What's Your BAC (Bystander Alcohol Check-in)? A Pilot Intervention to Prevent Violence by Reducing Alcohol Consumption of Potential Bystanders

by

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Abstract

Sexual violence and heavy drinking co-occur for young adult university students. Most university-level interventions target either sexual violence or heavy drinking, but no effective interventions address both. This study pilot tested a novel intervention, titled *What's Your BAC (Bystander Alcohol Check-in)?* that combined bystander training to prevent sexual violence with brief alcohol intervention. Forty young adult students who engaged in heavy drinking completed one two-hour psychoeducational group intervention. Feasibility and acceptability were assessed at post-intervention. Within-subjects ANOVA tested changes from pre-intervention to post-intervention and four-week follow-up in sexual violence knowledge, attitudes toward rape, bystander intentions and attitudes, alcohol knowledge, weekly alcohol consumption, and perceived alcohol norms. Groups were completed in two hours, and 88% of students rated the group as *Good* or *Excellent*. Following the group, students had increased knowledge of sexual violence ($p < .001$, $\eta^2 = .36$), alcohol knowledge ($p < .001$, $\eta^2 = .32$), and bystander intentions ($p = .010$, $\eta^2 = .11$); as well as reduced alcohol consumption ($p = .040$, $\eta^2 = .11$), and perceived drinking norms ($p < .001$, $\eta^2 = .14$). Exploratory interaction analysis showed that men were less likely to maintain increases in bystander intentions at follow-up than women, $\eta^2 = .086$. The intervention was feasible, acceptable, and showed preliminary effectiveness. This approach has potential to reduce violence and sexual assault on university campuses by (1) moderating drinking behaviors of potential bystanders and (2) training students to use bystander strategies within heavy drinking context that has high risk for sexual violence. Future research should test the intervention using a more robust study design that includes a control group, focus on recruiting a larger, more diverse sample, incorporate recruitment strategies to increase attendance

rates, and assess students' actual bystander behavior and alcohol consumption patterns in addition to self-reported bystander intentions and alcohol use measured in this study.

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Chapter 1: Introduction

Power-based personal violence (PBPV) is violence caused by one person using intimidation, power, or control to hurt another person; PBPV encompasses a range of harmful behaviors including sexual assault, partner/dating violence, and stalking/harassment (Violence Intervention and Prevention Center, 2013). This proposal will use the terms PBPV and sexual violence interchangeably. In recent years, sexual assault in particular has gained national attention due to consistent findings that one in five women and one in ten men are sexually assaulted during college (White House Task Force 2014; National Center for Injury Prevention and Control, 2016). With the overwhelming number of reports of sexual assault on college campuses and response of violence prevention strategies, bystander intervention programs have been implemented and studied in recent years (Banyard et al., 2007; Coker et al., 2016; & Bennett et al., 2014). One limitation of current bystander interventions is a lack of attention to the likelihood that PBPV will occur in a drinking context in college settings. So, adapting interventions to address the possibility that bystanders may be drinking could be one important way to increase effectiveness of these interventions and reduce PBPV on campuses.

Bystander intervention programs on college campuses in the U.S. have been created with the intent of preventing any form of PBPV sexual misconduct on college campuses. *Bystanders* are third-party witnesses of sexual violence, who may make the situation worse by ignoring, or improve the situation by intervening in some way (McMahon & Banyard, 2012). About one-third (30%) of the time, a bystander is present in situations where sexual assault occurs (Planty, 2002). The bystander approach shifts the focus away from those involved in sexual violence, and engages the entire community by empowering those not directly involved in sexual violence to take responsible action if they witness something suspicious or unsafe (Banyard, Moynihan &

Plante, 2007; Jouriles, 2016). There is evidence that bystander interventions have moderate effects on knowledge and attitudes about sexual violence, but only small effects on reducing violence (Katz & Moore, 2011). Results of effectiveness/efficacy studies will be reviewed in greater detail in the following chapter.

In addition to violence, alcohol use of young adult college students is common, remains is one of the top public health concerns in the nation, and has been consistently linked to PBPV (Schneider Institute for Public Health Policy, 2001). About 53% of full-time college students between the ages of 18-22 years reported drinking alcohol in the past month, and 33% reported heavy episodic drinking (5 drinks on one occasion for men, 4 for women) [Substance Abuse and Mental Health National Services Administration (SAMHSA), 2019; National Institute of Alcohol Abuse and Alcoholism (NIAAA), 2021]. About 9% of full-time college students have a substance use disorder (NIAAA, 2021) compared to 2% of the adult general population (SAMHSA, 2019). Heavy drinking is a well-established correlate of sexual assault perpetration (Giancola, 2002; Ullman, Karabatsos, & Koss, 1999) and victimization (Wilhite et al., 2018). Approximately 97,000 college students ages 18-24 years report being sexually assaulted by someone who has been drinking (NIAAA, 2021). About one half of all sexual assaults involve alcohol by either the perpetrator, victim, or both (Abbey et al., 2001).

There are widely used strategies to reduce and prevent heavy drinking and related consequences in college populations. The NIAAA recommends multiple strategies to address drinking on college campus which include individuals, high risk groups (first year students, members of Greek organizations, and student athletes), and the greater community. Individual level harm reduction strategies, such as shifting attitudes and behaviors that lead to lower risk alcohol use with fewer consequences, are recommended instead of abstinence-focused strategies

(NIAAA, 2021). Brief Alcohol Screening and Intervention for College Students (BASICS; Marlatt et al., 1998) is one example of a widely used individual-level intervention. In addition to individual strategies, environmental strategies designed to target the greater campus community are used in conjunction with the aforementioned individual strategies. An example of an environmental strategy is being intentional about the accessibility of alcohol. Less availability decreases consumption, and thus alcohol-related consequences (NIAAA, 2021). Results of effectiveness/efficacy studies will be reviewed in greater detail in the following chapter, but there is evidence that alcohol interventions for college students have small to moderate effects on reducing alcohol use and associated consequences. These kinds of interventions are usually brief and have components that could be integrated with bystander intervention.

The next chapter discusses the theoretical frameworks for bystander intervention and brief alcohol intervention for college students or young adults, an outline of brief intervention sessions, and the evidence from studies of efficacy/effectiveness of both kinds of interventions. This study adapts and pilot test a novel, brief combined bystander and alcohol harm reduction intervention for young adult college students. The third chapter describes the adapted intervention that integrated bystander training with components of alcohol harm reduction strategies, and the proposed design of an empirical pilot study of this novel intervention. Chapter four discusses the results of the analyses including preliminary and exploratory findings. Chapter five summarizes the study, its findings and limitations, and provides directions for future research to continue to study *What's Your BAC?.*

Hypotheses

Hypothesis 1: The pilot intervention will be feasible.

- *H1a*: All intervention content can be delivered in one 120-minute session.

- *H1b*: At least 75% of students who completed the pre-intervention questionnaire will attend the group session.
- *H1c*: All (100%) students in the group session will participate, that is speak about intervention content during the session at least once.

Hypothesis 2: Students will report a high level (>80%) of acceptability (satisfaction) with the intervention.

Hypothesis 3: Students will report increased knowledge about PBPV and reduced acceptance of rape myths from pre-intervention to post-intervention, and maintain reduction at follow-up.

Hypothesis 4: Students will report increased willingness to intervene as bystanders from pre-intervention to follow-up.

Hypothesis 5: Students will report lower perceived peer drinking norms and greater knowledge about alcohol effects from pre-intervention to post-intervention, and maintain reduction at follow-up.

Hypothesis 6: Students will report lower quantities of drinking from pre-intervention to follow-up.

Chapter 2: Literature Review

Bystander Intervention Conceptual Framework

In recent years, PBPV, particularly sexual assault, has gained national attention due to consistent findings that college students, specifically women, are disproportionally raped by men compared to any other age group (Fisher et al., 2000). In the overwhelming majority of cases (90%), the perpetrator is known to the victim, and typically inside the residence of either the perpetrator or victim (Fisher et al., 2000). Sexual assault has been considered a public health/safety issue that has impacted college students at increased rates (Krebs et al. 2007).

The consequences of PBPV are significant for victims, both physically and psychologically. College students who have experienced sexual violence also experience several significant physical, psychological, and behavioral issues because of the assault (Krebs et al., 2007; Vladutiu et al., 2011). In a systematic review of 51 studies, Coker (2007) found physical dating violence was consistently associated sexual risk taking, inconsistent condom use, partner nonmonogamy, having an unplanned pregnancy or induced abortion, and having a sexually transmitted infection. Recently, increased knowledge regarding the psychological impact of trauma includes findings that indicated women who have experienced PBPV reported higher rates of depression, anxiety, posttraumatic stress disorder (PTSD), suicidal thoughts, more severe depressive symptoms, and higher rates of suicide attempts when violence is compounded (physical and sexual or physical and psychological) compared to non-abused women (e.g., Pico-Alfonso et al., 2006). Knowledge of these impacts has led to destigmatizing these experiences and a shift in cultural dialogue. There has been an increase in legislation as well as in everyday conversations about the consequences of sexual violence for both survivors and perpetrators, and how to promote safer communities to eradicate this behavior.

For the past few decades, policy changes at academic institutions have reflected the importance of a growing understanding of the severity and frequency of PBPV (e.g., White House Task Force 2014; National Center for Injury Prevention and Control, 2016). The Clery Act (1990) mandated that all colleges and universities that receive federal funding must inform students and employees about crime statistics occurring on campus and policies and procedures in place to prevent crimes, including sexual offenses. Specifically, this includes statements on violence prevention efforts being made on campus, as well as procedures being in place for when violence does occur (Vladutiu et al., 2011). Colleges and universities are also required to implement a violence prevention program or create their own if they received federal funding for programs such as Title IX per the Campus Sexual Assault Violence Elimination Act (SaVE) of 2013 (Mujal, 2021). The Obama Administration launched the White House Task Force (2014) titled Protect Students from Sexual Assault with the intent of addressing campus sexual misconduct and creating a guide for institution Presidents, Chancellors, and Senior Administrators.

Following the changes to laws and policies, training programs have been developed to prevent and respond to sexual assault and other forms of PBPV across college campuses and community populations (Banyard, Moynihan, & Plante, 2007; Burn, 2009; Cook-Craig, 2014). There have been several prevention interventions implemented across college campuses to diminish and ultimately eradicate these types of violence (Vladutiu, Martin, & Macy, 2011). Violence prevention program is a broad term and bystander intervention programs are a subtype of violence prevention program (Mujal, 2021).

Bystander interventions have been commonly studied with college and university samples due to the high rates of PBPV within college populations (e.g., Katz & Moore, 2013;

Banyard, Moynihan, & Plante, 2007). It is not necessary that the bystander is directly involved in acts of PBPV to be considered a bystander. Specifically, a bystander is defined as anyone who plays a role in any act of harassment, abuse, or violence, including anyone who is outside of the victim-perpetrator situation (Katz & Moore, 2011). In other words, anyone who is not directly involved in violence (that is not a person causing harm or being harmed, not a "perpetrator" or "victim"), but witnesses a violent situation is considered a bystander. A bystander confronted with a situation that has a high likelihood of PBPV can either do nothing, thus making the situation worse by ignoring, or improve the situation by intervening in some way (McMahon & Banyard, 2012). Bystanders to PBPV are not the victim or target of violence, so bystander interventions train bystanders to identify ways in which the bystander themselves can help others in a potentially harmful situation, and to build self-efficacy to prevent violence with behaviors like asking someone who is being yelled at if they need help (Banyard, Plante, & Moynihan, 2005; Katz & Moore, 2013).

Part of the programming addresses shifting the culture and placing responsibility on every individual, by encouraging small individual choices to intervene (Coker et al., 2011). That is, bystander interventions demonstrate and encourage protective behaviors of bystanders to reduce or prevent interpersonal violence such as sexual assault, partner/dating violence, and stalking/harassment (Vladutiu, Martin, & Macy, 2011; Violence Intervention & Prevention Center, 2013). In addition to preventing violence to people in a single situation, bystander interventions can also decrease PBPV in a community, i.e., through changing norms and expectations about violence of all people (most of whom do not perpetuate PBPV), rather than reaching only victims and perpetrators (Cook-Craig and colleagues, 2014).

The Situational Model of Bystander Intervention (Latane & Darley, 1970) is a commonly used theoretical framework to explain and discuss general bystander behavior/intervention and has been generalized effectively to sexual violence prevention (Burn, 2009). This model has five steps: (1) notice the event, (2) identify the situation as intervention appropriate, (3) take responsibility, (4) decide how to help, and (5) act to intervene. There are several common delivery components to bystander intervention programs, including presentation of material, vignette/scenario, and active learning (i.e., role play), and other, less common strategies include skills training and media (web-based programs) (Mujal et al, 2021). Schewe and O'Donohue (1996) discussed the importance of avoiding victim-blaming language in violence prevention programming. For example, other types of prevention programs have sent messages to women encouraging them to be more vigilant (don't walk alone at night, carry mace, educate yourself about self-defense), but bystander interventions suggest these are not sustainable because no one person can be always perfectly vigilant. More recent bystander training models encourage inclusive language and thus intentionally do not use binary genders (i.e., does not use men/women) fitting into the victim/perpetrator role. For instance, the phrases 'person who is being harmed' and 'person who is being harmful' are examples of language used when describing two people involved in a harmful situation when discussing during a bystander intervention training to avoid stereotypical gender roles of male perpetrators and female victims (Edwards, 2014). Programming encompasses both education about sexual violence, and opportunities for participants to actively engage in discussion and activities related to the five steps in the conceptual framework. (Cook-Craig et al., 2014; Latane & Darley, 1970).

One example of bystander intervention on college campuses is the Green Dot framework (Edwards, 2014) (Chapter 3 will have more details about the intervention components that will

be adapted for the pilot study). Green Dot (Edwards, 2014) was originally developed in 2008 at the University of Kentucky and updated most recently in 2014. There are different ways campuses implement Green Dot in terms of length of program—either 60-minute overviews, or multiple hour (usually 4-6) in-depth trainings. This proposal uses the shorter model of implementation given the pilot study nature of the proposed program (Coker et al., 2016). The following paragraphs illustrate how the Green Dot (Edwards, 2014) program components are designed to train students on each of the five steps.

The Green Dot (Edwards, 2014) program educates students (i.e., would-be bystanders) about noticing potentially harmful situations by discussing the warning signs of potential PBPV to meet steps 1 and 2 (notice the event and identify the situation as intervention appropriate). Examples of this include observing a person leading someone who is very intoxicated to a private room at a party, or witnessing a couple talking through clenched teeth when in line at a sporting event. Burn (2009) suggested that the ability to detect a potentially harmful situation (Step 1) is a key driver of effectiveness of bystander interventions, so education about violence prevalence and consequences is essential. Participants discuss bystanders in a community and discuss thoughts about who bystanders are, what bystander behavior looks like, and when a situation is appropriate for intervention (Step 2).

Bystanders may be less willing to intervene if they believe the victim is to blame for their behavior, so bystander intervention programs should instill empathy for victims and explain the concept of victim-blaming to correct these attitudes/beliefs. Active learning (small group discussion, brainstorming real-life scenarios) and other empathy-building strategies are tactics used to promote personal responsibility for bystanders to help others (Step 3 take responsibility; Mujal et al., 2021). One important construct for establishing responsivity to intervene is

countering *rape myth acceptance*, which is the degree to which an individual adheres to false information (or "myths") about rape (e.g., Burt, 1980). For example, a rape myth is incorrectly believing that a woman's outfit caused her to get raped.

Before the training, bystanders might not know how to help. Part of bystander intervention programs is training students how to intervene in a variety of situations. Burn (2009) recommended that potential bystanders be provided language and actions to use. To teach bystanders strategies for intervening, Green Dot uses the mnemonic "*3 Ds*", which stands for Direct, Delegate, Distract. *Direct* tactics involve addressing the situation by either approaching either the person being harmful, or the person who may be harmed. For example, approaching either person and telling them to stop, or asking if they are okay/if they need anything, respectively. *Delegate* involves seeking help from someone who is better equipped to help prevent the situation. For example, when at a bar, asking a manager to intervene. The manager is better positioned to help because they are likely not intoxicated and hold power at the business. *Distract* is when a bystander creates another situation to diffuse the situation from escalating (Coker et al, 2014). Spilling a drink is an example of a distraction a bystander could create to diffuse a potentially harmful situation (Edwards, 2014). Direct instruction and role plays that use these strategies help bystanders to decide how to intervene and promote intervention, and build efficacy and intention to intervene (steps 4 and 5 decide how to help and act to intervene).

Bystander Intervention Effectiveness

Research consistently suggests violence prevention programs to increase bystander protective behavior are effective. A meta-analysis of 69 studies of 18,172 participants (Anderson & Whiston, 2005) reported moderate mean increases in knowledge, such as warning signs of PBPV (Cohen's d =.57; steps 1 and 2); and small improvements in attitudes, such as reduced

rape myth acceptance (*d* =.21; step 3), behavioral intentions to intervene (*d* =.14; steps 4 and 5). More recently, other meta-analyses (Katz & Moore, 2013; Jouriles et al., 2018) examined bystander intervention programs exclusively with undergraduate samples, which is the most relevant literature for this proposal, and found small, yet consistent evidence of positive outcomes for bystander intervention programs. Jouriles and colleagues (2018) found college students who had completed a bystander program had small increases in pro-social attitudes and beliefs about sexual violence (*d* =.27; Steps 1, 2, and 3), and engaging in bystander behavior (*d* = .39; Steps 4 and 5) compared to students who did not attend a bystander program. Katz and Moore (2013) found that compared to control groups, students in bystander training had moderate increases in bystander efficacy (*d* = 0.49; Steps 4 and 5), willingness to help (*d* = 0.58; Steps 4 and 5); and small increases in bystander behaviors (*d* = 0.22; Steps 4 and 5), reductions in rape myth acceptance (*d* = -0.28, Step 3).

Bystander interventions in general are effective, and there is evidence that Green Dot (Edwards, 2014) is effective on college campuses. Coker and colleagues (2011) examined Green Dot at one university and found that university staff, faculty, and/or students who attended Green Dot training were more likely to notice situations requiring bystander intervention (steps 1, 2) and intervene to prevent violence (step 5). Similar evidence for effectiveness has been observed university-wide; Coker and colleagues (2016) found that institutions with Green Dot had small, but significantly lower rates of any interpersonal violence (OR = 0.69, Cohen's *d* = 0.21), sexual harassment (OR = .85, Cohen's *d* = 0.09) stalking (OR = 0.74, Cohen's *d*= 0.17), and psychological dating violence (OR = 0.78, Cohen's *d*= 0.14) compared to institutions with no bystander intervention programs.

Although bystander interventions in general, and Green Dot in particular, are effective at reducing PBPV, effects on PBPV are in the small range so there is still room for improvement. DeGue and colleagues (2014) reviewed the bystander intervention literature and suggested adding individual risk and protective factors besides attitudes/beliefs about sexual violence. One potential addition is to address alcohol use of bystanders, so they are better bystanders and can do the steps when they/others are drinking or reduce the likelihood that they will be too intoxicated for intervention. First, it is likely that potential bystanders will be in contexts with drinking (e.g., Planty, 2002). Second, alcohol may impair bystanders' ability to complete steps 1-5, potentially because of intoxication on cognitive processes, such as attention or memory (e.g., Leone et al., 2018; Steel & Josephs, 1990; Burn, 2009). Consistent with this idea, Melkonian and colleagues (2020) observed how intoxicated participants recalled a sexual violence vignette provided to them. Observations of students showed that drinking did impair steps 1 and 2 of the model (notice event, determine an intervention is required), and that intoxicated students had poor ability to accurately recall details of nonconsensual sexual experiences and assess level of risk. Nearly half (42%) of first-year students reported that using alcohol or drugs impaired their ability to intervene (step 4) (Bennett et al., 2014). Furthermore, Pugh and colleagues (2016) pointed out links between drinking and rape myth acceptance (step 3), i.e., ambiguity about victim responsibility and the definition of sexual assault increased when alcohol was involved. The next section will review literature on the conceptual framework for brief alcohol interventions with college students, and evidence about effectiveness of these alcohol interventions, as a framework for intervention adaptation.

Brief Alcohol Intervention Conceptual Framework

Marlatt and colleagues (1993) discussed the lengthy global and American history of society's relationship with alcohol and intoxication. The prohibition era actually led to more organized crime related to gaining access to alcohol. Once it was recognized that abstinence for all was not sustainable or effective, the narrative shifted to a pathological/disease model for those who suffered consequences because of alcohol consumption. The pathological model is dichotomized in that individuals are classified as either having a problem with alcohol or not, in other words, alcoholic or non-alcoholic, there is no in-between. Even in the present day, Alcoholics Anonymous (AA) uses the disease model and promotes abstinence from drinking as the only way to recovery (Marlatt et al., 1993).

Although zero-tolerance strategy is often favored in the U.S. (Neighbors et al., 2006), this proposal focuses on harm reduction strategies for alcohol use in an undergraduate population. In the late 18th century, Dr. Benjamin Rush, a signer of the Declaration of Independence, was one of the first researchers to suggest a continuum model for alcohol use or misuse and suggested a dimension of problematic and non-problematic drinking. Harm-reduction models are defined as strategies that minimize or reduce harmful consequences of addictive behaviors and assume there is a continuum of behaviors and risk level associated with addictive behavior, as opposed to the dichotomized approach of problematic or not (Marlatt et al., 1993). Harm reduction strategies are thought to be effective because they target occasions of heavy drinking, which is a better predictor of drinking problems than level of consumption (Single, 1996).

Neighbors and colleagues (2006) differentiated two general types of alcohol intervention programs commonly used on college campuses, universal (or environmental) and individual. *Universal* approaches are designed for an entire group of people, such as a school, and *individual*

approaches target those with high-risk behavior or those who have experienced negative consequences as a result of their drinking. Universal strategies work to address communities with a goal of changing the culture around drinking (NIAAA, 2019). The NIAAA (2002) developed a Task Force to serve as a call to action the change the culture of college drinking in the U.S. The NIAAA compiled an accessible, user-friendly database, College Alcohol Intervention Matrix (*CollegeAIM*), that addresses both individual and environmental evidence-based strategies for harm reduction as it pertains to alcohol on college campuses. *CollegeAIM* also considers cost, individual needs of different institutions, and is updated regularly to remain relevant. Like bystander interventions, multi-level programming is also recommended in the alcohol prevention literature, specifically on college campuses (NIAAA Task Force, 2002; NIAAA, 2019).

Before discussing intervention strategies, it is important to differentiate between screening and brief intervention. Screening usually consists of a brief set of questions about a person's drinking patterns (frequency, duration, motives, etc.). The purpose of screenings is to collect initial information which can be used to inform future level of treatment, or to provide recommendations about healthier drinking (CDC, 2021). Individual, brief alcohol interventions are by definition short-term interventions that share a goal of reducing alcohol consumption by providing information or teaching skills to influence decision-making and behavior around drinking, and sometimes begin with screening for alcohol and related consequences (Larimer & Cronce, 2007).

Several strategies have been used in brief alcohol interventions, including general education/awareness, values clarification, feedback (and norms), skills training, and/or self-monitoring/self-assessment. *General education/awareness* provides statistics and discussion related to alcohol, e.g., definition of BAC (Blood Alcohol Content), what influences BAC, and

myths about ways to speed BAC reduction. Values clarification encourages students to identify what is important to them and use that to help inform/understand current and desired behavior (Bonow & Follette, 2009). The majority (over 80%) of college students, particularly those who drink heavily or frequently, tend to overestimate the amount that their peers drink. As a result of this overestimation, college students drink more which puts them at risk for negative consequences (Cox et al., 2019). *Normative feedback* forms the basis for alcohol interventions that first measure students' reports on their own drinking (e.g., screening for frequency and amount) and perceptions of those drinking around them. Next, the students are provided feedback in the form of charts or graphs that show the student's own drinking patterns alongside the reference group, which often includes the respective campus or peer groups based on age (Dotson, Dunn, & Bowers, 2015). Correcting misperceptions about drinking behavior is believed to lead to reductions in drinking, i.e., students change behavior to be more like an "average" student, which is a reduction for students who drink heavily. *Skills trainings* have participants identify personally relevant negative consequences of alcohol and equip them with strategies to refuse and/or engage in less frequency and duration of drinking episodes, e.g., drinking water between alcoholic drinks. *Self-monitoring/assessment* requires students to track their drinking over a period of time and can include a reflection piece on what they notice/learned about their drinking patterns. Intentionally tracking drinking has led to decreases in alcohol consumption (Larimer & Cronce, 2007).

Motivational Interviewing (MI), based on Person-Centered Therapy (Rogers, 1946), is the foundation for these brief interventions for alcohol use (Miller & Rollnick, 2002). Miller and Rose (2009) explained the core elements of the theory behind motivational interviewing (MI) are relational and technical. An empathy-based therapeutic relationship and a change-oriented

strategy that elicits the desire, willingness, and reinforcement of change within those who seek treatment using motivational interviewing. The process of motivational interviewing is founded on *rolling with resistance,* that is the MI interventions honor the resistance, and provide accurate information regarding the problem area without confrontations. *Developing discrepancies* is theorized to promote consideration of behavior change. Developing discrepancies refers to the clinician helping a client to identify discrepancies between values and desires, and the current behaviors opposed to those values or desires, or between expected/perceived and actual behaviors. Another example of an MI technique is listening to what the individual has to say while also directing the conversation toward behavior change which can be identified from their change talk (Miller & Rose, 2009). *Change talk* is the chief mechanism of change of MI and occurs when the client or student, not the clinician or facilitator, verbalizes anything that favors the target behavior/desired change (Miller & Rose, 2009). The goal of motivational interviewing is to promote small, sustainable changes in intrinsic motivation, and thus change in behavior (Miller & Rollnick, 2002).

There are two terms often used to characterize brief motivational interventions (BMI), personalized feedback intervention and personalized normative feedback. *Personalized feedback intervention* (PFI) is a broad term that to describe interventions that combine clarification, feedback about normative alcohol use with some combination of general education/awareness, values skills training, and/or self-monitoring/self-assessment (e.g., Larimer & Cronce, 2007). *Personalized normative feedback* (PNF) is a subtype of PFI that focuses more specifically on how a student's drinking or normative beliefs about drinking differ from a certain reference group, (gender groups, peers in the same age group, and/or respective campus) (Lewis, Neighbors, Oster-Aaland Kirkeby, & Larimer, 2007). The PNF interventions were created to

make briefer, more efficient implementation after research suggested that correction of misperceptions about normative drinking can be an effective intervention on its own (e.g., Dotson, Dunn, & Bowers, 2015; Lewis et al., 2007). In both types of interventions, a clinician or facilitator takes on a non-confrontational, non-judgmental role to discuss individual's feedback (Murphy et al., 2001). Typically, these interventions last anywhere between 10-60 minutes and are tailored to a particular student based on results of a brief assessment and/or screening about their experiences with alcohol (Ickes et al., 2013). Brief Alcohol Screening and Intervention for College Students (BASICS) is one of the most commonly used and widely known brief motivational interventions to reduce alcohol use and related harms on college campuses that pairs Motivational Interviewing (MI) with personalized feedback, education, skills training, and self-monitoring (Dimeff et al., 1999; NIAAA, 2019). Other brief alcohol interventions for college students have similar content to BASICS (Dimeff et al., 1999), but provide feedback in different ways.

For example, there are also online, brief motivational interventions similar to BASICS. One example is called *eCHECKUP TO GO* (previously electronic Check Up to Go, or eCHUG; Walters, Vader, & Harris, 2007). In this intervention, students first input self-reported information including demographic information (sex, age, weight, living arrangements, academic standing), alcohol consumption (typical and most ever), and a range of alcohol-related positive and negative consequences. While there are several possible strategies to use in each brief alcohol intervention, commonalities across different techniques have shown clinical effectiveness. The feedback in the intervention for this study will be a modified version used in the eCHECKUP TO GO program at Auburn University. The biggest difference will be that the

students will report their responses using an online format, and then feedback will be provided to each student in the group setting rather than only via an online profile.

Brief Alcohol Intervention Effectiveness

CollegeAIM was developed by a NIAAA Task Force (2002) as noted previously, and is a comprehensive resource containing evidenced-based strategies for alcohol intervention on college campuses. *CollegeAIM* uses a matrix format and can be tailored to each individual campus's needs based on funding, strategy level (individual or environmental), effectiveness of each strategy, and it is updated regularly. The resource is available online or in a hard-copy book (NIAAA, 2021). The most effective, individual-level interventions recommended in *CollegeAIM* include feedback/norms, skills training, and/or self-monitoring/assessment. A systematic review (Ickes et al., 2013) found the most promising intervention for lasting change in alcohol education/prevention is a brief, personalized session with a trained facilitator to discuss individual thoughts/beliefs that surround alcohol use; about 25% of studies examined used an explicit Motivational Interviewing (MI) framework. Meta-analysis of Brief Alcohol Screening Intervention for College Students (BASICS) showed that an in-person session rooted in MI paired with individualized feedback was effective in reducing amounts of alcohol consumed each week (difference between means = -1.50) as well as negative consequences because of drinking (difference between means = -0.87) compared to controls at 12-month follow-up. These results sustained at a 12-month follow-up, difference between means = -0.15 and -3.24, respectively (Fachini et al., 2012). Control groups varied across studies and included no treatment, treatment as usual (e.g., recommendations to decrease drinking), and alternative, active treatments. It should be noted that educational programs alone are not as effective as multi-component interventions, so *CollegeAIM* recommends that at least one additional strategy be paired with

education about drinking and related consequences (Croom et al., 2009; NIAAA, 2019; Larimer & Cronce, 2007).

Consistent with the notion that education alone is not sufficient to reduce drinking and suggesting that techniques from Motivational Interviewing such as developing discrepancies through normative feedback can be found in dismantling studies. As noted above, providing normative feedback (i.e., a PNF intervention) that highlights the discrepancy between perceived vs. actual alcohol use can be nearly as effective as a single-component intervention (e.g., Lewis et al., 2007; Dotson, Dunn, & Bowers, 2015). For example, in a dismantling RCT with 279 heavy drinking students, Walters and colleagues (2009) examined differences between four groups: (1) only feedback (based on *eCHECKUP TO GO*); (2) only Motivational Interviewing; (3) Motivational Interviewing with feedback; and (4) only assessment control group. Their findings indicated Motivational Interviewing combined with feedback had greater reductions in drinking than only assessment, only Motivational Interviewing, or only feedback (*d*s = .54, .63, .48, respectively), specifically from baseline to 6-months follow-up, average drinks per week went from 6.67 to 4.06, and average peak BAC from .18 to .11.

Integrating Bystander and Brief Alcohol Interventions

Both bystander intervention programming and brief alcohol interventions have substantial evidence for effectiveness. Most literature has integrated bystander interventions and brief alcohol interventions, not by combining intervention components but by testing whether alcohol intervention reduces PBPV. A small meta-analysis of seven studies of alcohol interventions, such as Motivational Interviewing with personalized feedback, with over 18,000 college students showed that five interventions were associated with participants experiencing lower rates of PBPV, although only four interventions discussed PBPV directly (Denhard et al.,

2020). Notably, most of the intervention approaches viewed alcohol use as a risk factor for experiencing or being the victim of PBPV.

One exception was a pilot test of a program developed by Orchowski and colleagues (2018) that involved 25 male college students who reported (1) heavy episodic drinking twice or more in the past month and (2) sexual activity in the past 4 months. Students attended a three session, 5.5-hour training on the relationship between alcohol and PBPV with the intent of reducing the men's perpetration rates. The first session (90 minutes) incorporated normative feedback about participants' drinking patterns, the second session (2.5 hours) focused on PBPV prevention, and the third session (90 minutes) was booster session and a review of the first two sessions. The program had promising acceptability and satisfaction. At the exit interview, students reported scores between 33.1-33.8 (out of 36) for facilitator satisfaction, specifically the nonjudgmental, MI approach, and 95% indicated they were very satisfied with the program. In terms of future use of program information, 90% stated they this program for their sexual relationships, and 74% with alcohol use, although only 53% said all their needs were met. Students completed a follow-up interview two months after the third session was completed. Results indicated significant medium-sized changes in motivation to change drinking patterns (Cohen's d = .56) and intended drinks per week (d = .50) after the first session, although there was no significant change in drinks per week over the follow-up (d = .13). In terms of violence prevention, there were a significant moderate-sized decreases in rape myth acceptance (d = .40), improved skills toward labeling consent (d = .44), and a better understanding of peers using coercion in situations of sexual activity (d = .43). Students also reported significant medium-sized increases in bystander intentions (d = .43) and confidence in intervening as a bystander

with a stranger (d = .47), but no significant change in confidence helping a friend (d = .04), at the two-month follow up.

To my knowledge, based on a thorough review of the literature, there have been two attempts to integrate bystander interventions with alcohol reduction interventions to improve the effectiveness of bystander interventions programs by reducing alcohol use of *potential bystanders*, and not of potential perpetrators (Schipani-McLaughlin et al., 2021; Zinzow et al., 2018). Both interventions increased either bystander behavior or intentions to reduce sexual violence, but neither were successful at reducing alcohol use.

First, Zinzow and colleagues (2018) combined sexual violence and alcohol intervention into a 70-minute training session. They found significant improvements over time in bystander intentions, knowledge, and intervention which sustained at four-month follow-up. Interestingly, some of their findings indicated that women's risky drinking patterns actually increased over time after receiving the intervention while men's remained relatively stable. Zinzow and colleagues (2018) examined a range of behaviors including those that related to sexual and risky drinking behaviors not necessarily related to sexual violence (i.e., use of medical amnesty policy). Zinzow and colleagues (2018) found some harmful consequences related to increased risky drinking patterns at follow-up. Long-term, risky drinking nearly doubled because of the intervention (22% of participants at pre-test to 50% at follow-up). The education-only intervention as noted above (Croom et al., 2009; NIAAA, 2019) is a potential reason for limited efficacy of their intervention.

Second, Schipani-McLaughlin and colleagues (2021) implemented a two-month media campaign to promote bystander intervention for sexual violence and reduce alcohol use on a large campus in the Southeastern U.S. Campaign materials were distributed through social media

postings and promotional materials (posters, stickers, etc.). Ultimately, findings indicated that although social media analytics reported the campaign reached nearly 40,000 students, only 30% (n = 44) of participants in the study reported being exposed to the campaign; most (90%) of those reported seeing it on posters, and 25% reported viewing the campaign on social media. Campaign exposure was not related to bystander behavior or alcohol use, but it was related to increased bystander intentions to intervene.

These studies started an initial dialogue related to combined programming with bystander intervention and alcohol use, but none of these combined programs were able to improve bystander intentions or behaviors *and* decrease alcohol use of potential bystanders. This study will expand on previous interventions by (1) extending work to increase the effectiveness of bystander interventions by reducing alcohol use of potential bystanders, and (2) providing the more "powerful" individualized feedback regarding alcohol norms, rather than only education.

Research Question/Hypothesis

The goal of this study was to adapt and pilot test an intervention, titled '*What's Your BAC (Bystander Alcohol Check-in)?'* for undergraduate students. That is, this intervention will improve existing bystander interventions by adding components from efficacious brief alcohol interventions. I expected that the addition of alcohol intervention components would improve the bystander intervention because (1) situations where bystanders can intervene to prevention PBPV are likely to occur in drinking contexts like "keg parties," and (2) alcohol intoxication is linked to a reduction in bystanders' ability to intervene, so bystanders who moderate their drinking or abstain will be more likely to intervene successfully. Specifically, the intervention integrated Latane and Darley's (1970) Situational Model of Bystander Intervention from Green Dot (Edwards, 2014) with harm reduction approaches for alcohol reduction with education,

personalized normative feedback, and motivational interviewing (e.g., BASICS, Dimeff et al., 1999). The study tested the following hypotheses about feasibility, acceptability, and preliminary efficacy of *What's Your BAC?* for young adult undergraduate students.

Hypothesis 1: The pilot intervention will be feasible.

- *H1a*: All intervention content can be delivered in one 120-minute session.
- *H1b*: At least 75% of students who completed the pre-intervention questionnaire will attend the group session.
- *H1c*: All (100%) students in the group session will participate, that is speak about intervention content during the session at least once.

Hypothesis 2: Students will report a high level (>80%) of acceptability (satisfaction) with the intervention.

Hypothesis 3: Students will report increased knowledge about PBPV and reduced acceptance of rape myths from pre-intervention to post-intervention, and maintain reduction at follow-up.

Hypothesis 4: Students will report increased willingness to intervene as bystanders from pre-intervention to follow-up.

Hypothesis 5: Students will report lower perceived peer drinking norms and greater knowledge about alcohol effects from pre-intervention to post-intervention, and maintain reduction at follow-up.

Hypothesis 6: Students will report lower quantities of drinking from pre-intervention to follow-up.

Chapter 3: Methods

Research Design

This study was a quasi-experimental, pre-post-follow-up test, quantitative pilot intervention study. It was conducted at a large Southeastern university. The purpose of this study was to combine concepts of bystander intervention programs with brief alcohol interventions to target potential bystander behavior. The goal of this intervention was to create a safer campus by implementing harm reduction strategies that will lead to decreased alcohol consumption in heavy drinkers and thus increased rates of bystander intervention to decrease power-based personal violence.

Participants

Eligibility requirements included current undergraduate enrollment at a large, Southeastern university, and endorsed at least one episode of heavy episodic drinking within the past three months on a brief screening survey. In the U.S, a *standard drink* is about 14 grams of pure alcohol, which corresponds to a 12oz. can of beer, a 0.5oz. glass of wine, or a 1.5oz. shot of liquor or spirits (NIAAA, 2021). Heavy drinking was defined as four drinks for women and five drinks for men on one occasion. Heavy drinking was an eligibility criterion because *What's Your BAC?* is designed for students who may intervene in a drinking context, so would not be well-suited to reaching students who do not drink or who drink in small amounts. Further, the study would not be able to show preliminary effectiveness, i.e., reduction in drinking, if students have no or minimal drinking at baseline. Students were provided the definition of heavy episodic drinking to ensure clarity.

To recruit students, a health promotion office advertised the study on social media accounts, and to student groups affiliated with an office on campus within the Student Affairs division. Students who were interested in participating were screened for eligibility, provided a

brief overview of the study/intervention, and asked to provide contact information, e.g., name and email address prior to attending.

A total of 81 students consented to participate online and completed some or all of the pre-intervention questionnaire (see Figure 1). Six of these 81 surveys were duplicates in that the same student took started the questionnaire and completed the questionnaire using a different link at a separate time. These 6 cases were incomplete and removed. After the duplicates were removed, there were 75 remaining pre-intervention questionnaires that were either started or completed. Of those 75 cases, 19 were incomplete, and 56 were completed. Of the 56 completed pre-intervention questionnaires, 40 of those 56 students attended a training session in groups ranging from 2-7 students. Students who attended a training session were included in the $n = 40$ in the demographics below.

The following demographics represent the 40 students who attended a training session (see Table 1): 8 (20%) identified as man, 32 (80%) identified as woman. Most students ($n = 34$ or 85%) identified as European American/White. The breakdown of non-White racial groups included: $n = 2$ (5%) Biracial/multiracial, $n = 2$ (5%) Hispanic/Latinx, $n = 1$ (2.5%) African American/Black, and $n = 1$ (2.5%) Other. All 40 completed the pre-intervention and post-intervention questionnaires. Thirty-nine students completed the 4-week follow-up questionnaire, which is included in the below analyses. Due to the repeated measures ANOVA, the student who did not fill out the follow-up questionnaire was removed for accuracy and consistency. The removal of this student's data did not affect the results, as 2.5% missing data is usually ignorable (e.g., Graham, 2009).

Procedures

Students who were eligible were scheduled to attend a single group session lasting approximately 120 minutes. This time frame was based on typical lengths of a Green Dot bystander overview (60 minutes), and a brief alcohol intervention (45 minutes), at Auburn University, and to allow for post-intervention data collection. Eligibility measures assessing eligibility criteria were collected online prior to attending the intervention. All consenting students completed a brief baseline, pre-intervention questionnaire prior to attending the intervention, participated in the group intervention, and then completed a post-intervention questionnaire immediately following the intervention. More information about the intervention and questionnaires is provided below. At the conclusion of the post-intervention assessment, the facilitator reminded students about the online follow-up assessment, which was sent out 4-weeks after the intervention via email. Students were awarded for their time in the study with their choice of a gift card or extra credit points after completing the 4-week follow-up survey.

Human Subjects Protections. All procedures were approved by the Auburn University IRB before recruiting students. Students were given the name and contact information (email address) of the licensed psychologist overseeing the project and campus resources on the consent form; students were given the consent form upon request. Students were informed that they may refuse to answer questions on the questionnaires, for any reason, and without negative consequences. Data was secured in a password- protected software (Qualtrics) that required two-factor authentication for login, and was deidentified before data analysis. All data was successfully collected electronically. Emails and other contact information of students were used to award students for their time and to send follow-up assessment reminders if needed. To protect students, I obtained a NIH Certificate of Confidentiality, which ensured that students'

responses, such as reporting illegal underage drinking, could not be used against them by the university or legal system.

Facilitators

The lead facilitator for *What's Your BAC?* was a doctoral candidate in Counseling Psychology with 2.5 years of experience working in Student Affairs/outreach programming with Green Dot, 2 years of experience in clinical intervention specifically related to substance use (including one year of providing normative feedback as part of brief alcohol intervention), and 2.5 years of experience in sexual violence advocacy work. The facilitator attended a week-long training for Green Dot bystander strategy implementation in June 2019. Co-facilitators were PhD students in Counseling Psychology trained by the doctoral candidate and faculty supervisor, and assisted with pre-intervention screening and questionnaires, attended the intervention session, managed post-intervention data collection, and observed student participation during the intervention. The intervention and study were supervised by the faculty supervisor, a psychologist licensed in the state of Alabama. A co-facilitator attended the *What's Your BAC?* session to ensure the facilitator presents material within the allotted amount of time for each topic. The co-facilitator filled out the Fidelity Checklist measure that the facilitator developed for this study (see Appendix C). The checklist had a list of topics to check off throughout the intervention that mirrored content in the PowerPoint presented at each intervention. The checklist held the primary facilitator accountable by ensuring consistency across each intervention.

What's Your BAC? Intervention

What's Your BAC? followed a PowerPoint curriculum created for this study that was presented during the intervention. Students attended a 120-minute group intervention discussing

bystander intervention to prevent power-based personal violence (PBPV) and the effects of alcohol intoxication on bystanders. The intervention was developed by combining effective strategies in bystander intervention trainings and brief alcohol interventions and was delivered in a series of five phases, discussed below. A PowerPoint with the study curriculum followed this timeline and served as the manual for the intervention.

Phase 1: Pre-Intervention Data Collection. For approximately the first 15 minutes, the facilitator asked co-facilitators and students to introduce themselves, explained limits of confidentiality, and provided an overview of the group procedures. After consenting to participate, students were asked to fill out an online questionnaire with measures on binge drinking in the past 3 months, demographics, sexual violence knowledge, attitudes toward rape, bystander intentions, alcohol knowledge, perceived drinking norms, and alcohol consumption. Qualtrics software was used to collect the pre-intervention data, including measures to assess alcohol norms, alcohol knowledge, and drinking patterns. This data was used to provide feedback as a group by encouraging students to estimate peer drinking norms, and calculate individual Blood Alcohol Content (BAC) using a BAC chart and estimating number of alcoholic drinks and hours spent drinking.

Phase 2: Bystander Intervention Content: The next 30 minutes were spent addressing the Five Steps of the situational model of bystander intervention: (1) notice the event; (2) identify the situation as intervention appropriate; (3) take responsibility; (4) decide how to help; and (5) act to intervene, (Latane & Darley, 1970). First, the facilitator provided background information including statistics about the rates of PBPV in college populations, the perspective of the bystander lens (as opposed to individuals directly engaged in the violence), how culture change occurs through bystander behavior, obstacles that might get in the way of intervening as

bystanders, definitions of the three major categories of PBPV (stalking, dating/domestic violence, and sexual assault). Much of the background information addressed step 3 (take responsibility) in Latane and Darley's model as it discusses the importance of bystanders and their potential to reduce PBPV and associated harms. After some general information is given, the facilitator discussed steps 1 and 2 (notice event, identify that an intervention is needed) through examples and asked students how they might identify a potentially harmful situation and presenting warning signs. The facilitator then addressed step 4 (decide how to help) by described potential bystander interventions and a mnemonic to remember different intervention strategies (*3 D's: Direct, Delegate, Distract*), vignettes of situations and brainstorming about what bystanders might do, and barriers or obstacles to intervening depending on the situation. The vignettes intentionally referenced drinking culture, popular campus bars, and events typically involving alcohol (e.g., certain sporting events). Students discussed what they could do (step 5, act to intervene), and what might get in the way of intervening.

Phase 3: Group Feedback for Alcohol: The next 30 minutes included group feedback based on pre-intervention data that compared students' perceptions to actual drinking behavior using normative data from the National College Health Assessment (NCHA), a large, nationwide survey of college students collected in fall 2021. This data showed comparisons between Auburn University students and the national average for several alcohol-related statistics. The intervention included strategies previously discussed in Chapter 2—general education, feedback and norms, and harm reduction skills training. Students reported individual, physical components that impact effects of alcohol and BAC (Blood Alcohol Content based on gender, height, weight, and number of standard drinks in a specified amount of time), number and type of drink consumed in a typical week (self-monitoring), estimates of how much other students drink, good

things associated with alcohol (easier to talk to people, something to enjoy with friends), and potential concerns with alcohol (hangovers, injury, legal issues).

The facilitator approached these topics using a non-judgmental, evidenced based approach from Motivational Interviewing (Miller & Rose, 2009). Student in the study were provided a BAC chart to practice calculating their BAC. Feedback compared students' responses about their perceptions of campus alcohol use to the actual data collected from campus climate surveys and national data. Since the intervention is a pilot study seeking initial effectiveness data, some of the more detailed elements of personalized feedback (monetary costs of alcohol, number of calories consumed, time spent drinking or hungover) were not included in this intervention for the sake of time. Most students were expected to find discrepancies between their perceptions of college student drinking behavior and actual drinking behavior and their perceptions of BAC to actual BAC, that is, students will overestimate student drinking behavior and underestimate the effects of alcohol on their body.

Phase 4: Overlap and Providing Resources: After receiving discussing alcohol use and bystander intervention strategies separately, a 30-minute group discussion connected the two concepts (bystander intervention and alcohol use). The facilitator encouraged students to think about how alcohol might influence their ability to intervene as bystanders and related discussion. This part of the intervention was intentionally less structured to allow for group discussion. The facilitator provided students with cost-free, confidential campus resources for victim/survivor advocacy, counseling, and substance use programs.

Phase 5: Post-Intervention Questionnaire: Fifteen minutes were allotted for post-intervention data collection. Immediately following the *What's Your BAC* intervention, students were asked to complete the Knowledge of Sexual Violence measure, College Date Rape Attitude

Survey, Bystander Attitudes, Descriptive Norms Rating Form, and Client Satisfaction Questionnaire.

Measures

Demographics. Students were asked to identify their age, race, year in school, and gender identity. This measure was administered only at pre-test/baseline.

Feasibility. The facilitator monitored the amount of material covered in 120 minutes, calculated attendance percentage based on number of students who attend the training after completing the pre-intervention questionnaire, and counted the number of times students spoke about the content during the intervention. These outcomes were discussed and documented by the co-facilitators.

Fidelity. To ensure consistency across multiple training sessions, there was a co-facilitator present at each session to observe and track participation of students and consistency across intervention content. The co-facilitator used a Fidelity Checklist measure developed for this study that tracked intervention content presented and how many times each student responded to the material.

Acceptability. Students were asked about their experience attending the intervention when completing the post-test questionnaire. Students completed an 8-item, modified version of the Client Satisfaction Questionnaire (CSQ-8) (Larsen et al., 1979) to assess their satisfaction with the intervention. They responded on a 4-point Likert scale. Sample items include, "*Has 'What's your BAC?' helped you to deal more effectively as a bystander within the context of alcohol?*" and "*How satisfied are you with the amount of training provided in this intervention?"* Items on the measure were modified to reflect intervention content. Previous studies of the CSQ-

8 within substance use populations had a $\alpha = .92$ and demonstrated concurrent validity with the Treatment Questionnaire Perceptions (TPQ) (Kelly et al., 2018)

Knowledge about PBPV was assessed using a knowledge scale created by Banyard, Plante, and Moynihan (2005) at pre-intervention, post-intervention, and four-week follow-up. Nine items on this measure are used to assess students' knowledge about power-based personal violence using multiple choice, fill-in, and short answer. A sample multiple choice item includes, "Over their lifetime, approximately one in _____ women will experience sexual assault". Options include a) four b) seven c) ten d) fourteen e) seventeen f) I don't know. A sample fill-in item includes, "I know I have consent to engage in sexual behavior with my partner when_____". Correct responses were based on the Rape, Abuse, & Incest National Network's (RAINN) definition of consent: "Consent is an agreement between participants to engage in sexual activity. Consent should be clearly and freely communicated. A verbal and affirmative expression of consent can help both you and your partner to understand and respect each other's boundaries. Consent cannot be given by individuals who are underage, intoxicated or incapacitated by drugs or alcohol, or asleep or unconscious. If someone agrees to an activity under pressure of intimidation or threat, that isn't considered consent because it was not given freely. Unequal power dynamics, such as engaging in sexual activity with an employee or student, also mean that consent cannot be freely given." Responses that align with this definition were counted as correct. Students had the option to check a box indicating they do not know. Knowledge scores are defined as the percent of correct answers from the multiple choice and fill-in responses; higher scores indicate more knowledge about sexual violence. This measure is adapted from Banyard and colleagues (2005) and the psychometric properties have not been

tested. Face validity is high given that it is a measure of general knowledge, and the scoring (i.e., correct vs incorrect) may mean the scale is useful even without internal consistency.

Attitudes toward Rape was assessed with the College Date Rape Attitude Survey (CDRAS) (Lanier & Elliott, 1997), a 20-item survey that has been modified specifically to measuring attitudes related to date rape (i.e., rape myth acceptance) at pre-intervention, post-intervention, and four-week follow-up. Students responded via a five-point Likert scale indicating their level of agreement with each statement (1 = *strongly agree* and 5 = *strongly disagree)* in four areas: entitlement, blame-shifting, traditional roles, and overwhelming sexual arousal. The total score is the average of all items (total score/20). Higher scores suggest greater disagreement with date rape myths. Sample items include, **"**If a woman dresses in a sexy dress she is asking for sex" and "A man can control his behavior no matter how sexually aroused he feels" (reverse scored). Previous studies indicated acceptable internal consistency and high test-retest reliability in college student samples (α = .86, .94, respectively) (Lanier & Green, 2006). In this sample, internal consistency reliability was strong α = .92 (pre-intervention), .89 (post intervention), and .89 (four-week follow-up).

Bystander Intentions were assessed with the Bystander Attitudes and Behaviors measure (Banyard, Plante, & Moynihan, 2002), a 51-item scale that presents students with potential bystander helping behaviors and measures willingness to engaging these behaviors to prevent a potentially violent situation. This measure was administered at pre-intervention, post-intervention, and four-week follow-up. Students responded using a 5-point Likert scale (1 = *not at all likely* 5 = *extremely likely*) and are summed to create a total score with higher scores indicate greater willingness to intervene. Sample items include, "Approach a friend if I thought they were in an abusive relationship and let them know that I'm here to help" and "Speak up

against sexist jokes". Cronbach's α = .94 in a sample of undergraduate students (Banyard, Plante & Moynihan, 2007). In this sample, internal consistency reliability was strong α = .94 (pre-intervention), .95 (post-intervention), and .96 (four-week follow-up).

Perceived Drinking Norms were assessed by using the Descriptive Norms Rating Form (DNRF) (Baer, Stacey, & Larimer, 1991) at pre-intervention, post-intervention, and four-week follow-up. The DNRF is a brief measure that assessed students' perception of the number of drinks consumed by a typical student at Auburn University on each day of the week. The DNRF parallels the Daily Drinking Questionnaire (see below) in that it asks students to estimate the amount of alcohol peers consume in a calendar format. A sample item asks, "How much alcohol, on average (measured in number of drinks), does a typical student at Auburn University drink on each day of a typical week?" A total score is created by totaling the number of drinks students perceive their peers consume (other Auburn students) in a typical week. This measure has been widely used in young adult college samples, and previously shown good convergent validity with other measures of drinking (Baer et al., 1991; Borsari & Carey, 2000; Neighbors et al., 2004). As this is not a psychometric scale, Cronbach's alpha was not calculated.

Alcohol Knowledge was assessed using a knowledge subscale from the Student Alcohol Questionnaire (Engs, 1975), which was adapted for the proposed study, at pre-intervention, post-intervention, and four-week follow-up. Because some of the information has changed over time, small adjustments have been made to ensure accuracy and to match intervention content. For example, when the original measure was developed, the legal limit for blood alcohol content (BAC) while driving is .10%, which will be modified to .08% (the current legal BAC limit while driving). The initial measure contained 36 items but was shortened for brevity to 10 items for this study. The total score of this measure is the percentage of *true/false* questions answered

correctly. Higher scores indicate more knowledge about the effects of alcohol. Sample items include, “Drinking milk before drinking an alcoholic beverage will slow down the absorption of alcohol into the body” (*true*) and “A blood alcohol concentration of .08% is the legal definition of alcohol intoxication in most states in regard to driving” (*true*). Knowledge scores are defined as the percent of correct answers from the multiple-choice responses; higher scores indicate more knowledge about the impact of alcohol. This measure is a shortened version of Engs’s (1975) work and the psychometric properties cannot be extrapolated to this study. Face validity is high given that it is a measure of general knowledge, and the scoring (i.e., correct vs incorrect) means the scale is useful even without internal consistency.

Alcohol Consumption was assessed with the Daily Drinking Questionnaire (DDQ) (Collins, Parks, & Marlatt, 1985) at pre-test and four-week follow-up, a brief measure that examines typical drinking patterns and heaviest drinking patterns. Students responded based on recall and report number of drinks and number of hours spent drinking on a calendar with days of the week Monday-Sunday. The DDQ allowed students to calculate the number of drinks consumed during a typical week. Sample items include, “Think of the occasion (any day of the week) you drank the most during the last month. How much did you drink?” The DDQ demonstrated construct validity with a significant, positive correlation, $r = .50$, with the Drinking Practices Questionnaire (Collins, Parks, & Marlatt, 1985). As this is not a psychometric scale, Cronbach’s alpha was not calculated.

Analysis Plan

Preliminary Analyses. Power analysis was completed using *G*Power* software, which indicated 34 students was sufficient to detect change over time using a within ANOVA. Frequencies, descriptives, distribution and reliability of each variable were examined. I tested

assumptions of the repeated measures ANOVA which were used to test several hypotheses (see below). Repeated measures or within-subjects ANOVA assumes (1) a relatively normal distribution of the DV, (2) independence, and (3) sphericity, which is the repeated measures analog of homoscedasticity, or equal variances of the conditions at different times (Garson, 2014). A normal distribution means participant responses fall into an approximately symmetric bell curve. In order to assess normality, I used a Shapiro Wilk's test ($p < .05$) and skewness values above 2, as well as visual inspection of a histogram, recommended for small and medium sample sizes (Garson, 2012). Outliers are also easily identifiable on the residual plots and it allows the researchers to examine multiple facets of the dependent variables at once. Sphericity is the assumption for repeated measures that is related to the homogeneity of variance (heteroscedasticity) and occurs when the estimated variance for any pair of groups is equal to any other pair of groups. Sphericity was tested in the SPSS analyses (Garson, 2014).

In a repeated measures ANOVA, the assumption of independent samples refers to independence of the participating students, not the repeated measures of a single student (Garson, 2014). This assumption was the most difficult to test directly and may be the least tenable given all students will be Auburn University students. To increase the possibility of meeting this assumption, I attempted to avoid enrolling students with very close connections, e.g., siblings or roommates. To assess sphericity, I used Mauchley's Test of Sphericity ($p < .05$ indicated a departure from sphericity) and corrected for violations of sphericity using the Greenhouse-Geisser correction.

Feasibility of the intervention was measured by the amount of material delivered in a 120-minute timeframe, attendance, and students' level of engagement during the intervention. To measure this, I created a simple Fidelity Checklist that mirrored the intervention curriculum in

the PowerPoint presented during the intervention. The checklist included a list of content to be covered during the intervention. Feasibility was defined as discussing all content on the Fidelity Checklist (boxes checked). Overall, the intervention was feasible to administer in a 120-minute timeframe. Each 120-minute trial of the intervention allowed for ample time to thoroughly discuss all intervention material.

Hypothesis 1 was tested by examining the Fidelity Checklist. One to two members of the research team piloted this measure and filled out a checklist during each intervention to capture topics discussed and track student participation. The analysis here were simple calculations, i.e., (a) totaling the number of sessions under 120 minutes, (b) dividing the number of intervention group attendees by the number of completed pre-intervention questionnaires, (c) referencing Fidelity Checklists and amount of content discussed and number of students who spoke at least once during the group session.

Hypothesis 2 was tested by examining the percentage of students' responses on the modified Client Satisfaction Questionnaire (CSQ) (Larsen et al. 1979) which was completed immediately following intervention attendance. Items on the measure were modified to reflect intervention content.

Hypotheses 3-6 were tested with a series of separate one-way repeated measures ANOVA over two or three data points (pre-intervention, post-intervention, and at a 4-week follow-up). Drinking frequency is the only outcome variable that was not assessed at post-intervention, i.e., had only two timepoints.

Tests of Hypotheses

***Hypothesis 1*: The pilot intervention will be feasible.**

- **H1a:** All intervention content can be delivered in one 120-minute session.

- **H1b:** At least 75% of students who completed the pre-intervention questionnaire will attend the group session.
- **H1c:** All (100%) students in the group session will participate, that is speak about intervention content during the session at least once.

To test Hypothesis 1, I used the Fidelity Checklist which documented observations of time, content, attendance, and students' participation.

***Hypothesis 2*: Students will report a high level (>80%) of acceptability/satisfaction with the intervention at post-test.**

Hypotheses 2 was tested by examining responses of the acceptability measure created for this study and calculating the percentage of responses that indicated "strongly agree" or "agree."

***Hypothesis 3*: students will report increased knowledge about PBPV and reduced acceptance of rape myths from pre-intervention to post-intervention, and maintain reduction at follow-up.**

***Hypothesis 4*: Students will report increased willingness to intervene as bystanders from pre-intervention to follow-up.**

***Hypothesis 5*: Students will report lower perceived peer drinking norms and greater alcohol knowledge from pre-intervention to post-intervention, and maintain reduction at follow-up.**

***Hypothesis 6*: Students will report lower heavy episodic drinking from pre-intervention to follow-up.**

Hypotheses 3, 4, 5, and 6 were tested with repeated measures (or within-subjects) ANOVA.

Exploratory Analyses

Follow-up analyses tested differences in feasibility, acceptability, and preliminary effectiveness by exploring differences by student characteristics (gender and year in school). For example, I examined whether men or women differed in their attendance with ANOVA and response to the intervention with a gender x time interaction in repeated measures ANOVA.

Chapter 4: Results

Preliminary Analyses

Below, I report the tests of normality and sphericity (similar to heteroscedasticity for repeated measures) for each measure. As noted in methods, repeated measures ANOVA assumes (1) a relatively normal distribution of the DV, (2) independence, and (3) sphericity, which is the repeated measures analog of homoscedasticity, or equal variances of the conditions at different times (Garson, 2014).

Knowledge about Power-Based Personal Violence. Although the Shapiro Wilk's test showed that responses on the Sexual Violence Knowledge (SVK; Banyard, Plante, & Moynihan, 2005) were not normally distributed in the pre- (p = .023) and post-questionnaires (p = .008) but were normally distributed in the follow-up questionnaire (p = .152), the skewness of sexual violence knowledge at pre-intervention was 0.049, and at post-intervention was -0.294. A visual inspection suggested that the distribution approximated normality, so no transformation was needed. Mauchley's Test of Sphericity demonstrated equal variance in the repeated measures for knowledge of PBPV (p = .399), and therefore no correction was needed.

Attitudes toward Rape. The Shapiro Wilk's test showed that responses on the College Date Rape Attitude Survey (CDRAS; Lanier & Elliott, 1997) were not normally distributed at pre- (p = <0.001), post- (p = < .001), or follow-up (p = .001) questionnaires, but skewness values were -1.365 at pre-intervention, -1.667 at post-intervention, and -1.249 at follow-up. Visual inspection suggested that there was not a violation of the assumption of normality, and therefore no transformation is necessary. Sphericity was violated according to Mauchley's Test of Sphericity (p = .010), and therefore the Greenhouse-Geisser correction is reported in Table 2 for attitudes toward rape.

Bystander Intentions. The Shapiro Wilk's test showed responses on the Bystander Attitudes and Behaviors (BAB; Banyard, Plante, & Moynihan, 2002) were normally distributed on the post- (p = .247) and follow-up (p = .066) questionnaires, but not normally distributed at pre- intervention (p = .015). The skewness of responses was examined and found to be -.309, and the visual inspection suggested there was not a violation of the assumption of normality, and therefore no transformation was necessary. Mauchley's Test of Sphericity demonstrated equal variance in the repeated measures for bystander intentions (p = .082), and therefore no correction was needed.

Perceived Drinking Norms. The Shapiro Wilk's test showed responses on the Drinking Norms Rating Form (DNRF; Baer, Stacey, & Larimer, 1991) were normally distributed at the pre-intervention (p = .160), but not at the post- (p = .008) or follow-up (p = .006). Skewness of responses was examined and found to be .70 at post-intervention, and .71 at follow-up intervention. Visual inspection suggested there was not a violation of the assumption of normality, and therefore no transformation necessary. Sphericity was violated according to Mauchley's Test of Sphericity (p = .040), and therefore the Greenhouse-Geisser correction is reported in Table 2 for perceived drinking norms.

Alcohol Knowledge. The Shapiro Wilk's test showed responses on the Student Alcohol Questionnaire (SAQ; Engs, 1975) were not normally distributed at the pre- (p = .020), post- (p < .01), or follow-up (p = .003) intervention. Skewness of responses was examined and found to be -.22 at pre, -1.49 at post, and -1.09 at follow-up. A visual inspection suggested that the distribution approximated normality, so no transformation was needed. Mauchley's Test of Sphericity demonstrated equal variance in the repeated measures for alcohol knowledge (p = .730), and therefore no correction was needed.

Alcohol Consumption. The Shapiro Wilk's test showed responses on the Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985) were normally distributed at the pre-intervention (p = .120), however, not at the follow-up intervention (p = .020). Skewness of responses was examined at the follow-up intervention and was .78. Visual inspection suggested that the distribution approximated normality, so no transformation was needed.

I also created a simple, quick measure of intervention fidelity (Fidelity Checklist for Key Personnel), and asked co-facilitator(s) to pilot test it during the group sessions for future research. The Fidelity Checklist included two sections; a list of content to be incorporated in the intervention (e.g., theoretical steps to intervening as a bystander, how to use the blood alcohol content chart**)**, and a list of students and number of times each student participated during the intervention. One or two co-facilitators completed a checklist during each intervention by checking boxes as each content area was discussed and tallying the number of times each student engaged in discussion. The Fidelity Checklist measure provided evidence for the feasibility of the intervention.

Hypotheses

Hypothesis 1: *The pilot intervention will be feasible.*

H1a: *All intervention content can be delivered in one 120-minute session.*

Hypothesis 1a was tested by using a pilot Fidelity Checklist created by the facilitator. All (100%) of the curriculum material was discussed at every intervention session and was completed within 120 minutes. This included the time it took for all students to complete the post-intervention questionnaire. Therefore, Hypothesis 1a was supported.

H1b: *At least 75% of students who completed the pre-intervention questionnaire will attend the group session.*

Hypothesis 1b was tested by dividing the number of intervention attendees by the number of completed pre-intervention questionnaires, that is, 40/56 = 71% (see Figure 1). Therefore, hypothesis 1b was not supported.

> ***H1c:*** *All (100%) students in the group session will participate, that is speak about intervention content during the session at least once.*

According to the Fidelity Checklist measure, all (100%) attendees participated during the intervention at least one time, thus supporting hypothesis 1c.

> ***Hypothesis 2:*** *Students will report a high level (>80%) of acceptability (satisfaction) with the intervention.*

All (100%) of attendees rated the content of *What's Your BAC?* either *Excellent* (88%) or *Good* (13%) [percentages do not sum to 100% due to rounding]. For satisfaction, 100% of students reported they were either *Very Satisfied* or *Mostly Satisfied* with *What's Your BAC?*, 90% and 10%, respectively. When asked if they would return to the intervention, 97.5% of students reported either *Yes, Definitely,* or *Yes, I think so*, and 2.5% reported *No I don't think so*. Therefore, Hypothesis 2 was supported.

> ***Hypothesis 3:*** *Students will report increased knowledge about PBPV and reduced acceptance of rape myths from pre-intervention to post-intervention, and maintain reduction at follow-up.*

Knowledge about PBPV. The one-way repeated measures ANOVA indicated a significant difference in knowledge about PBPV, $F(2,76) = 21.45$, $p < .001$, $\eta^2 = .36$ (see Table 2 for full results for tests of hypotheses 3-6). The effect size suggests a large change in knowledge about PBPV. Further examination of the pairwise comparisons showed a significant, large increase (Cohen's $d = 1.36$) in knowledge between pre- ($M = 3.54$, $SD = 1.48$) and post-intervention ($M =$

5.51, *SD* = 1.41), ($p < .001$), and a medium-size, significant difference ($d = 0.75$) between pre-intervention assessment and follow-up ($M = 4.72$, $SD = 1.67$) interventions ($p = .002$), although no significant differences between the post- and follow-up ($M = 4.72$, $SD = 1.67$) interventions ($p = .057$). Thus, hypothesis 3 was supported as there was significant increase in knowledge about sexual violence from the pre- to post- intervention, which was generally maintained though the follow-up assessment.

Attitudes toward Rape. The one-way repeated measures ANOVA indicated no significant difference in reducing rape myth acceptance, F (1.64, 62.25) = 0.80, $p = .453$, $\eta^2 = .02$ (see Table 2), and thus hypothesis 3 was not supported.

> ***Hypothesis 4:*** *Students will report increased bystander intentions from pre-intervention to follow-up.*

Bystander Intentions. The one-way repeated measures ANOVA indicated a significant difference in bystander intentions, F (2, 76) = 4.68, $p = .012$, $\eta^2 = .11$. Further examination of the pairwise comparisons showed a significant, medium increase (Cohen's $d = 0.65$) difference between the pre- ($M = 194.82$, $SD = 26.68$) and post-intervention assessment ($M = 211.72$, $SD = 25.33$), ($p = .031$), but no significant differences between the post and follow-up ($M = 203.00$, $SD = 28.320$) intervention ($p = .392$) or between the pre- and follow-up ($p = .237$), thus hypothesis 4 was supported.

> ***Hypothesis 5:*** *Students will report lower perceived peer drinking norms and greater knowledge about alcohol effects from pre-intervention to post-intervention, and maintain reduction at follow-up.*

Perceived Drinking Norms. The one-way repeated measures ANOVA indicated a significant difference in perceived drinking norms, F(1.73, 65.61) = 6.07, $p = 0.01$, $\eta^2 = .14$. Further

examination of the pairwise comparisons showed a medium to large, significant reduction (Cohen's d = 0.76) between pre- (M = 13.78, SD = 8.03) and post- (M = 8.79, SD = 4.71) intervention (p = .020), but no significant changes between post- and follow-up (M =10.18, SD = 5.66) intervention (p = .730). Thus, hypothesis 5 was supported as there were initial reductions in perceived drinking norms, and changes were generally sustained at follow-up.

Alcohol Knowledge. The one-way repeated measures ANOVA indicated a significant difference in knowledge about alcohol, $F(2, 76) = 18.22$, ($p < .001$), $\eta^2 = .32$. Further examination of the pairwise comparisons showed large, significant differences (Cohen's d = 1.11) between pre- (M = 5.33, SD = 1.71) and post- (M = 7.26, SD = 1.77) intervention. Increases were generally maintained at the 4-week follow-up (M = 7.18, SD = 1.89) intervention (p = 1.00). Therefore, hypothesis 5 was supported.

Hypothesis 6: *Students will report lower quantities of drinking from pre-intervention to follow-up.*

Alcohol Consumption. The one-way repeated measures ANOVA indicated a significant difference in number of drinks consumed from pre- (M = 8.72, SD = 4.80) to follow-up (M = 6.23, SD = 4.1) intervention $F(1,38) = 4.67$, p = .040, $\eta^2 = .11$. The effect size (Cohen's d = 0.56) suggests a moderate reduction in number of drinks in a typical week. Therefore, hypothesis 6 was supported.

Exploratory Analyses

Given the high percentages of feasibility [ability to cover all content in one session (Hypothesis 1a), student participation (Hypothesis 1c), and acceptability of students who attended (Hypothesis 2)], there was not sufficient variation to test for differences by gender or year in school. Regarding attendance, the majority of students who completed the pre-

intervention questionnaire (n = 46/56 or 82%) and attended the session (n = 32/40 or 80%) were women. There was not a significant difference in attendance rates by gender, $Z = 0.66$, $p = .512$.

A two-way mixed ANOVA tested whether gender and/or year in school were related to changes over time in the main outcomes. Gender was coded as woman and man; school year was coded as lower division (first- and second-year) and upper division (junior, senior, 5th year and above) due to small numbers. These analyses added each student characteristic as a between-level variable and tested the time x characteristic interaction.

Gender and Knowledge about PBPV. There was no interaction for gender on knowledge about PBPV in response to the intervention, $F(2, 74) = 0.77$, $p = .468$, $\eta^2 = .020$.

Gender and Attitudes toward Rape. There was no interaction for gender on attitudes toward rape in response to the intervention, $F(1.50, 55.52) = 1.05$, $p = 0.34$, $\eta^2 = .028$.

Gender and Bystander Intentions. There was an interaction for gender on bystander intentions, $F(1.69, 62.53) = 34.65$, $p = .045$, $\eta^2 = .086$ (see Table 3). As shown in Figure 3, men and women had different trajectories of willingness to intervene as bystanders over time. Although women and men both showed increases in bystander intentions after the intervention, women generally maintained the increase in intentions, but men lost the gains by follow-up.

Gender and Alcohol Knowledge. There was no interaction between gender on alcohol knowledge in response to the intervention, $F(1.69, 62.45) = 0.33$, $p = .685$, $\eta^2 = .009$.

Gender and Perceived Drinking Norms. There was no interaction between gender and perceived drinking norms in response to the intervention, $F(1.63, 60.42) = 0.75$, $p = .451$, $\eta^2 = .020$.

Gender and Alcohol Consumption. There was no interaction between gender and alcohol consumption in response to the intervention, $F(1, 37) = 2.15$, $p = .054$.

Year in School and Knowledge about PBPV. There was no interaction between year in school and knowledge about PBPV in response to the intervention, $F(1.70, 62.78) = 2.30$, $p = .117$, $\eta^2 = .058$.

Year in School and Attitudes toward Rape. There was no interaction between year in school and attitudes toward rape in response to the intervention, $F(1.51, 55.89) = 0.96$, $p = .366$, $\eta^2 = .025$.

Year in School and Bystander Intentions. There was no interaction between year in school and bystander intentions in response to the intervention, $F(2, 74) = 0.28$, $p = .761$, $\eta^2 = .007$.

Year in School and Alcohol Knowledge. There was no significant interaction between year in school and alcohol knowledge in response to the intervention, $F(1.73, 64.03) = 2.16$, $p = .130$, $\eta^2 = .055$.

Year in School and Perceived Drinking Norms. There was no interaction between year in school and perceived drinking norms in response to the intervention, $F(1.65, 61.16) = 0.31$, $p = .697$, $\eta^2 = .008$.

Year in School and Alcohol Consumption. There was no interaction between year in school and alcohol consumption in response to the intervention, $F(1,37) = 0.91$, $p = .345$, $\eta^2 = .024$.

Chapter 5: Discussion

The purpose of this study was to adapt and pilot an original intervention, *What's Your BAC (Bystander Alcohol Check-in)?* that combined concepts of effective, empirically-supported bystander intervention programs and brief alcohol interventions for young adult college students. Typically, on college campuses, there are curricula to address bystander intervention to prevent sexual violence (e.g., Banyard et al., 2007; Bennett et al., 2014; Coker et al., 2016), and brief alcohol interventions to reduce or prevent heavy drinking (e.g., Marlatt et al., 1998; Neighbors et al., 2006). Bystander intervention and alcohol intervention are most often separate, despite alcohol being present in 50% of sexual assaults (NIAAA, 2021), and a bystander being present in situations leading up to sexual assault about 30% of the time (Planty, 2002). To my knowledge, this is the first intervention that combines these two interventions in a single-day program. The goal of this intervention was to create a safer campus and to decrease power-based personal violence by (1) increasing the use of harm reduction strategies around alcohol consumption and (2) increase rates of bystander intervention specifically in drinking contexts to decrease violence.

Overall, results of this pilot study of *What's Your BAC?* demonstrated that the intervention was feasible to deliver, as well as had preliminary effectiveness at changing five of the six outcome variables measured. The strongest results of this study are found in the sustained change overtime shown in students' knowledge of power-based personal violence and alcohol knowledge, and perhaps the most significant is the reduction of number of drinks in a typical drinking week by nearly 30%. These findings suggest *What's Your BAC?* is a promising intervention strategy and should be tested more rigorously. Limitations and recommendations to improve the rigor of study design and the intervention content are discussed below.

In the pilot study, I assessed feasibility and acceptability of students, as well as changes in theoretically meaningful constructs, including knowledge, attitudes, and behaviors related to violence and drinking, from pre-intervention to post-intervention (except for alcohol consumption), and maintenance of these changes four weeks after the intervention. Results showed that (a) the pilot intervention *What's Your BAC?* was feasible to deliver in a single 120-minute group session, (b) students participated in the session, and (c) students found the content acceptable, although student attendance in the group was lower than expected. Preliminary effectiveness was strong, with improvements in knowledge about PBPV, bystander intentions, perceived drinking norms, alcohol knowledge, and alcohol consumption, although there was no change detected in rape myth acceptance.

Feasibility of the intervention was measured using a Fidelity Checklist created for this study that captured the amount of intervention content delivered in a 120-minute timeframe, attendance, and students' level of engagement during the intervention. Overall, the Fidelity Checklist consistently showed that it was feasible to discuss all intervention content in a 120-minute timeframe. Attendance was lower than anticipated, only 71% of students who completed the pre-intervention questionnaire actually attended the *What's Your BAC?* group meeting. Follow-up assessment rates were generally high (98%), with only one student who did not participate in the follow-up survey. Most recommendations for missing data indicate that this low level of missingness can be ignored without biasing the results (e.g., Graham, 2009).

It is possible that attendance in the group session was lower than expected due to the nature of the pre-intervention questionnaire. These questions covered sensitive information about violence and alcohol which may have caused students to feel wary about attending the group. It is also possible that the duration or time of the group was not favorable to students. Given the

potentially sensitive nature of the assessments, for future studies or campus implementation it might be more effective to recruit students and have them take the pre-intervention questionnaire after they arrive for the intervention rather than on their own time beforehand. The intervention has a non-judgmental approach and uses several strategies to ease discussions of sensitive topics, which may ease uncertainty. These strategies appeared successful because the students who did attend the intervention participated in the group, reported it was acceptable, and indicated that they were consistently satisfied with the content. All attendees rated the content of *What's Your BAC? Excellent* or *Good* and reported they were either *Very Satisfied* or *Mostly Satisfied* with the *What's Your BAC?* intervention. When asked if they would return, nearly all (97%) students reported either *Yes, Definitely,* or *Yes, I think so.*

Scheduling 2-hour timeframes to facilitate the intervention also proved to be challenging among college student schedules. It was common for students to express interest in participating in the study, but then not have availability to attend any of the sessions. I found the most successful method of scheduling was offering the intervention at different times of day and on different days of the week (e.g., one session on Tuesday at 11am, Thursday at 2pm, or Wednesday at 5pm) rather than having the intervention at the same time each week. Students seemed to have more availability in the evenings, which is often inconvenient for staff or facilitators and may be more expensive for universities but could increase attendance. Future research could also explore the potential of online interventions; in this study I ran five online interventions. Although there were too few groups to power statistical tests comparing in-person to online groups, students seemed to have a similar experience in online and in-person groups based on the Fidelity Checklist.

Another logistical issue for in-person groups that could be alleviated by online groups was related to physical space; there was only one physical space available to facilitate the intervention, which comfortably fit about 10 people including the research team. This was a shared space, which somewhat limited flexibility in scheduling *What's Your BAC?* sessions. More resources such as a larger space dedicated exclusively to the study would help to avoid scheduling conflicts and provide more opportunities for students. This would also allow for more students to attend at one time, providing a larger, more representative sample. On the other hand, interactions among group members are also an important aspect of the intervention, so there are likely trade-offs to larger group sizes. Group experts recommend 5-10 members for optimal group cohesion and effectiveness (e.g., Yalom & Leszcz, 2005), so these recommendations should be considered as well.

There were somewhat surprising findings about incentives for participating in the pilot study that should be considered when designing future studies for this intervention. Initially, students were offered a $25 gift card, but due to lack of interest, I added a choice between a $25 gift card or 6 points of extra credit through the college's extra credit award system. Of students who were offered the choice, 100% of them chose extra credit over a $25 gift card. It could be that students did not perceive $25 as sufficient for the time they were asked to dedicate to the study (in total about 3 hours with the pre- and follow-up questionnaires and the 2-hour intervention). It is also possible that this study seemed more attractive than other available studies, which were often surveys, in the course extra credit system. Future tests of this intervention should consider the following options: (a) offer greater monetary incentives, (b) give monetary awards at different and/or increasing increments throughout the study (e.g., partially after attending the intervention, and partially after the 4-week follow-up), or (c) giving

students options to combine monetary incentives and extra credit to be counted towards coursework.

With respect to participation incentives, it is important to note that I added the extra credit option near the end of the semester, which may have impacted students' decisions to choose the extra credit option. The last session of *What's Your BAC?*, which was tied (with the first in-person intervention) for the most attended session with seven students, was run on the last possible day of the semester that would allow for a 4-week follow up questionnaire to be completed in time for extra credit to be awarded. This suggests that students may be looking to complete course requirements for research at the last minute. While unexpected, this is likely to occur in the future and should be considered when planning for recruiting and responses of students if extra credit or similar options linked to semester schedules are offered.

Results indicated large improvements in students' knowledge about power-based personal violence between pre-intervention and post-intervention, which were sustained at the 4-week follow-up. This effect was generally consistent, although larger (d = 0.75), than reported in meta-analyses of bystander interventions (d = 0.57; Anderson & Whinston, 2005). The content of *What's Your BAC?* focused on general knowledge of sexual violence and was delivered with teaching strategies that included a non-confrontational approach, group feedback for students, and engaging students in active discussion. This pilot study was not designed to test which components were most useful, but future studies should assess which of these, if not all of them, are needed.

Attitudes toward rape did not change over the course of the three data timepoints. Two meta-analyses of bystander interventions for college students showed small effects in reducing rape myth acceptance (d = .21, .28; Anderson & Whinston, 2005; Katz & Moore, 2013,

respectively), which suggests rape attitudes are difficult to change even when interventions are designed to address them. However, some findings do suggest bystander intervention programming can increase the potential for reducing rape myth acceptance. Specifically, Katz and Moore (2013) found that longer, more focused programs had greater effects on rape myth attitudes. However, this intervention was developed as a two-hour group based on success of previous two-hour interventions (Coker et al., 2016), so increasing length will likely have trade-offs for factors like participation and/or cost, and may not equate to a more effective intervention.

The lack of change in attitudes toward rape could be because the intervention had a stronger focus on violence education rather than countering rape myths. For example, the items on the measure of students' attitudes toward rape were not directly related to the material discussed in the *What's Your BAC?* intervention. If future studies decide to address rape myth acceptance, more education about content similar to the measure's items, as well as specific attention to changing these beliefs could be provided to improve the intervention. The strategies to change alcohol norms in *What's Your BAC?* were effective (see details below), so using a similar strategy of showing that rape myths are not widely accepted could potentially lead to changes. Further, educating about rape myths in the intervention might include a "myth-busting" vs. factual information segment, discussion of how these attitudes developed, and research supporting the facts. This foundation of education related to rape myths could facilitate change by dismantling common misconceptions. In addition to more content, parts of the intervention could be restructured to facilitate more discussion amongst students to share perspectives of peers.

On the other hand, it is possible that it is more difficult to change or challenge a belief system than it is to increase knowledge about a topic by presenting information, or that there was a ceiling effect with the measure in this study. It is important to note that there is still debate about the relationship between rape-related attitudes and sexual violence (Anderson & Whinston, 2005), so changing attitudes toward rape may not be a necessary topic to focus on during the intervention, compared to intentions and actual behavior. In other words, individuals may act as bystanders while simultaneously holding inaccurate attitudes toward rape. Actual bystander intervention behaviors (e.g., ask a friend who seems upset if they are okay or need help, get help from other friends or university staff if I saw a friend grabbing, pushing, or insulting their partner, spill a drink to draw attention from potential violence) should be the outcomes of future tests of this intervention.

Due to the nature of this pilot investigation, I only assessed students' intentions to act as bystanders. There were promising significant moderate-sized (d = 0.65) increases in students' willingness to intervene as a bystander. This is generally consistent with prior research showing that students who attended a bystander intervention program had moderate increases in willingness to intervene (d = 0.58; Katz & Moore, 2013). As noted above, future research should assess actual bystander intervention, in addition to intentions. Self-reported willingness and actual bystander intervention are separate constructs, and future research examining this would better our understanding the effectiveness of the intervention by examining both, especially as it relates to bystander behavior within college drinking culture. Bystander behavior includes many different situations and behaviors. Some examples of bystander behavior include walking someone who looks overly intoxicated home from a bar or party, asking a bartender or bar staff to remove a person engaging in potential violence from the bar, pretending to know someone

who seems to be on the receiving end of unwanted flirting or potentially harmful physical touch. This intervention used only Three Ds (Direct, Delegate, and Distract) because the pilot was focused on prevention and time-limited. Also, the current Green Dot curriculum at the university used the 3Ds, which was the basis for this study. Future trainings could add additional Ds such as Delay which involves offering post-violence support and resources, and Document, which involves recording violence or antecedents of potential violence. While examples can be provided, it is impossible to have a comprehensive list of all possibly bystander intervention behaviors. Therefore, having a qualitative component in the analysis of future studies study would help to learn of specific examples that students from the study engaged in as bystanders.

In addition to testing effects on outcomes related to power-based personal violence, I tested several alcohol-related constructs: perceived drinking norms, knowledge about alcohol, and alcohol consumption. I will discuss each finding, starting with perceived drinking norms. There were significant medium-to-large ($d = 0.76$) reductions in students' perception of peer drinking frequency in *What's Your BAC?* In other words, students who attended the intervention initially perceived that their peers engage in heavy drinking at higher rates (on average nearly 14 drinks/week) at pre-intervention than at post-intervention (about 9 drinks/week). These results are consistent, and slightly higher, than previous research that suggests normative feedback is an effective strategy in reducing overestimations of how much peers drink in a week at 3-month ($d = .46$) and 6-month follow-ups ($d = .48$) (Neighbors et al., 2004). At the 4-week follow-up for this study, perceived drinking norms increased (~10 drinks/week) but not significantly, and norms were still lower than pre-treatment levels. These results are generally consistent with previous research that showed reductions in norms in brief alcohol interventions for college students (Lewis et al., 2007; Dotson, Dunn, & Bowers, 2015).

Developing the discrepancy between perceived vs. actual alcohol consumption of peers is one mechanism of brief interventions for decreasing heavy drinking because heaving drinking students often overestimate the amount that other students drink, but increasing knowledge about alcohol is another common mechanism in these kinds of interventions (e.g., Lewis et al., 2007; Dotson, Dunn, & Bowers, 2015; NIAAA Task Force, 2002). Like knowledge about sexual violence, knowledge about alcohol increased significantly over the course of the study, (d = 1.11) from pre-intervention and maintained at 4-week follow-up. This suggests, again, that the education part of *What's Your BAC?* as it related to alcohol use was a well-designed part of the intervention. The effect size of *What's Your BAC?* on alcohol consumption was large (d = 0.76) and consistent with previous research that showed Motivational Interviewing with feedback was linked to greater reductions in drinking than only assessment (d = .54), only MI (d = .63), or only feedback (d = .48) (Walters et al., 2009), and greater than effects of brief alcohol interventions for first-year college students compared to control groups (d = .13) (Scott-Sheldon et al., 2014). *What's Your BAC?* aligns with best practice recommendations for college-based interventions, which includes pairing one or more strategies alongside education about drinking-related consequences (Croom et al., 2009, NIAAA, 2019; Larimer & Cronce, 2007). Techniques such as a non-confrontational approach to address heavy drinking and group-level feedback proved to be effective in this study. Future research would benefit from building on this framework. Selecting facilitators who are familiar with Motivational Interviewing, perhaps those who have experience in substance use work, would promote adhering to the Motivational Interviewing framework in future interventions.

In this pilot study, students reported significantly lower alcohol consumption from pre-intervention to 4-week follow-up. Specifically, reporting 8.72 drinks in a typical week prior to

the study, and 6.23 drinks at follow-up shows a 29% decrease, i.e., a medium-size reduction (d = 0.56) in typical week of drinking. These findings are consistent with previous research that examined the BASICS program and found medium to large reductions in quantity of alcohol consumption in a typical week (d =.59) and typical number of drinks consumed on one occasion (d = .76) at a 4-week follow-up (e.g., Terlecki et al., 2015). Previous research examining the effectiveness of alcohol programming paired with personalized feedback showed long-term effectiveness of decreasing the number of drinks by 1.50 drinks per week at 12-month follow up (Fachini et al., 2012). This is consistent with our findings of personalized feedback sustaining long-term in terms of alcohol consumption. Reductions in alcohol consumption is one of the most promising results of this study because (1) heavy drinking is associated with a number of more severe consequences and a targeted behavior across college campuses nationwide (NIAAA, 2021; SAMHSA, 2019), and (2) shows that combining bystander intervention content with an alcohol intervention does not appear to reduce effectiveness. Future research should expand the assessment of drinking behavior to include drinking frequency and heavy episodic drinking over time.

After testing hypotheses, I explored whether several characteristics of students, including gender and year in school, were related to change over time. There was one significant time x characteristic interaction, gender was related to change in bystander intentions. Although there appeared to be little difference initially, women retained higher willingness to intervene as a bystander at follow-up compared to men. Although the small number of men in this sample limits interpretations, it is important to consider both a) why these differences exist, and b) how they can be addressed in future research of this intervention. It's possible that because college women are victimized at higher rates (White House Task Force 2014; National Center for Injury

Prevention and Control, 2016), they are more aware of the impact and importance of bystander intervention, and therefore more willing to intervene. As noted above, more women than men participated in the study (only eight in this sample), so it would be helpful to recruit more men in future studies. With respect to understanding the within-intervention processes that may influence men differently than women, a qualitative approach may be useful. For example, researchers or group facilitators could record the intervention, transcribe it, and examine the differences in responses during groups between men and women. This may allow for further research into this topic without making the intervention itself more gendered or aimed at one gender over another without specific information about what changes to make.

These results set the foundation for future studies and suggest expanding from tests of changes in knowledge and intention to actual behavior change. *What's Your BAC?* suggests that students' knowledge increased as it related to power-based personal violence and alcohol, and increased intentions of intervening as bystanders. Future studies should also test for changes in bystander behavior, specifically students actively intervening as bystanders. This study demonstrated preliminary effectiveness in decreasing students' alcohol consumption, and researchers should continue to assess a broad range of alcohol consumption variables in future studies.

Some of the same measures from this study could be used to reflect behavior change. The Bystander Attitudes and Behaviors Scale (Banyard, Plante, & Moynihan, 2005) is a list of 51 potential bystander behaviors (e.g., *say something to a person whose drink I saw spiked with a drug even if I didn't know them; if I know information about an incident of sexual violence, I tell authorities what I know in case it is helpful*). Students in this study responded to this list with level of willingness to engage in the listed behaviors. Future research should ask students if they

had *actually intervened* in these ways. Since it's impossible to create a comprehensive list of all bystander behaviors, a qualitative component to the next research study would allow for more flexibility in responses and measure behavior change in terms of bystander intervention behavior. With respect to alcohol consumption, The Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985) was used in this study, although there are other measures of alcohol consumption, e.g., Timeline Follow-back (Sobell & Sobell, 1992) or the Alcohol Use Disorders Identification Test (AUDIT; Bohn, Babor, & Kranzler, 1995), that could be used in future research to measure behavior change in alcohol consumption. The DDQ asks respondents to fill out a calendar consisting of number of drinks consumed and hours spent drinking on each day of the week. While number of drinks and hours spent drinking are more easily detected in quantitative research, a qualitative study on alcohol consumption may provide more context into students' drinking patterns.

The goal of *What's Your BAC?* was to incrementally contribute to efforts to create a safer campus by implementing harm reduction strategies that will lead to decreased alcohol consumption and thus increased rates of bystander intervention to decrease power-based personal violence. The first pilot study of its kind suggests initial success across these constructs, and can further develop by focusing on behavior changes as a result of the intervention. To develop the current research, specific next steps include creating a more detailed manual for the intervention, training multiple facilitators, and adding qualitative research methodology. Expanding the training manual would streamline the intervention and training process and ensure that facilitators and students were getting the same material delivered in the same way. Training multiple facilitators would allow for opportunities for more students to attend *What's Your BAC?* and control for the experimenter effect – the idea of the facilitator using their own expectations

to influence the results of the study. As previously discussed, a qualitative research component would provide more context to student behaviors of bystander intervention and alcohol consumption. Since this study is the first of its kind, early qualitative data will allow for more candid responses, and help researchers to better understand nuance of students' behavior.

What's Your BAC? is similar to other programming in student affairs and would fit seamlessly into existing curricula that already address violence prevention and alcohol consumption among students. Specifically, students affairs professionals could get trained in the *What's Your BAC?* intervention and implement the intervention on campus within a two-hour timeframe. The results showed that students who attended the training were satisfied with the intervention and recommend to other students, which would promote student buy-in to the intervention.

Limitations

Because this study was a pilot study and testing an intervention for the first time, there were several structural limitations not addressed previously, including a small, homogenous sample, no control group, exclusive use of self-report measures, and only one facilitator. A sample of 40 students was sufficient for a pilot study, but having a larger sample size in the future would improve the credibility of the intervention and help to better understand its effectiveness. The nature of this pilot study being on one large Southeastern campus meant that had limited diversity in ethnic/racial groups and potentially other characteristics, so results may not generalize consistently to drinking and bystander culture in other parts of the country. Future studies should recruit students from a wider range of campuses.

Given the promising findings of this pilot study, a larger and more rigorous trial of this intervention appears warranted. Although the longitudinal pre-test post-test design was

appropriate for a pilot study, a more rigorous experimental design would include randomizing students to either (a) the *What's Your BAC?* intervention or (b) a control or comparison group. There are multiple design options for control groups, including a waitlist or delayed-treatment design, a minimal treatment control, or a similar intervention. In a waitlist (or delayed-treatment) control study, students in group A and group B would both take pre-intervention questionnaires at the same time. Group A would attend *What's Your BAC?* first, and complete post-intervention and 4-week follow-up questionnaires following the intervention. Group B would take post-intervention and 4-week follow-up questionnaires without attending the intervention. After the follow-up survey for group A was complete, group B could attend *What's Your BAC?* and complete both post- and follow-up questionnaires. A minimal treatment control group, such as watching a pre-recorded video about an individual's personal experience with alcohol use, without incorporating evidence-based practices that proved successful in this study (e.g., alcohol education, group-level feedback, student interactions in group). An even more rigorous design would be to assign the control group to receive an effective bystander intervention and/or brief alcohol intervention to test whether the combined intervention was equivalent to either intervention.

Data was based on exclusively self-report measures in this study. While helpful for initial data, it's possible students responded in ways that they perceived to be more socially desirable (e.g., drinking less or more likely to intervene to prevent violence). In this study, I had a NIH Certificate of Confidentiality, which ensured that students' responses, such as reporting illegal underage drinking, could not be used against them by the university or legal system. Although this increases the likelihood of truthful responding, it does not completely mitigate social desirability bias. Additionally, with self-report measures, responses may be subject to recall bias.

To avoid these biases of self-reported responses, collateral data from peers could be collected to measure behavior (e.g., how often do you witness this person intervening as a bystander, how much does this person drink in on one occasion). If this intervention were implemented campus-wide in larger study, researchers might incorporate observational measures of bystander and alcohol consumption behaviors on a given campus. These measures might include researchers spending time in campus bars, at campus events (sports) with alcohol, or gathering public records of reports of PBPV to campus law enforcement during the time *What's Your BAC?* is being implemented. However, using measures other than self-report also may be resource-intensive. For example, observational measures would require a large research team who must spend more time with assessment.

Implications for Implementation on College Campuses

The positive findings of the *What's Your BAC?* intervention is a promising and effective strategy for undergraduate students. As previously discussed, implementation of *What's Your BAC?* could incorporate peer facilitators of the intervention, training faculty and staff to facilitate *What's Your BAC?*, or a combination of both. This intervention could be implemented on college campuses within departments of student affairs, who often have partnerships with many entities across campus. Student affairs professionals from different disciplines could become trained in administering the *What's Your BAC?* intervention and become facilitators on their respective campus. Additional marketing strategies could be put in place on campus to promote the intervention and engage students. Community partners of college campuses could implement *What's Your BAC?* in local bars, restaurants, or events where binge drinking is more likely among students. On a larger scale, results from this study suggested that implementing *What's Your BAC?* on college campuses would increase students' knowledge about sexual violence and

effects of alcohol, and reduce student alcohol consumption, which, in theory, could lead to fewer sexual assaults. This is significant. Opportunities for implementation include offices that promote overall health and wellness for students, counseling centers, freshmen and transfer student orientation, and student groups on campus who want to add to their regular programming. According to Anderson and Whinston (2005) the research is inconclusive in the violence prevention literature regarding peer-facilitators, that is, having undergraduate students as the facilitators of the intervention. However, in the brief alcohol intervention literature, peer-led programming is recommended for behavioral changes related to drinking (Facini et al., 2012). Since *What's Your BAC?* combines both violence prevention and brief alcohol interventions, studying the role of peer facilitators is important as previous research is inconclusive. The role of peer facilitators would help to understand best practice for implementing the program on college campuses.

In conclusion, the results of this study showed that components of a bystander intervention could be combined with components of a brief alcohol intervention without reducing effectiveness for theoretically meaningful outcomes related to violence prevention and alcohol reduction. *What's Your BAC?* was feasible and acceptable by students. Preliminary effectiveness was strong, with improvements in knowledge about PBPV, bystander intentions, perceived drinking norms, alcohol knowledge, and alcohol consumption. However, there was no change detected in rape myth acceptance. The next steps for research of this study could be adapting some elements of the intervention to improve effects or increase attendance rates, as well as testing the intervention with a more rigorous experimental design. Overall, this intervention has the potential to decrease rates of two highly pervasive issues, power-based personal violence and heavy drinking, on university campuses and eventually other contexts.

References

Abbey, A. (2002). Alcohol-related sexual assault: A common problem among college students. *Journal of Studies on Alcohol, supplement,* (14), 118-128. https://doi.org/10.15288/jsas.2002.s14.118

Alcohol and Sexual Assault. (n.d.). Retrieved April 2021, from https://www-ncbi-nlm-nih-gov.spot.lib.auburn.edu/pmc/articles/PMC4484576/

Anderson, L. A., & Whiston, S. C. (2005). Sexual Assault Education Programs: A Meta-Analytic Examination of Their Effectiveness. *Psychology of Women Quarterly*, *29*(4), 374–388. https://doi.org/10.1111/j.1471-6402.2005.00237.x

Baer, J. S., Stacy, A., & Larimer, M. (1991). Biases in the perception of drinking norms among college students. *Journal of Studies on Alcohol*, 52, 580-586. https://doi.org/10.15288/jsa.1991.52.580

Banyard, V. L., Moynihan, M. M., & Crossman, M. T. (2009). Reducing Sexual Violence on Campus: The Role of Student Leaders as Empowered Bystanders. *Journal of College Student Development*, *50*(4), 446–457. https://doi.org/10.1353/csd.0.0083

Banyard, V. L., Moynihan, M. M., & Plante, E. G. (2007). Sexual violence prevention through bystander education: An experimental evaluation. *Journal of Community Psychology,* 35(4), 463–481. https://doi-org.spot.lib.auburn.edu/10.1002/jcop.20159

Banyard V. L., Plante E.G., & Moynihan M.M. Rape Prevention Through Bystander Education: Final Report. Washington, DC: US Department of Justice; 2005. Document no. 208701. Available at: http://www.ncjrs.org/pdffiles1/nij/grants/208701.pdf. Accessed April 9 2021.

Bennett, S., Banyard, V. L., & Garnhart, L. (2014). To act or not to act, that is the question? Barriers and facilitators of bystander intervention. *Journal of Interpersonal Violence,* 29(3), 476–496. https://doi.org/10.1177/0886260513505210

Bohn, M. J., Babor, T. F., & Kranzler, H. R. (1995). The Alcohol Use Disorders Identification Test (AUDIT): validation of a screening instrument for use in medical settings. *Journal of studies on alcohol*, *56*(4), 423-432. https://doi.org/10.15288/jsa.1995.56.423

Bonow, J.T., Follette, W.C. Beyond values clarification: Addressing client values in clinical behavior analysis. *BEHAV ANALYST* **32,** 69–84 (2009). https://doi-org.spot.lib.auburn.edu/10.1007/BF03392176

Borsari, B., & Carey, K. B. (2000). Effects of a brief motivational intervention with college student drinkers. *Journal of Consulting and Clinical Psychology*, 68, 728–733. http://dx.doi.org.spot.lib.auburn.edu/10.1037/0022-006X.68.4.728

Brown, A. L., Banyard, V. L., & Moynihan, M. M. (2014). College students as helpful bystanders against SV: Gender, race, and year in college moderate the impact of perceived peer norms. *Psychology of Women Quarterly*, 38, 350 –362. https://doi-org.spot.lib.auburn.edu/10.1177/0361684314526855

Burn, S. M. (2009). A Situational Model of Sexual Assault Prevention through Bystander Intervention. *Sex Roles*, *60*(11–12), 779–792. https://doi.org/10.1007/s11199-008-9581-5

Butler, L. H., & Correia, C. J. (2009). Brief alcohol intervention with college student drinkers: Face-to-face versus computerized feedback. *Psychology of Addictive Behaviors*, *23*(1), 163–167. https://doi-org.spot.lib.auburn.edu/10.1037/a0014892

Byrnes, H. F., Miller, B. A., Bourdeau, B., Johnson, M. B., & Voas, R. B. (2016). Drinking group characteristics related to willingness to engage in protective behaviors with the group at nightclubs. *Psychology of Addictive Behaviors*, *30*(2), 168-174. https://doiorg.spot.lib.auburn.edu/10.1037/adb0000142

Clinton-Sherrod, M., Morgan-Lopez, A. A., Brown, J. M., McMillen, B. A., & Cowell, A. (2011). Incapacitated Sexual Violence Involving Alcohol Among College Women: The Impact of a Brief Drinking Intervention. *Violence Against Women*, *17*(1), 135–154. https://doi.org/10.1177/1077801210394272

Coker, A. L. (2007). Does physical intimate partner violence affect sexual health? A systematic review. *Trauma, Violence, & Abuse,* 8(2), 149–177. https://doi-org.spot.lib.auburn.edu/10.1177/1524838007301162

Coker, A. L., Bush, H. M., Fisher, B. S., Swan, S. C., Williams, C. M., Clear, E. R., & DeGue, S. (2016). Multi-college bystander intervention evaluation for violence prevention. *American Journal of Preventive Medicine,* 50(3), 295–302. https://doi.org/10.1016/j.amepre.2015.08.034

Coker, A. L., Cook-Craig, P. G., Williams, C. M., Fisher, B. S., Clear, E. R., Garcia, L. S., & Hegge, L. M. (2011). Evaluation of Green Dot: An Active Bystander Intervention to Reduce Sexual Violence on College Campuses. *Violence Against Women*, *17*(6), 777–796. https://doi.org/10.1177/1077801211410264

Coker, A. L., Fisher, B. S., Bush, H. M., Swan, S. C., Williams, C. M., Clear, E. R., & DeGue, S. (2015). Evaluation of the Green Dot bystander intervention to reduce interpersonal violence among college students across three campuses. Violence against women, 21(12), 1507-1527. https://doi-org.spot.lib.auburn.edu/10.1177/1077801214545284

Cook-Craig, P. G., Millspaugh, P. H., Recktenwald, E. A., Kelly, N. C., Hegge, L. M., Coker, A. L., & Pletcher, T. S. (2014). From empower to Green Dot: Successful strategies and lessons learned in developing comprehensive sexual violence primary prevention programming. *Violence Against Women*, *20*(10), 1162-1178. https://doi.org/10.1177/1077801214551286

Cox, M. J., DiBello, A. M., Meisel, M. K., Ott, M. Q., Kenney, S. R., Clark, M. A., & Barnett, N. P. (2019). Do misperceptions of peer drinking influence personal drinking behavior? Results from a complete social network of first-year college students. *Psychology of Addictive Behaviors*, *33*(3), 297–303. https://doi.org/10.1037/adb0000455

Croom, K., Lewis, D., Marchell, T., Lesser, M. L., Reyna, V. F., Kubicki-Bedford, L., Feffer, M., & Staiano-Coico, L. (2009). Impact of an Online Alcohol Education Course on Behavior and Harm for Incoming First-Year College Students: Short-Term Evaluation of a Randomized Trial. *Journal of American College Health*, *57*(4), 445–454. https://doi.org/10.3200/JACH.57.4.445-454

DeGue, S., Valle, L. A., Holt, M. K., Massetti, G. M., Matjasko, J. L., & Tharp, A. T. (2014). A systematic review of primary prevention strategies for sexual violence perpetration. *Aggression and Violent Behavior*, *19*(4), 346–362. https://doi.org/10.1016/j.avb.2014.05.004

Denhard, L., Mahoney, P., Kim, E., & Gielen, A. (2020). A Review of Alcohol Use Interventions on College Campuses and Sexual Assault Outcomes. *Current Epidemiology Reports*, *7*(4), 363–375. https://doi.org/10.1007/s40471-020-00253-2

Dimeff, L. A., Baer, J. S., Kivlahan, D. R., & Marlatt, A. G. (1999). Brief Alcohol screening and intervention for college students (BASICS): A harm-reduction approach. New York, NY: Guilford Press.

Doumas, D. M., Kane, C. M., Navarro, T. B., & Roman, J. (2011). Decreasing heavy drinking in first-year students: evaluation of a web-based personalized feedback program administered during orientation. *Journal of College Counseling*, *14*(1), 5-20. https://doi-org.spot.lib.auburn.edu/10.1002/j.2161-1882.2011.tb00060.x

Edwards, D. (2014). *Green Dot College Strategy: Curriculum Manual.* Alteristic.

Fachini, A., Aliane, P. P., Martinez, E. Z., & Furtado, E. F. (2012). Efficacy of brief alcohol screening intervention for college students (BASICS): A meta-analysis of randomized controlled trials. *Substance Abuse Treatment, Prevention, and Policy*, *7*(1), 40. https://doi.org/10.1186/1747-597X-7-40

Falcon, A., Halstead, V. A., & McCabe, B. E. (2021). College students' experiences with substance use at electronic music events: A qualitative study. *Journal of American College Health*, 1–9. https://doi.org/10.1080/07448481.2021.1904953

Fisher, B., Cullen, F.T., & Turner, M.G. (2000). *The sexual victimization of college women*. US Department of Justice, Office of Justice Programs, National Institute of Justice.

Foubert, J.D. (2005). The Men's Program: A Peer Education Guide to Rape Prevention, Third Edition (1st ed.). Routledge. https://doi-org.spot.lib.auburn.edu/10.4324/9780203956601

Graham, J. W. (2009). Missing data analysis: Making it work in the real world. *Annual review of psychology*, *60*, 549-576. https://doi.org/10.1146/annurev.psych.58.110405.085530

Giancola, P. R. (2002). Alcohol-related aggression during the college years: theories, risk factors and policy implications. *Journal of Studies on Alcohol, supplement*, (14), 129-139. https://doi.org/10.15288/jsas.2002.s14.129

Hingson, R., Zha, W., & Smyth, D. (2017). Magnitude and trends in heavy episodic drinking, alcohol-impaired driving, and alcohol-related mortality and overdose hospitalizations among emerging adults of college ages 18–24 in the United States, 1998–2014. *Journal of studies on alcohol and drugs*, *78*(4), 540-548. https://doi.org/10.15288/jsad.2017.78.540

Ickes, M. J., Haider, T., & Sharma, M. (2015). Alcohol abuse prevention programs in college students. *Journal of Substance Use*, *20*(3), 208–227. https://doi.org/10.3109/14659891.2013.856480

Jouriles, E. N., Kleinsasser, A., Rosenfield, D., & McDonald, R. (2016). Measuring bystander behavior to prevent sexual violence: Moving beyond self-reports. *Psychology of Violence,* 6(1), 73–81. https://doi.org/10.1037/a0038230

Jouriles, E. N., Krauss, A., Vu, N. L., Banyard, V. L., & McDonald, R. (2018). Bystander programs addressing sexual violence on college campuses: A systematic review and meta-analysis of program outcomes and delivery methods. *Journal of American College Health*, *66*(6), 457–466. https://doi.org/10.1080/07448481.2018.1431906

Katz, J., & Moore, J. (2013). Bystander Education Training for Campus Sexual Assault Prevention: An Initial Meta-Analysis. *Violence and Victims*, *28*(6), 1054–1067. https://doi.org/10.1891/0886-6708.VV-D-12-00113

Kelly, P. J., Kyngdon, F., Ingram, I., Deane, F. P., Baker, A. L., & Osborne, B. A. (2018). The Client Satisfaction Questionnaire-8: Psychometric properties in a cross-sectional survey of people attending residential substance abuse treatment: Client satisfaction in residential treatment. *Drug and Alcohol Review*, *37*(1), 79–86. https://doi.org/10.1111/dar.12522

Krebs, C.P., Lindquist, C.H., Warner, T.D., Fisher, B.S., & Martin, S.L. (2007). The Campus Sexual Assault (CSA) Study. Washington, DC: National Institute of Justice, U.S. Department of Justice.

Larimer, M. E., & Cronce, J. M. (2007). Identification, prevention, and treatment revisited: Individual-focused college drinking prevention strategies 1999–2006. *Addictive Behaviors*, *32*(11), 2439–2468. https://doi.org/10.1016/j.addbeh.2007.05.006

Lanier, C. A., & Elliot, M. N. (1997). A new instrument for the evaluation of a date rape prevention program. *Journal of College Student Development*, 38(6), 673–676.

Lanier, C. A., & Green, B. A. (2006). Principal Component Analysis of the College Date Rape Attitude Survey (CDRAS) An Instrument for the Evaluation of Date Rape Prevention

Programs. *Journal of aggression, maltreatment & trauma*, *13*(2), 79-93. 10.1300/J146v13n02_06

Latané, B., & Darley, J. M. (1970). *The unresponsive bystander: Why doesn't he help?* Appleton-Century-Crofts.

Larsen, D. L., Attkisson, C. C., Hargreaves, W. A., & Nguyen, T. D. (1979). Assessment of client/patient satisfaction: Development of a general scale. *Evaluation and Program Planning*, *2*(3), 197–207. https://doi.org/10.1016/0149-7189(79)90094-6

Leone, R. M., Haikalis, M., Parrott, D. J., & DiLillo, D. (2018). Bystander intervention to prevent sexual violence: The overlooked role of bystander alcohol intoxication. *Psychology of Violence*, *8*(5), 639. https://doi-org.spot.lib.auburn.edu/10.1037/vio0000155

Leone, R. M., & Parrott, D. J. (2019). Acute alcohol intoxication inhibits bystander intervention behavior for sexual aggression among men with high intent to help. *Alcoholism: Clinical and Experimental Research*, 43(1), 170–179. https://doiorg.spot.lib.auburn.edu/10.1111/acer.13920

Lewis, M. A., Neighbors, C., Oster-Aaland, L., Kirkeby, B. S., & Larimer, M. E. (2007). Indicated prevention for incoming freshmen: Personalized normative feedback and high-risk drinking. *Addictive Behaviors*, *32*(11), 2495–2508. https://doi.org/10.1016/j.addbeh.2007.06.019

Lipari, R. N. (2018). *Key Substance Use and Mental Health Indicators in the United States: Results from the 2018 National Survey on Drug Use and Health*. 82.

Marlatt, G. A., Baer, J. S., Kivlahan, D. R., Dimeff, L. A., Larimer, M. E., Quigley, L. A., Williams, E. (1998). Screening and brief intervention for high-risk college student drinkers: Results from a 2-year follow-up assessment. *Journal of Consulting and Clinical Psychology*, *66*, 604-615. https://doi.org/10.1037/0022-006X.66.4.604

Marlatt, G. A., Larimer, M. E., Baer, J. S., & Quigley, L. A. (1993). Harm reduction for alcohol problems: Moving beyond the controlled drinking controversy. *Behavior Therapy*, *24*(4), 461–503. https://doi.org/10.1016/S0005-7894(05)80314-4

McCabe, B.E., Falcon, A., Halstead, V.A., & WooChing, C. (under review). Substance use of college students during spring break and electronic music events.

McMahon, S., & Banyard, V. L. (2012). When Can I help? A Conceptual Framework for the Prevention of Sexual Violence Through Bystander Intervention. *Trauma, Violence, & Abuse*, *13*(1), 3–14. https://doi.org/10.1177/1524838011426015

Melkonian, A. J., Ham, L. S., Wiersma-Mosley, J. D., Jackson, K. K., Mobley, A. M., Jozkowski, K. N., Willis, M., & Bridges, A. J. (2020). Alcohol intoxication impairs the bystander intervention process in a hypothetical sexual assault: A field investigation. *Psychology of Violence, 10*(6), 657–666. https://doi-org.spot.lib.auburn.edu/10.1037/vio0000283

Miller, W. R., & Rose, G. S. (2009). Toward a theory of motivational interviewing. *American Psychologist*, *64*(6), 527–537. https://doi.org/10.1037/a0016830

Miller, W. R., & Rollnick, S. (2002). Motivational interviewing: Preparing people for change (2nd ed.). New York: Guilford Press.

Mujal, G. N., Taylor, M. E., Fry, J. L., Gochez-Kerr, T. H., & Weaver, N. L. (2021). A Systematic Review of Bystander Interventions for the Prevention of Sexual Violence. *Trauma, Violence, & Abuse*, *22*(2), 381–396. https://doi.org/10.1177/1524838019849587

Murphy, J. G., Duchnick, J. J., Vuchinich, R. E., Davison, J. W., Karg, R. S., Olson, A. M., Smith, A. F., & Coffey, T. T. (2001). Relative efficacy of a brief motivational intervention for college student drinkers. Psychology of Addictive Behaviors, 15(4), 373–379. https://doi-org.spot.lib.auburn.edu/10.1037/0893-164X.15.4.373

National Center for Injury Prevention and Control (2016)

National Institute on Alcohol Abuse and Alcoholism [NIAAA]. (2019). Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism. https://www.collegedrinkingprevention.gov/

National Institute on Alcohol Abuse and Alcoholism [NIAAA] *CollegeAIM*. Retrieved from: https://www.collegedrinkingprevention.gov/CollegeAIM/Introduction/default.aspx

National Institute of Alcohol Abuse and Alcoholism (NIAAA), (2021). *College Drinking Fact Sheet.* Retreived from: https://www.collegedrinkingprevention.gov/media/collegedrinkingFactSheet2021.pdf

Neighbors, C., Larimer, M. E., & Lewis, M. A. (2004). Targeting misperceptions of descriptive drinking norms: Efficacy of a computer-delivered personalized normative feedback intervention. Journal of Consulting and Clinical Psychology, 72, 434–447. https://doi.org/10.1037/0022-006X.72.3.434

Neighbors, C., Larimer, M. E., Lostutter, T. W., & Woods, B. A. (2006). Harm reduction and individually focused alcohol prevention. *International Journal of Drug Policy*, *17*(4), 304–309. https://doi.org/10.1016/j.drugpo.2006.05.004

Orchowski, L. M., Barnett, N. P., Berkowitz, A., Borsari, B., Oesterle, D., & Zlotnick, C. (2018). Sexual Assault Prevention for Heavy Drinking College Men: Development and Feasibility of an Integrated Approach. *Violence Against Women*, *24*(11), 1369–1396. https://doi.org/10.1177/1077801218787928

Planty, M. (2002). *Third-party involvement in violent crime, 1993-99*. Washington, DC: US Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.

Pico-Alfonso, M. A., Garcia-Linares, M. I., Celda-Navarro, N., Blasco-Ros, C., Echeburúa, E., & Martinez, M. (2006). The Impact of Physical, Psychological, and Sexual Intimate Male Partner Violence on Women's Mental Health: Depressive Symptoms, Posttraumatic Stress Disorder, State Anxiety, and Suicide. *Journal of Women's Health,* 15(5), 599–611. https://doi-org.spot.lib.auburn.edu/10.1089/jwh.2006.15.599

Pugh, B., Ningard, H., Ven, T. V., & Butler, L. (2016). Victim Ambiguity: Bystander Intervention and Sexual Assault in the College Drinking Scene. *Deviant Behavior*, *37*(4), 401–418. https://doi.org/10.1080/01639625.2015.1026777

Rogers, C. R. (1946). Significant aspects of client-centered therapy. *American Psychologist*, *1*(10), 415-422.

Schewe, P. A., & O'Donohue, W. (1996). Rape prevention with high-risk males: Short-term outcome of two interventions. *Archives of Sexual Behavior*, *25*(5), 455–471. https://doi.org/10.1007/BF02437542

Schneider Institute for Health Policy, Brandeis University for the Robert Wood Johnson Foundation (2001). Substance abuse: *The nation's number one health problem: Key indicators for policy update.* Princeton, NJ: The Robert Wood Johnson

Scott-Sheldon, L., Carey, K., Elliott, J., Garey, L., & Carey, M. (2014). Efficacy of alcohol interventions for first-year college students: A meta-analytic review of randomized controlled trials. *Journal of Consulting and Clinical Psychology, 82(*2), 177-188. doi: 10.1037/a0035192

Seigers, D. K. L., & Carey, K. B. (2010). Screening and Brief Interventions for Alcohol Use in College Health Centers: A Review. *Journal of American College Health*, *59*(3), 151–158. https://doi.org/10.1080/07448481.2010.502199

Sobell, L. C., & Sobell, M. B. (1992). Timeline follow-back: A technique for assessing self-reported alcohol consumption. In *Measuring alcohol consumption: Psychosocial and biochemical methods* (pp. 41-72). Totowa, NJ: Humana Press.

Steiner, J., Woodall, W. G., Yeagley, J. A., & Venegas, M. (2005). The E-Chug: A randomized, controlled study of a web-based binge drinking intervention with college freshman. Society for Prevention Research 13th Annual Meeting May 25–27, 2005 Washington, DC.

Substance Abuse and Mental Health Services Administration [SAMHSA]. (2019). Key substance use and mental health indicators in the United States: Results from the 2018 National Survey on Drug Use and Health (HHS Publication No. PEP19-5068, NSDUH Series H-54). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from https://www.samhsa.gov/data/

Terlecki, M. A., Buckner, J. D., Larimer, M. E., & Copeland, A. L. (2015). Randomized controlled trial of brief alcohol screening and intervention for college students for heavy-drinking mandated

and volunteer undergraduates: 12-month outcomes. *Psychology of Addictive Behaviors, 29* (1), 2–16. https://doi.org/10.1037/adb0000056

Ullman, S. E., Karabatsos, G., & Koss, M. P. (1999). Alcohol and Sexual Assault in a National Sample of College Women. *Journal of Interpersonal Violence*, *14*(6), 603–625. https://doi.org/10.1177/088626099014006003

U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. (2009). Sexual violence: Risk and protective factors. Retrieved from http://www.cdc.gov/.ViolencePrevention/sexualviolence/riskprotectivefactors.html

Violence Intervention and Prevention Center (2016)

Vladutiu, C. J., Martin, S. L., & Macy, R. J. (2011). College-or university-based sexual assault prevention programs: A review of program outcomes, characteristics, and recommendations. *Trauma, Violence, & Abuse*, *12*(2), 67-86. https://doi.org/10.1177/1524838010390708

Walters, S. T., Vader, A. M., Harris, T. R., Field, C. A., & Jouriles, E. N. (2009). Dismantling motivational interviewing and feedback for college drinkers: A randomized clinical trial. *Journal of Consulting and Clinical Psychology*, *77*(1), 64–73. https://doi-org.spot.lib.auburn.edu/10.1037/a0014472

Walters, S. T., Vader, A. M., & Harris, T. R. (2007). A controlled trial of web-based feedback for heavy drinking college students. *Prevention Science*, *8*(1), 83-88. DOI 10.1007/s11121-006-0059-9.

White House Task Force to Protect Students From Sexual Assault (U.S.),. (2014). Not alone: The first report of the White House Task Force to Protect Students from Sexual Assault.

Wilhite, E. R., Mallard, T., & Fromme, K. (2018). A longitudinal event-level investigation of alcohol intoxication, alcohol-related blackouts, childhood sexual abuse, and sexual victimization among college students. *Psychology of Addictive Behaviors*, *32*(3), 289–300. https://doi.org/10.1037/adb0000353

Yalom, I., & Leszcz, M. (2005). *The theory and practice of group psychotherapy* (5th ed.). New York, NY: Basic.

Zinzow, H. M., Thompson, M. P., & Goree, J. (2018). Evaluation of a College Sexual Violence Program Focused on Education, Bystander Intervention, and Alcohol Risk Reduction. *College Student Affairs Journal*, *36*(2), 110-125. DOI:10.1353/csj.2018.0019

Table 1

*Student Characteristics (*N *= 40)*

Variable	Characteristic	*n*	%
Gender			
	Men	8	20
	Women	32	80
Year in School			
	Lower Division	12	30
	Upper Division	28	70
Race	European American/White	34	85
	Biracial	2	5
	African American/Black	2	5
	Hispanic/Latinx	1	3
	Other	1	3

Note. Lower Division is first and second year students. Upper Division is third year or above.

Table 2

Changes from Pre-Treatment to Follow-up in Outcome Variables.

	Pre-Treatment (n = 39)		Post-Treatment (n = 39)		Follow-up (n = 39)				
Outcome	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*	η2
Knowledge about PBPV (SVK)	39%	16%	61%	16%	52%	19%	21.45	<.001	.36
Attitudes toward Rape (CDRAS)	85.26	10.5	86.62	9.54	87.59	9.27	0.80	.450	.02
Bystander Intentions (BAB**)**	194.82	26.68	211.72	25.33	203.00	28.32	4.68	.010	.11
Perceived Drinking Norms (DNRF)	13.77	8.03	8.79	4.71	10.18	5.66	6.07	<.001	.14
Alcohol Knowledge (SAQ)	53%	17%	73%	18%	72%	19%	18.22	<.001	.32
Alcohol Consumption (DDQ)	8.72	4.80	-	-	6.23	4.10	4.67	.040	.11

Note. PBPV is Power-Based Personal Violence. Alcohol Consumption was # of drinks in a typical week. One participant had data only at baseline and was removed from analyses.

Table 3

Gender Interaction on Bystander Intentions over Time.

	Pre-Treatment (n = 39)		Post-Treatment (n = 39)		Follow-up (n = 39)				
Outcome	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*	η2
Bystander Intentions (BAB**)**							0.33	.045	.086
Women	195.97	26.17	212.06	24.32	206.68	26.62			
Men	190.38	30.02	210.38	25.33	188.75	32.02			

Figure 1

Student Engagement

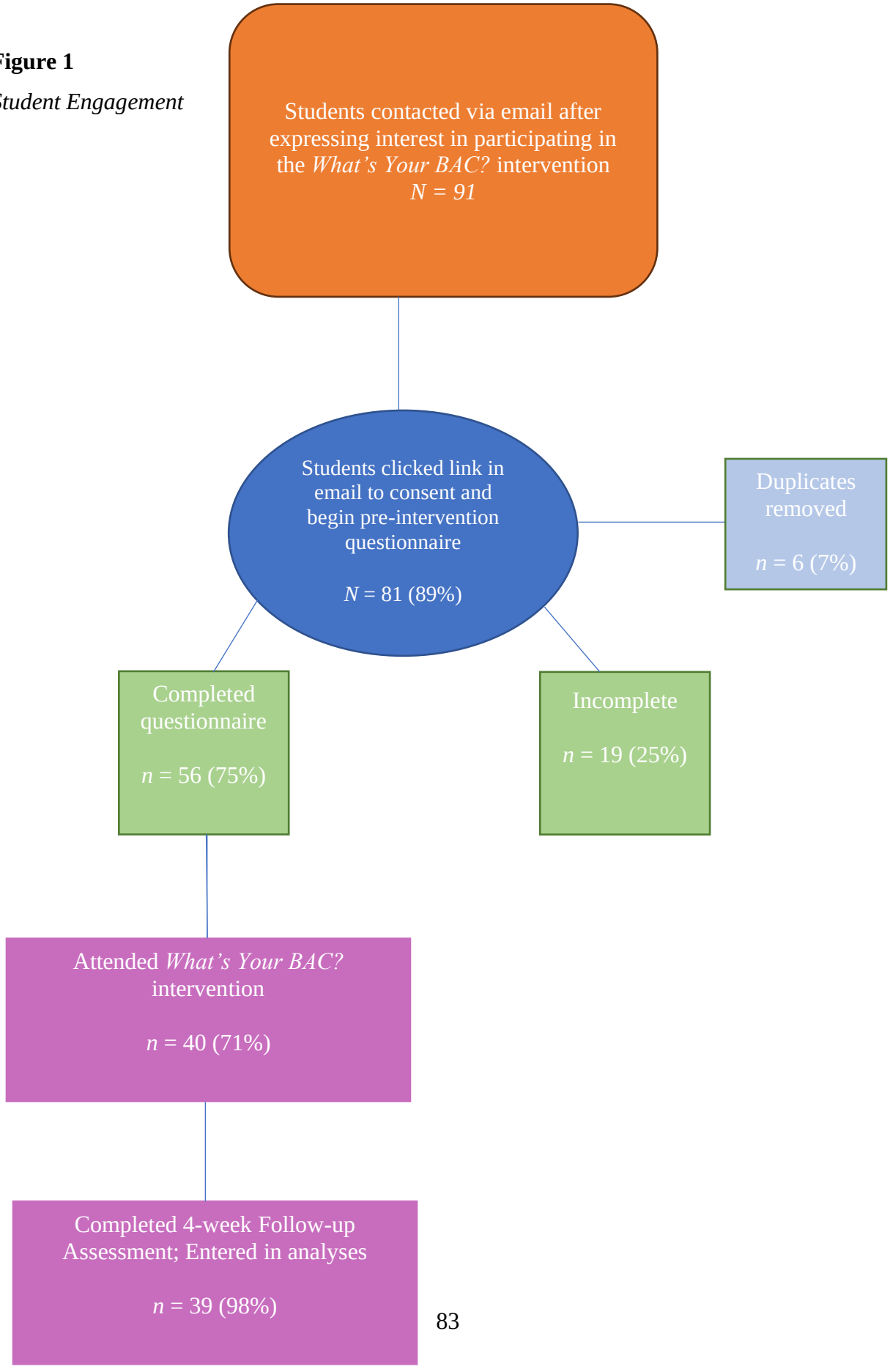
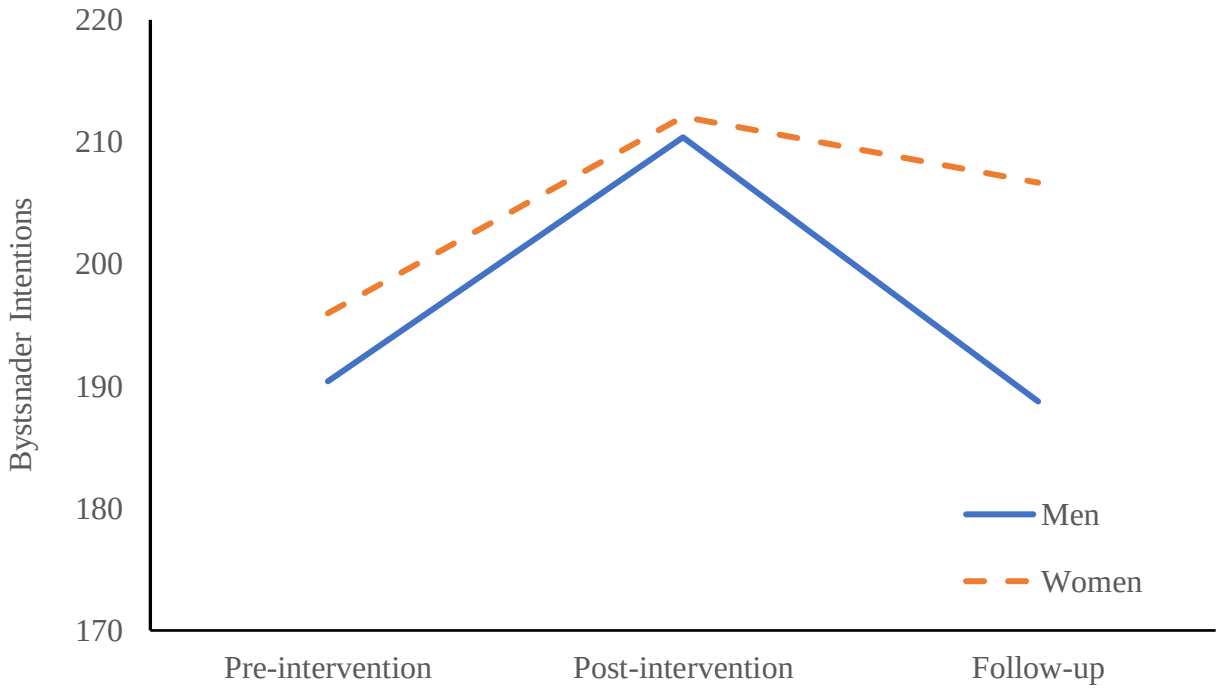


Figure 2

Bystander Intentions across Time for Men and Women.



Appendices are available upon request.