to fulfill their intentions, perhaps as a result of less alcohol use with others (see Limitations).

The final component of Aim 1 sought to describe the total number of unintended drinks consumed on days when quantity was underestimated. A priori hypotheses regarding the average number of drinks consumed were not provided. Results suggested that when unintended drinking occurred, roughly three unintended drinks were consumed beyond intended amounts. This is comparable to prior work, which also found an average of three unintended drinks (Fairlie et al., 2019; Labhart et al., 2017). Overall, Aim 1 findings suggest that intention-inconsistent drinking
is a relatively common phenomenon among college students’ typical drinking episodes. However, contrary to our expectations, we found that overestimations of drinking quantity occurred more frequently than underestimations.

**Aim 2 – Association between Discrepant Drinking and Consequences**

Research suggests that intention-inconsistent drinking relates to experiencing more negative alcohol-related consequences (Fairlie et al., 2019; Lauher et al., 2020; Pearson & Henson, 2013). However, to the best of our knowledge, studies have yet to integrate the discrepancy statistic as a unique predictor of consequences; instead, prior studies focus on dichotomous indicators of unplanned drinking episodes. Our study is one of the first to evaluate the utility of discrepancy statistics for predicting consequences. Contrary to prediction, our findings suggested that the size of the discrepancy was not a significant predictor of alcohol-related consequences. This was true even when event-level quantity was included as a covariate. Findings were inconsistent with prior work on unplanned drinking. Specifically, Lauher and colleagues (2020) found that the endorsement of at least one negative consequence significantly differed between unplanned and planned drinking episodes. However, their findings revealed that unplanned drinking episodes were associated with lower likelihood of consequences. This is likely explained by greater consumption during planned drinking events (Lauher et al., 2020). This finding supports the notion that the total quantity consumed may be more important than the occurrence of unintended drinking when predicting consequences. However, none of our model’s predictors, including total event-level quantity, were significant predictors of negative consequences.

Overall, these findings from Aim 2 suggest that the number of unintended drinks consumed was not significantly related to the number of consequences endorsed. It should be
noted that the present study was severely underpowered, and, consequently, the likely occurrence of type 2 errors limits interpretations of our null findings. Given that literature consistently supports a strong association between alcohol quantity and consequences, our nonsignificant findings for the event-level drinking quantity covariate provides further evidence that our small sample did not provide adequate power to detect significant results.

**Aim 3 - The Roles of Unplanned Drinking Episodes and PBS**

Prior work indicates that there is a potential for underlying relations between unplanned drinking episodes, PBS, and discrepancy statistics (Fairlie et al., 2019; Pearson, 2013; Pearson & Henson, 2013). The associations between discrepancy size, unplanned drinking episodes, and PBS use and their relation to negative alcohol-related consequences have yet to be evaluated. Aim 3 sought to address this gap by first evaluating the moderating roles of unplanned drinking (Aim 3a) and PBS (Aim 3b) and then their predictive utility in a three-way interaction (Aim 3c) with the discrepancy size.

**Unplanned Drinking Moderator**

Consistent with prior findings on the negative outcomes associated with unplanned drinking (Fairlie et al., 2019; Pearson & Henson, 2013), it was hypothesized that the positive association between discrepancy size and negative alcohol-related consequences would be stronger if the overall drinking episode was unplanned. Our results did not support this hypothesis. Instead, the relation between discrepancy size and consequences did not change based on the planned or unplanned nature of the overall drinking episode. This remained true when event-level quantity was included as a covariate. The present study is the first to evaluate the role of an unplanned drinking episode on the association between discrepancy size and consequences. While previous literature has not evaluated this model, our findings were
inconsistent with prior work that suggests unplanned drinking episodes uniquely relate to consequences (Fairlie et al., 2019; Pearson & Henson, 2013). Additionally, this model was likely impacted by exceptionally low power, given our small sample size, and is consequently susceptible to type 2 errors. As such, findings should be interpreted with caution.

**Event-level PBS Moderator**

Prior research has highlighted the moderating and mediating roles of PBS on associations between a variety of risk factors and hazardous alcohol use (D’Lima et al., 2012; Palmer et al., 2010; Martens et al., 2007a). PBS have been theorized to aid in explaining the disproportionate number of consequences that unplanned drinkers are thought to experience (Pearson & Henson, 2013), and some evidence suggests that an interaction between intentions and PBS significantly predicted alcohol consumption (Grazioli et al., 2015). For the present study, it was hypothesized that the number of PBS used during the drinking episode would moderate the relation between the discrepancy statistic and consequences such that when more PBS were used, the influence of the discrepancy size on consequences would be lessened. Our findings did not support this hypothesis, as the model, main effects, and interaction term were nonsignificant. Findings were inconsistent with prior work; specifically, the main effect for PBS was not significant. This contradicts prior findings that suggest its utility as a predictor of negative alcohol-related consequences (Araas & Adams, 2008; Borden et al., 2011). It is possible that our measure of consequences was not comprehensive enough, given its restricted nature (i.e., seven-items total that represent more extreme consequences, like vomiting, aggression, and injury). Perhaps the variability in consequences was limited by the restricted nature of our measure. Further discussion on this is provided in Limitations. Finally, as in our previous models, our statistical model was insufficiently powered and results should be interpreted with caution.
**Three-way Moderation – Unplanned Drinking and PBS**

As mentioned in prior subcomponents of Aim 3, prior work supports the notion that an underlying association exists between intention-inconsistent drinking and PBS use (Grazioli et al., 2015; Pearson & Henson, 2013). It was hypothesized that a three-way interaction consisting of both moderators (unplanned drinking and PBS) and the main predictor (discrepancy size) would significantly predict negative alcohol-related consequences such that larger discrepancies would result in more consequences for unplanned drinkers, and this would be especially true when unplanned drinkers utilized low levels of PBS. Our results supported this hypothesis in that a three-way interaction existed; however, the simple slopes at low, moderate, and high values of the PBS moderator indicated that the conditional effects were different than our prediction. Regression analyses indicated that the three-way interaction was a significant predictor of alcohol-related consequences, such that lower levels of PBS use strengthened the interaction between discrepancy statistics and planned drinking. In other words, controlling for event-level drinking quantity, smaller discrepancy statistics were associated with experiencing more consequences for *planned* drinkers, but only when PBS use was low. Additionally, when evaluating the intercorrelations between all Aim 3 variables, a significant association existed between unplanned drinking and the discrepancy size, suggesting that unplanned drinkers had higher discrepancy sizes.

Given that prior work has yet to evaluate similar models that investigate Aim 3c variables, our three-way interaction results could not be compared to existing literature; however, when examined in relation to prior work in each distinctive domain (e.g., PBS literature and findings on unplanned drinking), our significant results were inconsistent with findings that suggest the existence of a strong negative relation between PBS and consequences (Araas &
Adams, 2008; Pearson, 2013). Further, our findings did not support Pearson and Henson’s (2013) notion that unplanned drinking is related to consequences through lower utilization of PBS. However, our findings in Aim 3c uniquely contributed to Pearson and Henson’s prior work by incorporating the degree of unintended drinking as a distinct component of this model. This model, like in all other aims, was extremely limited in power.

**Aim 4 – Peer Influence Factors’ associations with Discrepancy Size**

Social factors of the drinking context, such as peer influence, have been consistently linked with alcohol consumption (Berkowitz, 2003; Graham et al., 1991; Read et al., 2005). Peer influence consists of active (i.e., direct forms of pressure that require immediate responses) and passive domains (i.e., indirect forms of pressure) and models including factors from both areas tend to be more predictive of alcohol consumption (Read et al., 2005). Moreover, there is some evidence to suggest that discrepancy statistics are associated with certain peer influence factors (Brister et al., 2010; Day-Cameron et al., 2009; Lee, Patrick et al., 2017). Therefore, the present study hypothesized that four peer-influence factors, representing both passive (descriptive and injunctive norms) and active domains (drink offers and engagement in drinking games), would significantly predict one’s discrepancy size. Contrary to this hypothesis, our results indicated that all four peer influence factors were unrelated to discrepancy size. Additionally, neither covariate (sex and event-level consumption) significantly predicted discrepancy size.

Our finding that peer influence factors were not predictive of discrepancy size is inconsistent with prior work (Brister et al., 2010; Day-Cameron et al., 2009; Lee, Patrick et al., 2017). It should be noted, however, that Aim 4 analyses were conducted with a sample size of 12 individual days since only 12 of the 15 primary study days consisted of drinking episodes that occurred with others present. Consequently, this analysis was extremely underpowered. Our
significant lack of power may aid in explaining inconsistencies in our findings when compared to prior work. As such, additional research is needed to clarify the role of psychosocial factors in explaining intention-behavior gaps for drinking quantity.

**General Discussion**

Overall, two of the present study’s hypotheses were supported. Specifically, findings suggested that the majority of drinking episodes were planned. However, the majority of drinking quantities were overestimated, rather than underestimated. This is interesting, given its inconsistency with prior findings. Additionally, our results supported the existence of a three-way interaction among discrepancy size, planned drinking, and PBS use in predicting negative consequences; however, the conditions of this three-way interaction were inconsistent with our prediction. When event-level quantity was taken into account, planned drinkers with low PBS use experienced significant associations between low discrepancy size and more consequences. Finally, peer influence factors related to the drinking context were not related to discrepancy size.

The present study’s findings were somewhat inconsistent with prior work and theory. For instance, the theory of planned behavior (TPB) suggests that intention is one of the most proximal determinants of behavior (Ajzen 1988, 1991). However, among the overall sample, only around 30% of drinking episodes were characterized by accurate estimations of drinking quantity. Thus, our findings are indicative of a weaker intention-behavior relationship. Much of the prior literature on the TPB has highlighted similar findings and has sought to explain why behavior diverges from intentions (Cooke & Sheeran, 2013; Sheeran, 2002; Sheeran & Abraham, 2003). It is possible that drinking intentions in the present study were influenced by unanalyzed factors after assessment but before actual drinking behavior occurred, thus explaining our
inconsistencies with the TPB framework. Additionally, our findings did not fully support the model of unplanned drinking behaviors proposed by Pearson and Henson (2013) which suggested that intention-inconsistent drinking behavior relates to experiencing more negative consequences. Specifically, our null findings for the relation between intention-inconsistent drinking (i.e., discrepancy statistics) and negative alcohol-related consequences were incongruous with this proposed model. Additionally, our findings did not support Pearson and Henson’s model in regard to the role of PBS. Our significant three-way interaction suggested that discrepancies do relate to consequences, but only when drinking is planned and PBS use is low. Thus, based on the contradictions between our results and previous theory, the interaction between PBS, discrepancies, and unplanned drinking remains inconclusive. Null results suggest that among unplanned drinkers or those with moderate or high PBS use, discrepancy size appears to be a less informative factor. Because of the present study’s extremely limited sample size, the findings from the three-way interaction are tenuous. Further, adequately powered research is needed to determine the interplay among these variables. Finally, the lack of findings for peer influence factors and their association with discrepancy statistics was inconsistent with prior models and frameworks (Bandura & Walters, 1977; Berkowitz, 2003; Freisthler et al., 2014; Read et al., 2005).

Despite our mixed findings, the present study added to the literature in several ways. For instance, we provided information on the intention-inconsistent drinking behaviors of college students residing in the U.S. This aided in filling a gap that the current literature had largely ignored by sampling outside of the U.S. (Labhart et al., 2017) or by not comprehensively assessing discrepant drinking behaviors via discrepancy statistics (Baumann et al., 2015; Conner et al., 1999; Glassman et al., 2010; Grazioli et al., 2015; and Mullan et al., 2011). In contrast to
prior work, the present study’s event-level assessment of drinking intentions and actual consumption allowed for the creation of a discrepancy statistic that represented the quantitative difference between intentions and consumption. Furthermore, our study is among the first to provide information on discrepancy statistics during typical drinking episodes; as such, our study yielded more generalizable results than prior work that focuses on drinking during special occasions (Brister et al., 2010; Henslee et al., 2016; Lee, Patrick et al., 2017).

Additionally, the present study was the first to utilize the discrepancy statistic as a unique predictor of alcohol-related consequences. Prior work has evaluated the relation between intention-inconsistent drinking and consequences via dichotomous variables that indicate if a drinking episode was unplanned (Fairlie et al., 2019; Lauher et al., 2020). However, this largely limits the conclusions to the most basic understanding of unintended drinking (i.e., did any unplanned drinking occur?). Our study extended this to examine the degree of unintended drinking and its relation to consequences. Results suggested that the degree of unintended drinking is a useful predictor of alcohol-related consequences for individuals who neglect to incorporate protective strategies during a planned drinking episode. This is a novel area of research, given the lack of prior work that incorporates continuous measures of intention-inconsistent drinking in models with drinking-related risk factors.

Similarly, prior work has rarely investigated predictors of discrepancy size in relation to peer influence factors, with the exception of a couple of studies (Brister et al., 2010; Lee, Patrick et al., 2017). Our findings that active and passive peer influence factors were not significant predictors of discrepancy size should be considered in light of sample-size-related limitations. As previously mentioned, several predictors yielded significant, positive correlations (e.g., drinking game engagement and discrepancy size), and given a larger sample size, may aid in predicting
discrepancy size. Future studies should consider the potential for peer influence and other psychological factors to associate with discrepancy size.

Findings from the present study have several implications. Specifically, descriptive findings utilizing the discrepancy statistic indicated that the majority of drinking episodes were overestimated in quantity. This information may be useful in clinical settings that aim to reduce participants’ drinking behavior. For instance, evidence suggests that alcohol interventions can effectively change drinking behavior by correcting normative beliefs to represent actual peer drinking behavior more accurately (Dotson et al., 2015). Perhaps, informing individuals that the majority of their peers end up drinking less than intended may aid in encouraging participants to consume less than they initially intended to, as well. Future research may benefit from continued exploration of individuals who overestimate their drinking quantity, given that drinking less than intended is an adaptive behavior that may lessen the negative outcomes associated with alcohol use. Despite the fact that the majority of drinking episodes were characterized by consuming less than intended (39%), a sizeable number of drinking episodes consisted of alcohol consumption that exceeded intended amounts (32%). Consequently, evidence suggests that many individuals are consuming more than intended. Interventions that seek to lessen the negative outcomes associated with drinking may benefit from evaluating unintended drinking as a risk factor for heavy alcohol use. Additionally, regardless of under versus overestimation of drinking quantity, the majority of drinking episodes in the present study were binge episodes. Literature consistently supports a strong association between binge drinking and negative alcohol-related outcomes (Hingson et al., 2017). Thus, overestimated and underestimated drinking episodes may be of concern given the high occurrence of binge episodes.
Our results also provided data that smaller discrepancy sizes, planned drinking, and low PBS use work in conjunction to predict negative alcohol-related consequences. Specifically, low PBS use significantly strengthened the interaction between planned drinking and discrepancy size such that, for planned drinkers, smaller discrepancies significantly associated with more negative consequences. However, as previously noted, our small sample size necessitates this result being interpreted with caution. If future research with larger samples replicates this finding, that would suggest that planned drinkers who neglect to utilize PBS are not at risk of experiencing increased consequences as a result of increased discrepancy size. Perhaps, planning one’s drinking episode serves as a strong protective factor for negative consequences, and this notion is consistent with prior work (Fairlie et al., 2019). However, the role of PBS use in this three-way interaction is inconsistent with evidence that suggests higher drinking intentions predict more alcohol use when PBS is low (Grazioli et al., 2015) and that PBS use is protective against consequences (Pearson, 2013). Given the lack of empirical support and logic for this phenomenon, this finding yields limited clinical interpretations and utility.

Limitations

Findings of the present study should be considered in light of several limitations. Firstly, data were collected throughout the COVID-19 pandemic (February to July 2021), which likely influenced study results. For instance, during the majority of data collection, multiple state- and university-imposed restrictions on in-person gatherings were in place, thus limiting the amount of social contact among participants. Furthermore, 24.40% (n = 10) of participants reported that they were drinking with others in-person on special occasions only. Given that the present study specifically evaluated non-special occasions, a sizable number of participants may have experienced less social influence for drinking behaviors than is typical. Regarding the
pandemic’s influence on drinking amounts, roughly two-thirds of participants reported that their drinking frequency and quantity has changed since the pandemic began. Specifically, 34.10% ($n = 15$) reported that they were drinking more often, while 27.30% ($n = 12$) reported they were drinking less often. Additionally, 40.9% ($n = 18$) reported consuming more drinks than before the pandemic, and 13.6% ($n = 6$) reported consuming less than before the pandemic. Thus, participants’ drinking quantities, and, consequently, their discrepancy statistics, were likely altered in comparison to their pre-pandemic levels. This notion is consistent with preliminary findings that indicate a positive association between COVID-19-related stress and drinking quantity (Rodriguez et al., 2020). Additional evidence suggests that that COVID-19-related changes in drinking vastly vary based on living situation; for example, White and colleagues (2020) found that for participants who transitioned from living with peers to parents, drinking quantities and frequency significantly declined. However, the opposite was true for people whose living situations did not change. While the present study did not assess for changes in living situation, 78% of participants reported that the way they drink (i.e., in bars with friends, in other people’s houses/apartments, in your own home with others, in your own home alone) has changed since the pandemic started. Currently, it is unclear how drinking behaviors will change as the pandemic evolves. If drinking behaviors return to pre-pandemic levels, then the generalizability of the present findings may be uncertain.

Other potential COVID-19-related limitations include participant recruitment which resulted in obtaining a vastly undersized sample. One specific contributing factor included newly imposed IRB regulations that required virtual face-to-face meetings to complete informed consent even for a fully virtual, asynchronous study design. A large number of individuals who expressed interest in participating in the current study failed to schedule their face-to-face
informed consent meetings. Despite researchers’ attempts to minimize the burden of these meetings (e.g., flexible scheduling, minimizing session length to less than five minutes, etc.), out of 90 individuals who expressed interest in participating, only 51.11% (n = 46) responded to attempts to schedule the virtual session. Additionally, there is a potential that requiring Zoom sessions for informed consent reduced this study’s generalizability. Perhaps individuals who were willing to schedule and attend Zoom sessions represented personality characteristics (e.g., outgoingness, preparedness, etc.) that were different from those who were not willing. For example, if the current sample was comprised of individuals who demonstrated a general tendency towards preparedness, then findings on analyses with unplanned drinking or utilization of protective strategies (i.e., two factors that may be impacted by levels of preparation) may not reflect the true associations among the general population.

Based on a priori power analyses, it was estimated that 118 primary study days were needed for study analyses to be appropriately powered for aims two through four. The present study obtained 15 primary study days for aims two through four and is thus considerably underpowered. This implies that our findings may have been prone to type 2 errors. Increased risk for type 2 errors may aid in explaining why most of our findings were null and inconsistent with prior work. A post-hoc power analysis indicated that, for our smallest model, power was equal to .21. Thus, our simplest model would only detect a significant effect (if one existed) 21% of the time. As such, our statistical tests for all subsequent models, which were even more complex, were even less likely to detect significant effects. It is important to consider the present study’s null findings in light of this major limitation.

There are also study limitations related to our target sample. For instance, participants were emerging adult (i.e., 18-to-25 years of age) college students who reported at least one
episode of heavy drinking in the last two weeks. Further, a large proportion of participants were White females. Consequently, our findings may be less applicable among other population groups. Additionally, our measure of consequences, the Daily Alcohol-related Consequences and Evaluations (DACE; Lee, Cronce et al., 2017) allowed for the endorsement of only seven specific consequences. This brief measure aided in keeping survey response times low. However, given that this measure only assessed seven consequences, some of which were more extreme in nature (e.g., vomiting, injury, aggression), it is likely that the present study did not fully capture participants’ alcohol-related consequences. Indeed, participants’ responses on the DACE were rather limited as response ranges were low (e.g., mean = 0.92, minimum = 0, maximum = 5). It should also be noted that only negative alcohol-related consequences from the DACE were utilized for the present study. It is possible that positive consequences (e.g., feeling drunk, social facilitation, etc.) varied based on participants’ discrepancy statistics, yet the present study had no way of analyzing this potential association. Additionally, while our study is among the first to evaluate discrepancy statistics on non-special occasions, it is possible that individuals participated on days when special occasions occurred (e.g., birthday celebrations). Though the researchers took steps to prevent this, such as instructing participants to sign up for a weekend when no special event was planned, many participants were slow in responding to scheduling emails and participated after their selected weekends had passed.

Furthermore, while the present study expanded on the designs of prior work on intention-inconsistent drinking behaviors by using an event-level design to examine drinking intentions and actual consumption, only one drinking episode was examined per participant for major analyses. This decision, too, helped with reducing participant burden, yet this restricted the analyses of the present study. The assessment of multiple days would have allowed for analyses
on within-person differences (i.e., how discrepancy statistics change, day-to-day, for each participant). It is possible that variations in an individual’s discrepancy size is a better indicator of their expected number of event-level negative alcohol-related consequences. The current study aimed to measure intention and behavior as temporally proximal as feasible; however, there was still a potential for a one-to-three day lag between reports of intentions and the occurrence of actual drinking behavior. Participants’ drinking intentions may have been altered during this time, resulting in decreased validity of our assessment of unintended drinking. Finally, participants’ survey responses were entirely self-report. Participants’ alcohol consumption, consequences, and peer-influence factors may have been biased by recall effects. This, too, reduces the validity of the present study’s construct measurements.

**Future Directions**

The current study attempted to address limitations of prior work on intention-inconsistent drinking behaviors. Overall, it appears that college students commonly drink in ways that are inconsistent with their original intentions. However, due to significant limitations which likely limited our ability to detect significant effects, the present study did not provide comprehensive conclusions on relevance of discrepancy sizes. For instance, while one model suggested that discrepancy sizes are relevant predictors of consequences for a subset of drinkers (i.e., planned drinkers with low PBS), their relation to consequences was unsupported in multiple models and social factors failed to account for the variance in participants’ discrepancy sizes. Further, the direction of the three-way interaction was incongruous with prior theory and was generally illogical. Despite this, several future directions are highlighted.

Given the limitations of the present study, particularly regarding the small sample size and COVID-19-related impacts, additional work that seeks to replicate our findings is needed to
better examine the role of discrepancy sizes. As previously discussed, our study’s low power resulted in an increased risk for type 2 errors, which may explain our inconsistencies with prior findings. As such, an adequately powered replication of the present study is necessary. If similar results are obtained from a well-powered replication, then more statistically sound conclusions on the limited predictive utility of discrepancy statistics could be discussed. In that case, findings would suggest that increased unintended drinking is associated with experiencing fewer consequences for planned drinkers with low PBS use, and researchers should explore factors that may explain this unusual association. However, if a well-powered study detected significant effects for a positive relation between discrepancy statistic predictors and consequences, as is consistent with theory, then it could be assumed that the null and illogical findings from the present study were largely influenced by type 2 errors (for null findings) and type 1 errors (for the significant three-way interaction). Future replications of the present study should also consider the benefit of collecting data outside of the COVID-19 pandemic given the likely occurrence of pandemic-related changes in alcohol use during the present study’s data collection. The consequences of unintended drinking may be more pervasive once college students are engaging in their normal, pre-pandemic routines (e.g., attending in-person classes and gatherings, exposure to peers, etc.), and, as such, there exists a unique need for replication once the pandemic ends.

Additionally, future work is needed to identify risk factors for consuming more alcohol than intended. Although the present study focused specifically on peer influence factors, additional research should continue pursuing the predictive utility of these factors given the limitations of the current study. However, it is possible that factors other than those encompassed by peer influence are better indicators of larger discrepancy sizes. For instance, psychological
risk factors, such as drinking motives and alcohol expectancies, have demonstrated predictive utility for alcohol consumption (Kuntsche & Cooper, 2010; Nicolai et al., 2012) and may be as useful for predicting discrepancy sizes. Future work that aims to determine risk factors for intention-inconsistent drinking may aid interventionists in identifying risky drinkers.

An additional research direction concerns utilizing more ecologically valid study designs for capturing intention-inconsistent drinking. With regard to intention-inconsistent drinking, there is some evidence that unintended drinking varies within a person (i.e., day-to-day; Fairlie et al., 2019; Labhart et al., 2017; Lauher et al., 2020). However, prior work utilizing daily data has largely not incorporated discrepancy statistics. One exception is Labhart and colleagues (2017) findings, which noted a relation between multiple predictors (e.g., attending multiple locations and drinking with a larger group) and drinking more than intended. While these findings aid in beginning to understand the determinants of unintended drinking at the daily level, it remains unclear if daily variations in the number of unintended drinks consumed is relevant for predicting variations in daily alcohol outcomes. Perhaps within-person fluctuations in unintended drinking quantities are more indicative of drinking-related consequences than between-person differences. Future research should utilize daily diary or EMA designs to better understand these within-person associations. Furthermore, daily diary and EMA designs allow for more temporally proximal measurements of intention and behavior. Evidence has suggested that the relationship between intentions and behavior declines as time between measurements increases (Wolff, 1994), and as such, daily and EMA designs may more accurately capture drinking intentions and actual consumption.

In summary, suggestions for future longitudinal studies that aim to investigate unintended drinking include obtaining a larger sample size, evaluating unintended drinking outside of the
COVID-19 pandemic, and utilizing a more comprehensive measure of drinking consequences. Future research that more comprehensively captures alcohol-related consequences may be better equipped to establish the relation between discrepancy size and event-level consequences. Such findings would aid in determining the importance of unintended drinking as a predictor of negative outcomes and would inform interventions that aim to reduce negative impacts of alcohol use on college campuses.
CHAPTER V

CONCLUSIONS

The present study is the first to evaluate the utility of the quantitative discrepancy between alcohol use intentions and actual consumption as a predictor of negative alcohol-related consequences. Additionally, we aimed to describe the occurrence of intention inconsistent drinking behaviors in a U.S.-based sample of emerging adult college students. Finally, we sought to determine if several peer-influence factors were associated with drinking more than intended. Results indicated that college students commonly engage in intention-inconsistent drinking in that the majority overestimate their drinking quantities. Pathways between discrepancy size and consequences were not statistically supported. However, this did vary as a function of PBS use and planned drinking, such that lower PBS use among planned drinkers was associated with a significant relation between smaller discrepancy sizes and more alcohol-related consequences. None of the included peer-influence factors were associated with discrepancy statistics. However, the present study was severely limited by a small sample size, so results should be interpreted with caution. Overall, the present study added to the literature by evaluating the importance of the number of unintended drinks consumed and providing descriptive information on the occurrence of unintended drinking during typical drinking events. Furthermore, we shed light on potential associations between planned drinking, low PBS use, and low discrepancy size and how these variables work in tandem to explain increased negative consequences. However, given the significant limitations of this study, future research is needed to replicate our findings and to further examine the importance of unintended drinking as a unique risk factor for negative alcohol-related outcomes.
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APPENDIX A

TIME BALANCE: REASONS FOR NOT DRINKING

Below is a list of reasons for why you may not have consumed alcohol *Friday*. Please respond to each statement by indicating Yes or No as to whether it is a reason why you did not consume alcohol yesterday.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>I had to work at my job</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I had too much school work to do</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I had nobody to drink with</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I couldn’t obtain alcohol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I had no desire to drink</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I don’t usually drink on this night of the week</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX B

SCREENING SURVEY

1. Where did you hear about this study? _____ Sona _____ University Announcements
2. What is your current age? _____
3. What is your biological sex? _____ Male _____ Female
4. What is your gender? _____ Male _____ Female _____ Other (Specify)
5. In the past 14 days, how many times did you have 4 or more (if biological sex is female)/5 or more (if biological sex is male) standard alcoholic drinks in a single sitting? _____
6. What is your college major? ____________
7. How many hours do you spend studying each week? _____

ONLY for those who screen through:

Please respond to the following items. Your personal contact information will not be connected to any other survey responses that you have provided. Once you submit this form, you will receive an email with a link to the study on the Wednesday before your selected weekend.

1) What is your email address?
2) What is your cell phone number?
APPENDIX C
DRINKING INTENTIONS

Please answer the following questions regarding your drinking intentions for the upcoming weekend. Note, a standard drink is defined as:

1. Do you intend to drink on Friday? ___ Yes ____ No
2. How many standard alcoholic beverages do you intend to drink on Friday? *Note,* please select ‘0’ if you do not plan to drink. ______
3. Do you intend to drink on Saturday? ____ Yes ____ No
4. How many standard alcoholic beverages do you intend to drink on Saturday? *Note,* please select ‘0’ if you do not plan to drink. ______
APPENDIX D

ALCOHOL USE

The following questions have to do with alcohol use. For these questions, please choose the answer that best describes your drinking in the past 3 months.

Please think about your typical drinking over the past 3 months. On a typical day, how many drinks would you have, and over how many hours would you have them? That is, how many drinks would you typically have on each day in the past three months? How long (in hours) would a typical drinking occasion last on that day?

Over the past 3 months, on a....

<table>
<thead>
<tr>
<th>TYPICAL MONDAY</th>
<th>TYPICAL TUESDAY</th>
<th>TYPICAL WEDNESDAY</th>
<th>TYPICAL THURSDAY</th>
<th>TYPICAL FRIDAY</th>
<th>TYPICAL SATURDAY</th>
<th>TYPICAL SUNDAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER OF DRINKS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NUMBER OF HOURS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX E

COVID-19-RELATED CHANGES IN DRINKING

1. Compared to before the pandemic, would you say you are drinking…
   o More OFTEN
   o Less OFTEN
   o About the same

2. Compared to before the pandemic, when you drink, would you say your quantity (number of drinks) is…
   o More than usual
   o Less than usual
   o About the same

3. Are you going to bars and restaurants for in-person dining/drinking?
   o No, I’m not interested even if I felt it was safe
   o No, that seems unsafe given the number of coronavirus cases in the area
   o Yes, it seems safe to do so given the number of coronavirus cases in the area
   o Yes, I would be doing this regardless of the number of coronavirus cases in the area

4. Are you drinking with others IN PERSON?
   o Yes
   o No

5. Is drinking with others in person a typical occurrence or for special occasions only?
   o Typical
   o Special occasions only

6. Has the WAY you drink alcohol (for example, in bars with friends, in other people’s houses/apartments, in your own home with others, in your own home alone) changed since the pandemic started in March?
   o Yes
   o No
APPENDIX F

GENERAL BACKGROUND QUESTIONNAIRE

It is important to know something about our participants as a whole, so we request some demographic information. Only grouped data will be used, and you will never be identified.

1. Your Biological Sex: ☐ MALE ☐ FEMALE ☐
2. Your Gender: ☐ MALE ☐ FEMALE ☐ Other ☐ (Specify)
3. Your Age: __________
4. Your Height: ______ feet ______ inches
5. Your Weight: ______ lbs.

6. Are you of Hispanic or Latino Descent? (e.g., Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture): ☐ Yes ☐ No

7. What is your race?
☐ Caucasian/White ☐ Asian/Pacific American
☐ Native American/Indian ☐ Hispanic/Latino
☐ African American/Black ☐ Other (please specify): __________

8. Where is your current residence?
☐ A parent’s or relative’s home
☐ A dormitory, residence hall, or apartment on a college campus
☐ A house, apartment, or room (not affiliated with a college/university)
☐ A fraternity or sorority house
☐ Other: _________________________ (please specify)

9. What is your relationship status:
☐ Single/Never Married ☐ Married
☐ Living with partner ☐ Separated/Divorced ☐ Widowed

10. Are you employed now?
☐ YES, part-time only ☐ YES, full-time only
☐ YES, full and part-time ☐ NO

11. Yearly total individual income:
☐ Under $10,000 ☐ $10,000 - $20,000
☐ $20,001 - $40,000 ☐ $40,001 - $60,000
☐ $60,001 - $80,000 ☐ $80,001 - $100,000
☐ $100,000 or more

12. What is your current class standing in school?
☐ college freshman
☐ college sophomore
☐ college junior
college senior
other

13. What is your current GPA? _____ (on 4.0 scale)
14. Are you affiliated with a Greek organization on campus? ✓ YES ☐ No
APPENDIX G

EVENT-LEVEL ALCOHOL USE

To help us evaluate your weekend drinking, we need to get an idea of what your alcohol use was like over the past Thursday, Friday, and Saturday. Try to be as accurate as possible. We recognize you won’t have perfect recall. That’s OKAY.

Note, a standard drink is:

1. Did you drink alcohol on Thursday*? ____ Yes ____ No
2. What time did you consume your first drink? ______
3. What time did you consume your last drink? ______
4. How many standard drinks did you consume on Thursday*? ______

* This measure was administered three times to account for Thursday, Friday, and Saturday drinking events.
**APPENDIX H**

**DAILY CONSEQUENCES QUESTIONNAIRE**

Did any of the following things happen to you as a result of your drinking on *Friday*?  

<table>
<thead>
<tr>
<th>Event</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>I did something that embarrassed me</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I was rude or obnoxious</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I couldn’t remember what I did while I was drinking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I hurt or injured myself by accident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I felt nauseated or vomited</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I became aggressive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I had/have a hangover</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* *This measure was administered twice to account for both Friday and Saturday drinking events.*
APPENDIX I

STRATEGIES QUESTIONNAIRE

On *Friday*, did you do any of the following?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Choose to avoid situations where heavy drinking is likely</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Choose to participate in enjoyable activities that do not include alcohol consumption</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Finding other ways besides drinking to reduce stress</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Practicing ways to be more comfortable in social settings without using alcohol</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Being prepared with effective coping strategies in situations where you think heavy drinking is likely</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Limiting cash before going out to drink</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Avoiding carrying credit cards or ATM cards when going out to drink</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Keeping track of how many drinks you have</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Drinking slowly</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Spacing drinks over time</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Eating before and while you are drinking</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Alternating alcoholic and nonalcoholic beverages when you are drinking</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Choose not to participate in drinking games when given the opportunity</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Refusing drinks</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Being aware of internal body sensations that indicate you are getting intoxicated</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Drinking beer with a lower alcohol content (light beer) instead of stronger alcoholic beverages</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Choose not to do shots when available</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Choose not to funnel, shotgun beers, or do keg stands when those activities are available</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Choose not to “pre-game” or “pre-bar”</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Engage in activities while drinking to space out drinks (i.e. dancing, playing pool, darts)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Limit drinking to certain days of the week</strong></td>
<td></td>
</tr>
</tbody>
</table>

*This measure was administered twice to account for both Friday and Saturday drinking events.*
APPENDIX J

EVENT-LEVEL DESCRIPTIVE NORMS

1. Were you with other people who were drinking on *Friday*?  ____ Yes  ____ No

The following questions have to do with alcohol use for **YOUR THREE CLOSEST FRIENDS** present at the drinking event on *Friday*. If you drank with less than three people, consider your closest friend(s) present.

Note, a standard drink is:

2. Estimate the average number of standard drinks consumed by your three closest friends present during the drinking event on *Friday*: _____

* This measure was administered twice to account for both Friday and Saturday drinking events.
APPENDIX K

EVENT-LEVEL INJUNCTIVE NORMS

The following questions have to do with alcohol approval of **YOUR THREE CLOSEST FRIENDS** present at the drinking event on *Friday*. If you drank with less than three people, consider your closest friend(s) present.

For each question below, please indicate the extent to which the three closest friends you were drinking with on *Friday* would approve or disapprove of each behavior.

<table>
<thead>
<tr>
<th>1. Drinking alcohol every weekend</th>
<th>Strongly Approve</th>
<th>Strongly Disapprove</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4</td>
<td>5 6 7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Drinking alcohol daily</th>
<th>1 2 3 4</th>
<th>5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Driving a car after drinking</td>
<td>1 2 3 4</td>
<td>5 6 7</td>
</tr>
<tr>
<td>4. Drinking enough alcohol to pass out</td>
<td>1 2 3 4</td>
<td>5 6 7</td>
</tr>
</tbody>
</table>

*This measure was administered twice to account for both Friday and Saturday drinking events.*
APPENDIX L

EVENT-LEVEL DRINK OFFERS

1. On *Friday*, did others offer you any alcoholic drinks? ____ Yes ____ No
2. How many drinks did you accept on *Friday*? _____

* This measure was administered twice to account for both Friday and Saturday drinking events.
APPENDIX M

HAZARDOUS DRINKING GAMES MEASURE

The following questions ask about your involvement with drinking games. A Drinking Game is defined as an activity that has rules governing the consumption of alcoholic beverages (e.g., Beer Pong, Flip Cup, Ring of Fire, etc.). This includes any drinking games played virtually (e.g., through Zoom, House Party, etc.).

1. On Friday*, did you play drinking games? _____ Yes _____ No

* This measure was administered twice to account for both Friday and Saturday drinking events.
VITA

EMILY K. JUNKIN

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EDUCATION

Ph.D.  The Virginia Consortium Program in Clinical Psychology  Expected 2025

M.S.  Old Dominion University  Expected 2021

B.A.  Auburn University, Psychology  Summa Cum Laude  December 2018

BACKGROUND

Emily K. Junkin is a third-year graduate student in the Virginia Consortium Program in Clinical Psychology. She is currently pursuing her M.S. in Psychology and, in Spring 2022, her Ph.D. in Clinical Psychology. Her research interests involve social influences of heavy drinking, social network drinking behavior, and event-level evaluations of intention-inconsistent drinking.

SELECTED PUBLICATIONS
