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# Sexual Victimization Among College Females: Severity and Substance Use

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SEXUAL VICTIMIZATION AMONG COLLEGE FEMALES: SEVERITY AND  
SUBSTANCE USE

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A Thesis  
Presented to the  
Faculty of  
California State University,  
San Bernardino

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science  
in  
Psychology:  
Clinical Counseling

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by  
Krystal Anne Zielen  
June 2017

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June 2017

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## ABSTRACT

Numerous consequences of sexual assault have been identified, including psychological consequences such as posttraumatic stress disorder (PTSD) and health-risk behaviors such as substance misuse. Previous research has indicated that survivors of sexual assault may engage in substance misuse (i.e. alcohol and other illicit and prescription drug use) in attempt to suppress negative thoughts, memories, and flashbacks of the assault. The present study seeks to expand on and examine health-risk behaviors among undergraduate college women after the experience of sexual assault. Although many researchers have focused on the use of alcohol following sexual assault, less have studied non-medical use of prescription drugs (NMUPD) as an alternative method of maladaptive coping. NMUPD has recently been identified as the fastest rising recreational substance among college populations. With NMUPD becoming a norm among college students in recreational settings, exploring NMUPD for alternative uses seems like the next logical step in research. This study views sexual assault on a continuum starting from unwanted sexual contact and ending in completed rape. This study aims to bridge the gap in research by attempting to connect the risky behavior of NMUPD to coping with any experience on the sexual assault continuum among college undergraduate women. Participants with and without a history of sexual assault were recruited for the present study. Participants completed a measure of sexual assault history and severity, along with questionnaires assessing current alcohol, marijuana, and NMUPD use

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# CHAPTER ONE

## INTRODUCTION

### Sexual Victimization Overview

Sexual assault has become a serious public health concern in the United States. These concerns are predominantly troubling for women. Findings from the National Sexual Violence Resource Center (2016) and the National Intimate Partner and Sexual Violence Survey (2011) report that one in five women will be raped at some point in their lifetime, and approximately half of all women will experience some form of sexual victimization other than completed rape (National Sexual Violence Resource Center, 2016; Black, Breiding, Smith, Walters, Merrick, Chen & Stevens, 2011). College women, in particular, are at an increased risk for sexual assault. Fisher, Cullen and Turner (2000) estimated that 20-25% of undergraduate college women will experience attempted or completed rape at least once during their academic career. Accordingly risk of sexual assault is high on college campuses and more recent studies suggest increasing prevalence. For example, recent studies have shown that approximately 50% of women in college report experiencing some form of sexual assault (Sutton & Simons, 2014). There are various forms of sexual victimization, which include unwanted sexual contact, sexual exploitation, sexual coercion, attempted rape, and completed rape. For this study, we will refer to

sexual assault as any experience on the continuum from unwanted sexual contact to completed rape.

The high rate of victimization has engendered researchers to put forth extensive resources toward exploring specific behaviors that put women at greater risk, as well as the physical and psychological consequences that commonly follow sexual assault trauma. Sexual assault has been extensively researched as one of the most severe types of trauma, resulting in multiple negative, long-term consequences (Campbell, Dworkin, & Cabral, 2009). Following sexual assault, survivors commonly undergo various psychological consequences such as posttraumatic stress (PTSD), depression, and other anxiety disorders (Gidycz, Orchowski, King, & Rich, 2008; Campbell, Dworkin & Cabral, 2009; Black et al., 2011). The experience of negative psychological consequences could be a result of avoidance strategies employed by survivors following sexual assault. Survivors often engage in maladaptive coping strategies that inadvertently contribute to or worsen symptoms of depression, anxiety and PTSD. These strategies often include cognitive avoidance (e.g., denial, self-distraction, self-blame, thought stopping, thought blocking) and behavioral avoidance (e.g., social withdrawal, isolation, behavioral disengagement; (Ullman, Peter-Hagene, & Relyea, 2014). Attempting to avoid assault-related thoughts, places, or people is likely to inadvertently result increased intensity intrusive thoughts and worry, leading to more psychological distress. Behavioral avoidance may lead to withdrawal from social support

systems and reduced likelihood of emotional expression after trauma (Ullman et al., 2014). Gutner, Rizvi, Monson & Resick (2006) conducted a study that looked at cognitive and behavioral avoidance among sexual assault survivors and demonstrated worse PTSD symptomology among those who engaged in maladaptive coping strategies such as avoidance.

In addition to psychological consequences, there is an increased probability of engaging in health-risk behaviors, such as drug and alcohol use (Gidycz et al., 2008). Sexual assault survivors report increased prevalence of alcohol and other substance use compared to individuals who report no sexual assault history (Burnam et al., 1988; Kilpatrick et al., 2000; Kilpatrick et al., 2007; Kilpatrick et al., 2003; Polusny and Follette, 1995; Rheingold et al., 2004). Research suggests that survivors engage in substance and alcohol use after a traumatic event to cope with distress (Khantzian, 1985; Saladin, Brady, Dansky, & Kilpatrick, 1995; Ullman, 2016; Ullman et al., 2013). Accordingly, survivors may engage in problematic drinking or substance misuse to assist in cognitive and emotional avoidance. In addition, among college populations in particular, socialization often includes alcohol use, making alcohol use more normative when social or emotional support is not available (Stappenbeck, Hassija, Zimmerman, & Kaysen 2014). Therefore, college women are more likely to engage in alcohol use after sexual assault trauma, merely due to the prevalence of alcohol in a college environment. In addition to alcohol, previous research has explored marijuana use as another common health-risk behavior often used as a

coping strategy after sexual assault trauma. More recent research has begun to identify a link between marijuana use and trauma exposure (Bonn-Miller, Vujanovic, Bernstein, & Zvolensky 2007). Research regarding marijuana use in general has shown that although the mood effects have not been fully explicated, users generally believe that marijuana assists in regulating emotion (Reilly, Didcott, Swift & Hall, 1998). Therefore, there is a general perception among active users that the drug will reduce emotional distress. Research has suggested that individuals who have been exposed to marijuana are more likely to engage in marijuana use to cope after experiencing trauma or PTSD symptomology after a sexual assault (Bonn-Miller et al., 2007).

Although health-risk behaviors, such as marijuana and alcohol misuse, have been identified as health-risk consequences of sexual assault, they have also been identified as contributors to the occurrence of sexual assault. However, identifying the directionality of those behaviors is less clear (Gidycz et al., 2008). Kilpatrick, Acierno, Resnick, Saunders, and Best (1997) completed a longitudinal study that explored the directionality of health-risk behaviors in relation to sexual assault. Highly structured telephone interviews were implemented and designed to gather information such as demographics, alcohol and drug abuse, and history of rape and physical assault. These phone interviews were conducted at two time periods, spanning two years apart. The study found evidence that suggested a reciprocal relationship between substance and alcohol use and sexual victimization (Kilpatrick et al., 1997). Accordingly, health-risk behaviors may

contribute to the occurrence of victimization as well as be a potential consequence of sexual assault, creating a cycle of health risk behaviors and revictimization. For example, health-risk behaviors such as marijuana and alcohol use may contribute to the occurrence of sexual assault by lowering inhibitions, decreasing self-awareness and safety, and decreasing bodily autonomy. On the other hand, those same health-risk behaviors may also be used as maladaptive coping techniques after the experience of sexual assault, leading to increased risk of revictimization, hence, a reciprocal relationship.

Discovery of this cycle is important to our current research as we aim to expand exploring this cycle by including the health-risk behavior of Non-Medical Use of Prescription Drugs (NMUPD). NMUPD has been shown to be very popular among college students for recreational use; however, there is a paucity of research exploring NMUPD as a coping strategy among college sexual assault populations. Due to the fact that NMUPD has been shown to be prevalent among young adults (Benotsch, Koester, Luckman, Martin, & Cejka, 2011), exploring the use of this variant of substance use would be the next logical step in research. This study aims to bridge the gap in research regarding NMUPD as a coping strategy among college women who experience trauma-related distress following sexual assault. Specifically, this study will examine benzodiazepines, opioids, tranquilizers and/or barbiturates, under the umbrella term of NMUPD in addition to examining alcohol and marijuana use among participants who report a history of sexual assault.

## Substance Use

In effort to demonstrate a need for researching NMUPD, a review of past research regarding alcohol and marijuana use following a trauma is necessary. A number of studies have routinely associated substance misuse with sexual assault (e.g., Turchik & Hassija, 2014; Resnick et al., 2012; Ullman, 2016; Ullman, 2003; Gidycz et al., 2008; Kilpatrick et al., 1997). In an attempt to elucidate the association between substance misuse and sexual assault, Ullman Relyea, Peter-Hagene and Vasquez. (2013) conducted a mail-in survey, which tested a mediation model that aimed to explain the association of exposure to sexual trauma and substance use. Mail-in surveys were collected from a sample of 1,863 female sexual assault survivors ranging from 18 to 71 years old. Indeed, results showed that exposure to trauma was correlated with substance use. The relationship between trauma exposure and substance use was further explored and consequently linked PTSD as a mediator between trauma exposure and substance use. However, this relationship was shown to be more prevalent among those who experienced interpersonal trauma compared to non-interpersonal trauma. Additionally, participants who reported a greater degree of trauma exposure were more likely to engage in substance use than those with a lesser degree of trauma. In other words, the perceived severity of the assault may impact survivors' subsequent PTSD symptomology and substance misuse.

Identifying PTSD as a mediator between sexual assault and substance use, has led to research aimed at exploring associations between PTSD

symptomology and substance use. The most characteristic features of PTSD include intrusive trauma-related memories and thoughts and the experience of anxiety in response to trauma-related cues which often result in emotional dysregulation, reduced self-esteem, and impulsivity (Weiss, Tull, & Gratz, 2014). The diagnosis of PTSD is commonly comorbid with substance use diagnoses. In other words, individuals with trauma exposure, such as sexual assault may attempt to cope with the trauma-related distress by engaging in problematic alcohol and drug use while also experiencing PTSD symptomology. For example, Kaysen and colleagues (2014) conducted a study that attempted to link specific symptoms of PTSD to daily substance misuse (problematic drinking) among college undergraduate women. After an initial screening that assessed for trauma exposure, sexual assault, childhood sexual assault, and PTSD symptomology, the women then completed a daily log over the course over a four-week period. The daily log was designed to assess for daily experience of alcohol cravings, alcohol consumption, and PTSD symptomology. The results demonstrated that on days in which women experienced higher PTSD symptoms (intrusive thoughts and behavioral avoidance symptoms), they experienced stronger alcohol cravings and were more likely to consume alcohol on those days, suggesting increased PTSD symptomology, increases likelihood of alcohol and substance use or misuse. This study further demonstrates a strong association between trauma, PTSD, and alcohol and substance use.. A number of studies have suggested high comorbidity between PTSD and alcohol and substance use



(Khantzian, 1985; Saladin, Brady, Dansky, & Kilpatrick, 1995; Ullman, 2016).

One explanation for the association between PTSD and substance use is the self-medication hypothesis.

The self-medication hypothesis suggests that substances (i.e., alcohol, marijuana, and other illicit substances) are often used to aid in regulating or numbing psychological distress after trauma (Khantzian, 1985).. For example, a woman who is unable to regulate her emotions may be more impulsive and have a lowered self-esteem, which increases the likelihood that she might engage in more risky health behaviors, such as alcohol or other illicit substance use (Auerbach & Gardiner, 2012). For alcohol use in particular, the self-medication hypothesis states, a woman who has been sexually assaulted may attempt to cope with her trauma experience by engaging in problematic drinking to avoid thoughts and memories of the assault (Ullman, 2003).

Further showing the relevance of the self-medication hypothesis, Stappenbeck, Bedard-Gilligan, Lee and Kaysen (2013) conducted a study that examined the differences in problematic drinking among women with a history of trauma and PTSD symptomology compared to women with a history of trauma but no PTSD symptomology. Their study included 827 undergraduate college women who reported drinking four drinks or more on occasion at least two times in the past month. The results demonstrated that women who experienced PTSD symptomology reported more than two times the amount of alcohol use than the women who did not experience PTSD symptomology (Stappenbeck, et al.,

2013). Although ineffective, the use of alcohol and other illicit substances is often used to self-soothe and cope with trauma exposure (Khantzian, 1985; Ullman, 2016; Saladin et al., 1995).

The self-medication hypothesis has also been explored on a daily level. Stappenbeck, Hassija, Zimmerman, and Kaysen (2014) conducted a study that explored the daily functioning of self-medicating after sexual assault related distress. They hypothesized that a woman's engagement in either adaptive coping or maladaptive coping such as self-medicating is likely to vary on a day-to-day basis. Around 730 undergraduate women completed a self-report survey that revealed history of sexual assault, PTSD symptoms, and drinking habits within the past month. The results of this survey suggested that sexual assault related distress varies on a day-to-day basis and that distress influences self-medicating behaviors such as alcohol consumption. The results were more applicable for women who had low emotional regulation than women who were able to emotionally regulate (Stappenbeck, Hassija, Zimmerman & Kaysen, 2015). The findings of this study suggests that college women who experience sexual assault related distress and have low emotional regulation may also engage in greater substance use on day-to-day basis.

Correspondingly, sexual assault survivors who lack effective emotion regulation skills may experience severe psychological distress after victimization, and resort to substance use as a primary means of coping (Deliramich & Gray, 2008; Messman-Moore, Ward, & Zerubavel, 2013). The likelihood of a woman

developing severe distress and seeking out substances to cope with psychological distress may depend on her level of emotional regulation as well as the severity of her assault. An assault that is particularly severe in nature may elicit more psychological distress. Turchik & Hassija (2014) conducted a study that attempted to compare severity levels of different sexual assault experiences to greater risk of engaging in health risk behaviors. Levels of severity were defined as none, sexual contact, sexual coercion, and rape. Their study surveyed 309 college females and found results consistent with their hypothesis. It was found that greater involvement in health risk behaviors were associated with more severe sexual assault experiences such as completed rape (Turchik & Hassija, 2014). Therefore, on the continuum of sexual assault, instances such as completed rape may lead to more severe distress and higher chance of substance use, compared to instances such as unwanted touching. Creating mutually exclusive groups in which sexual assault experiences are categorized based off of severity of aggressiveness of the assault allows for better comparisons when looking at health-risk behaviors postassault. Although the severity of the assault may elicit more negative consequences, less severe instances should not be negated, as less severe consequences that are not attended to may worsen and potentially contribute to a cycle of negative health consequences and re-victimization.

Due to the cyclic nature of problem drinking and sexual assault, revictimization has become another public health concern in the U.S.

Approximately two out of three women who are sexually victimized will eventually experience a repeated incidence of victimization at some point in their lifetime (Classen, Palesh, & Aggarwal, 2005). The experience of repeated trauma may result in a severe experience of psychological consequences (e.g. PTSD symptomology and depression) and increased rates of substance misuse as a means to cope. Koverola, Proulx, Battle, & Hanna (1996) conducted a study that examined the psychological consequence of PTSD after sexual victimization, revictimization and nonvictimization. Results of their study revealed that women who were exposed to repeated sexual trauma were more likely to report PTSD symptoms when compared to groups who reported a single sexual trauma event (i.e. single event of child sexual assault or single event of adult sexual assault), and those who reported no history of sexual trauma (Koverola, Proulx, Battle, & Hanna, 1996). The results of this study are important and concerning to current and future research as they demonstrate that repeated exposure to sexual trauma and the experience of severe psychological consequences may lead to a higher prevalence of substance use among female sexual assault survivors in college. Given that research has already pointed out that socialization in college often includes alcohol and other drugs (Stappenbeck et al., 2014), college students in particular, are at higher risk of engaging in health-risk behaviors such as alcohol and other drugs when attempting to cope with trauma exposure. In addition to alcohol and marijuana, this study aims to include NMUPD as a potential health-risk consequence of sexual assault trauma.

## Non-Medical Use of Prescription Drugs

Non-medically prescribed drugs have become one of the most popular recreational drugs in recent years (Benotsch et al., 2011). The increasing phenomenon of recreational non-medical prescription drug use has sparked research to explore prevalence rates among college populations in particular. Research has shown increasingly drastic popularity on college campuses, making non-medical use of prescription drugs (NMUPD) a normative recreational drug. Although current research has explored NMUPD as a recreational health-risk behavior, there is limited research on NMUPD as coping behavior after trauma. Copious research has demonstrated strong associations between sexual assault, PTSD, problematic drinking, and other substance use, however few studies have explored the link between sexual assault and prescription drug use (Weiss et al., 2014; Ullman, 2016; Ullman, Relyea, Peter-Hagene, & Vasquez, 2013). Growing research exploring prescription drugs as an additional health-risk behavior following trauma, such as sexual assault, may be the next logical step considering the recent influx of popularity of such substances. Prescription drugs such as opioids, tranquilizers or barbiturates are often medically prescribed as “painkillers” by general physicians (Minen et al., 2015). In addition to “painkillers,” physicians often prescribe benzodiazepines’ and tranquilizers as “relaxers” (Olfson, King, & Schoenbaum, 2015; Chambers, White, & Lindquist, 1983). With the use of these drugs without a prescription becoming one of the most popular forms of illicit drug use among college students (Benotsch et al., 2011),

investigation of their association to sexual assault and PTSD is warranted.

Previous research on NMUPD has indicated that recreational use of such drugs has drastically increased over the past two decades (Benotsch et al., 2011).

NMUPD has become common among college students to the point that it is now considered a “norm” (McCauley et al., 2011). Research has suggested that it has become a norm due to the ease of accessibility to different types and classes of non-medical prescription drugs (McCauley et al., 2011). For instance, college students often share their prescription medications with other students, making an array of prescription drugs available to the majority (McCauley et al., 2011). Due to problematic NMUPD among college students, it can be speculated that those same habits might be used when attempting to cope with distress or trauma including sexual victimization.

Sturza and Campbell (2005) conducted an exploratory study, which demonstrated that female rape survivors ages 25 through 44 were likely to use prescription drugs as a means to cope. This qualitative study interviewed 102 sexual assault survivors, and of those who participated, 44% obtained and used prescription drugs post-assault without disclosing their assault. Of that 44%, only 50% of those women reported obtaining prescription medications legally from their physicians. These women reported seeking out prescription drugs to help “take the edge off.” Many of these adult women indicated that it was easier to go to their primary physician for a prescription than a psychiatrist due to their physician not asking specific questions regarding the cause of their symptoms,

only what current symptoms were occurring (Sturza & Campbell, 2005). This behavior may be prevalent among college students as well. For example, college students who have experienced sexual assault may visit their university health center with the expectation that they will not be questioned about the cause of their symptoms. Alternatively, a college student may instead choose to seek out prescription drugs from non-medical persons such as friends, classmates, or peers in social settings. A young college woman seeking prescription drugs in a social setting may provoke even less questioning compared to a visit at her doctor's office or her university's health center.

To date, only one study has examined NMUPD as a coping strategy following sexual assault. McCauley et al (2011) conducted a study among 2000 college women. The sample was obtained through purchase of information from who the American Student List (ASL). The ASL includes approximately 6 million women who are attending 1000 different colleges and universities across the U.S. The final sample included women from 253 different schools from 47 different states. The study explored sexual assault characterized by penetration (i.e. rape). This study attempted to link NMUPD to mental illness (i.e., PTSD and depression), other substance use (i.e., alcohol and marijuana use), and rape history (i.e., penetration to victim's mouth, vagina, or rectum without consent). The women were interviewed through a computer-assisted telephone interviewing (CATI) system designed to reduce error in data collection. NMUPD was assessed by the following question; "Doctors sometimes prescribe medicine

to calm people down or to help them to relax their muscles, to help people sleep, deal with pain, or lose weight. Besides the medical uses, people sometimes take these pills on their own or non-medically. By non-medically we mean from a source other than your own prescription, beyond the amount you were told to take, or some reason other than prescribed.” Then they were then asked about non-medical use of various prescription drugs in the past 12 months such as, tranquilizers (e.g., Valium), sedatives (e.g., Ambien), stimulants (e.g., Ritalin), steroids, and pain medicines (e.g., Percodan). Women who reported at least one instance of non-medical use in the past 12 months met criteria. Results demonstrated an association between penetration rape and an increased risk of NMUPD (McCauley et al., 2011). Therefore, the experience of rape has a positive association with the risk of engaging in ineffective self-medicating strategies and experiencing negative mental health outcomes. The experience of these negative mental health outcomes may perpetuate further NMUPD in another cycle-like manner. Although this study had notable strengths, there are also important limitations. The data from this study was cross-sectional, limiting the ability to determine causality. Additionally, the study did not distinguish between classes of prescription drugs (i.e., opioids, benzodiazepines, barbiturates). There may be different motivators or risks associated with different classes of prescription drugs, thereby limiting the true association to self-medicating after trauma (McCauley et al., 2011).



Our current study attempts to build off of previous research and expand the inclusion criteria for sexual assault from sexual assault characterized by penetration only to include the larger spectrum of sexual assault experiences ranging from unwanted sexual contact to completed rape. Expanding the inclusion criteria for sexual assault will provide a broader association between sexual assault experience and NMUPD, leading to more specific prevention tactics and intervention techniques. Further, this current study aims to build on previous research by categorizing classes of prescription drugs in effort to identify motivators associated with different classes of prescription drugs.

### The Present Study

The purpose of this present study is to examine associations between variants of substance use and sexual assault. Previous research has established that alcohol is commonly used as a coping mechanism to avoid thoughts and memories associated with traumatic events such as sexual assault. However, research aimed at exploring NMUPD among college populations, specifically women, is limited. Although, previous research has demonstrated that adult women seek out prescription drugs from their physician, there is limited research on younger women in college. To date, there has only been one study (McCauley et al., 2011) that explored this phenomena among college female survivors of sexual assault in college. For college women, obtaining prescription drugs from peers in social settings rather than seeking out their physician may be more

accessible. The goal of our study was to examine the link between sexual assault history, substance use, and psychological distress. Severity of the sexual assault was coded into three levels (no history of assault, unwanted sexual contact and/or attempted/completed coercion, and attempted/completed rape). We hypothesized that, in addition to alcohol and marijuana use, NMUPD would also be associated with sexual assault history among college women. Specifically, sexual assault severity will be associated with greater use of alcohol, marijuana, and/or non-prescription drugs. Looking at associations between variants of substance use and assault severity will allow us to predict when sexual assault survivors are at a greater risk of engaging in health risk behaviors after sexual assault trauma. Lastly, we predicted that PTSD and/or depressive symptoms will serve as intervening variables between sexual assault severity and substance use (i.e., alcohol, marijuana, and non-medical prescription drug use). In other words, the link between substance use and sexual assault severity will be accounted for by psychological distress.

## CHAPTER TWO

### METHODS

#### Design

The study was conducted with the use of an online survey. There was one quasi-independent variable (Q-IV) with three levels. The Q-IV is the experience of sexual victimization. Each level of sexual victimization is coded as follows; level 1: no history of sexual assault, level 2: unwanted sexual contact experiences, attempted and completed coercion, and level 3: attempted and completed rape. The severity level of the participant's previous victimization was assessed by self-report via the Sexual Experience Survey (SES-SFV; Koss et al., 2007). The dependent variables (DVs) consisted of NMUPD, alcohol and marijuana use, and depression and PTSD symptom severity. Pearson bivariate correlations were computed for sexual assault severity (coded as 1 = no history of assault, 2 = unwanted sexual contact, attempted/completed sexual coercion, and 3 = attempted/completed rape), types of substance use (i.e., alcohol use, marijuana use, and NMUPD), and psychological distress (i.e., depression and PTSD symptom severity). The data was also analyzed using a linear regression analyses.

#### Participants

Based on results of a power analysis, with five predictors, 127 participants were needed to produce an anticipated medium effect sizes ( $f^2 = .15$ ;  $p < .05$ ).

An additional 25 participants were recruited to correct for random responding. Data was collected from 254 undergraduate students, with and without sexual trauma histories, at California State University, San Bernardino (CSUSB). Participants were offered extra credit as an incentive for their participation. Participants who were not female were removed ( $n = 27$ ). Additionally, participants who did not complete the study were removed from the sample, resulting in the removal of 77 participants. The final sample was a total of 150 undergraduate women. Of the remaining 150 participants, the majority (69.3%) of women identified as Hispanic, followed by 30.7% as not Hispanic, 31.3% as White, 6% as Asian, 10.7% as African American, 3.3% as American Indian or Alaskan Native, .7% as Native Hawaiian/Other Pacific Islander, and 34.7% as Other. In regards to current marital status the majority (47.3%) of women reported being single, with 32% reporting being in a committed relationship, 12.7% reporting being married, 6.7% reporting Living with a significant other and 1.3% reporting being Divorced or Widowed. The majority of the sample (71.3%) reported an annual income between \$0-\$14,999, with 20% reporting between \$15,000-\$29,999, and the remaining reporting \$30,000 to over \$100,000. In regards to education, the majority (31.3%) of women were seniors in college, 30.7% were juniors, 12.7% were sophomores, and 25.3% were freshmen (For more detailed demographic information see Table 1). Approval for this investigation was granted by the Institutional review board at the university where the study was conducted. All participants were treated in accordance with the

“Ethical Principles Psychologists and Code of Conduct” (American Psychologist Association, 2010).

## Materials

### Demographics

Participants were asked to complete a brief demographics questionnaire, which assessed age, gender, ethnicity, income, relationship status, and education. .

### Sexual Assault Severity

The Sexual Experiences Survey: Short Form Victimization (SES-SFV; Koss et al., 2007) was used to assess prior experiences of sexual victimization and the severity of that victimization. The SES-SFV is a 10-item self-report survey that is designed to measure sexual victimization. The SES-SFV includes items designed to assess sexual victimization. The items include examples of behavioral descriptions of unwanted sexual behavior (e.g., unwanted sexual touching, completed or attempted sexual intercourse, anal sex, oral sex). Each of the items includes language that describes behavioral descriptions of the following aggressive strategies completed by the perpetrator: (a) verbal pressure, (b) exploitation of the victim’s incapacitated state (e.g., attempted or completed force following alcohol and/or substance use), and (c) coercion (e.g., threat of physical violence). The main elements of the legal definition of rape include force, exploitation of an individual’s incapacitated state, non-consent, and attempted or completed penetration of vaginal or anal orifices (Koss et. al.,

2007). Participants reported how often each behaviorally specific item occurred (0, 1, 2, 3 times) for two different time frames for each tactic. The two time frames are “How many times in the past 12 months” and “How many times since age 14.” The internal consistency of the SES was high ( $\alpha = .74$ ; Koss & Gidycz, 1985). The SES-SFV was scored to include participants with sexual trauma and no sexual trauma on a severity scale (1 “*nonvictim*” to 5 “*rape*”). However, this current study collapsed some of those categories, resulting in a modified severity scale (1: “*nonvictim*,” 2: “*Unwanted sexual contact, attempted/completed coercion*,” and 3: “*attempted/completed rape*”).

#### Alcohol Use

To determine the participant’s use of alcohol to cope, the Alcohol Use Disorders Identification Test (AUDIT; World Health Organization, 1982) was used. The AUDIT is self-report measure used to identify people at risk of alcohol problems. It is comprised of 10 items that assesses alcohol consumption (items 1-3), dependence (items 4-6), and alcohol-related problems (items 7-10) within the last 12 months. Scores range from 0 to 40 in order of increasing severity. The cut-off score of greater than or equal to eight is recommended as an indication of hazardous drinking (Saunders, Aasland, Babor, De La Fuente, & Grant, 1993). In a comparison of the AUDIT to its own revised versions, the AUDIT showed a Chronbach’s alpha of .81, sensitivity of .67, and specificity of .96; and positive predictive value of .75 for the cut-off point of seven/eight (de Meneses-Gaya, Zuardi, Loureiro, & Crippa, 2009). In our sample, the Chronbach’s alpha was .77.

## Non-Medical Use of Prescription Drugs

For determining NMUPD, the researchers altered the AUDIT to aim is questions toward NMUPD. It consisted of a 14-item self-report measure used to screen and identify participants who are at risk of misusing prescription drugs that were not medically prescribed. The measure assessed for consumption, motives, and dependence of three classes of prescription drugs: opioids(e.g., Vicodin, OxyContin, Tylenol 3 with codeine, Percocet, Darvocet, morphine, hydrocodone, oxycodone), benzodiazepines(e.g., Valium, Xanax, Ativan, Klonopin, diazepam, lorazepam), and barbiturates (e.g., Ambien, Halcion, Restoril, temazepam, triazolam). To assess consumption and motives, participants were asked to report how often they had been involved in three described behaviors (e.g., Item 1: How often do you consume benzodiazepines that were not prescribed to you or that were taken at a dose that was not recommended?, Item 2: Which of the following best describes your primary reason or motivation for consuming benzodiazepines that were not prescribed to you or that were taken at a dose that was not recommended?, and Item 3: How many benzodiazepines do you consume on a typical day?). To assess for dependence, participants reported how often they were involved with the following described behavior (i.e., How often during the last year have you found that you were not able to stop consuming prescription pills once you started?).

### Marijuana Use

The Cannabis Use Disorder Identification Test - Revised (CUDIT-R; Adamson et al., 2010) was used to screen and identify participants who engage in marijuana use. The CUDIT-R is a brief self-report instrument consisting of 8 items that reflect the use of cannabis within the past six months. Participants report how often they had been involved in eight described behaviors (e.g., item 1: “How often do you use cannabis?”). Responses range from 0 (never) to 4 (4 times or more per week). Total scores vary from 0 to 32; scores equal or higher than 13 suggest problematic cannabis use. The CUDIT-R has demonstrated strong concurrent reliability when compared to the original CUDIT, with a Cronbach’s alpha of 0.91 (Adamson et al., 2010). The Chronbach’s alpha for our sample was .80.

### Posttraumatic Stress Symptom Severity

To asses severity of PTSD symptoms participants will be asked to fill out the Posttraumatic Stress Disorder Checklist 5 (PCL-5; Weathers, Litz, Keane, Palmieri, Marx, & Schnurr, 2013). The PCL-5 checklist is a 20-item, self-report measure that evaluates the severity of experienced DSM-5 symptoms of PTSD within the past 30 days. The 20 items correspond accordingly to the 20 PTSD symptoms listed in the DSM-5. Respondents indicate how much they have been troubled by each PTSD symptom over the past month, using a 5-point scale ranging from 0 = *not at all* to 4 = *extremely*. Total scores range from 0 to 80, with higher scores indicating more severe PTSD symptomology. A specific cutoff



score for a suggested PTSD diagnosis has not been established, however a recent study attempted to empirically calibrate the PCL-5 to the PCL finding that a cut score of 31 and above would suggest a PTSD diagnosis (Blevins, Weathers, Davis, Witte & Domino, 2016; Bovin et al., 2016). The PCL-5 has demonstrated strong internal consistency with a Cronbach's alpha of .96, good test-retest reliability with a total score of  $r .84.$ , and excellent convergent validity demonstrated by good associations between PCL-5 scores and scores on other measures of PTSD (Bovin et al., 2016). A Chronbach's alpha of .96 was obtained for our sample.

#### Depression Symptom Severity

To assess severity of depression symptoms, participants will be asked to fill out the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). The CES-D is a 20-item self-report measure that evaluates the severity of depression symptomology. It includes items that measure affective symptoms such as depressed mood, cognitive symptoms such as feelings of worthlessness/hopelessness, and somatic symptoms such as loss of appetite. The items are rated using a 4-point Likert scale, which demonstrates how often each of the symptoms have occurred in the past week. (0 = *rarely/less than 1 day*, 1 = *some or a little of the time (1-2 days)*, 2 = *occasionally or a moderate amount of the time (3-4 days)*, and 3 = *most of the time/5-7days*). Four of the items are reverse coded. Scores range from 0 to 60 with a cutoff score of 16 or more. For our sample, we obtained a Chronbach's alpha of .93.

## Procedures

The present study was conducted online via SONA Research Management System and Qualtrics to allow participants to complete the survey in their own chosen environment at any time that is convenient to them. Upon beginning the survey, participants were asked to complete a demographic questionnaire, before moving on to the scales (i.e., SES-SFV, AUDIT, CUDIT-R, NMUPD measure, PCL-5, and CESD). The survey was estimated to take 35-45 minutes to complete. Each participant provided informed consent prior to accessing the survey and received a debriefing statement at the end of their participation.

Table 1. Demographics and other characteristics of the sample

Variable	M(SD)	n(%)	Range
<b><i>Gender</i></b>			
Female		150(100)	
<b><i>Age</i></b>			
	23.09(6.56)	150	18-52
<b><i>Education Status</i></b>			
Freshmen		38(25.3)	
Sophomore		19(12.7)	
Junior		46(30.7)	
Senior		47(31.3)	
<b><i>Student Yearly Income</i></b>			
\$0-\$14,999		107(71.3)	
\$15,000-\$29,999		30(20)	
\$30,000-\$44,999		2(1.3)	
\$45,000-\$59,999		3(2)	
\$60,000-\$74,999		4(2.7)	
Over &100,000		2(1.3)	
<b><i>Marital status</i></b>			
Single		71(47.3)	
In a committed relationship		48(32)	
Living with significant other		10(6.7)	

Married		19(12.7)	
Divorced, Separated, or Widowed		2(1.3)	
<b><i>Ethnic background</i></b>			
Hispanic		104(69.3)	
Not Hispanic or Latino		46(20.7)	
<b><i>Racial background</i></b>			
Caucasian or White		47(31.3)	
Asian (Asian American)		9(6)	
African American		16(10.7)	
American Indian or Alaskan		5(3.3)	
Native		1(0.7)	
Native Hawaiian /other Pacific		52(34.7)	
Island			
Other			
<b><i>Trauma history</i></b>			
Nonvictim		64(42)	
Unwanted Sexual Contact		19(12.7)	
Attempted Coercion		6(4)	
Completed Coercion		3(2)	
Attempted Rape		9(6)	
Completed Rape		49(32.7)	
<b><i>No Assault History (Level 1)</i></b>		64(42.7)	
PTSD Symptom Severity	11.64(14.84)	64	.00-57.00
Depression Symptom Severity	13.25(10.68)	59	.00-42.00
Alcohol Use	2.19(3.29)	64	.00-19.00
Marijuana Use	8.40(1.10)	64	8.00-12.00
Benzodiazepine Use	.00(.00)	64	.00-.00
Opioid Use	.40(1.57)	64	.00-8.00
Barbiturates Use	.00(.00)	64	.00-.00
<b><i>Unwanted sexual contact, attempted/completed sexual coercion (Level 2)</i></b>			
		28(18.7)	
PTSD Symptom Severity	19.64(17.46)	28	.00-59.00
Depression Symptom Severity	18.30(12.57)	27	3.00-47.00
Alcohol Use	2.60(3.50)	28	.00-13.00
Marijuana Use	9.90(4.66)	28	8.00-27.00
Benzodiazepine Use	.25(1.32)	28	.00-7.00
Motive: Because it helps me sleep		1(3.6)	
Opioid Use	.00(.00)	28	.00-.00
Barbiturates Use	.43(1.57)	28	.00-6.00
Motive: Because I am addicted		2(7.1)	
<b><i>Attempted/completed rape (Level 3)</i></b>			
		58(38.7)	
PTSD Symptom Severity	29.70(20.41)	58	.00-76.00

Depression Symptom Severity	19.76(13.39)	54	.00-50.00
Alcohol Use	4.12(4.33)	58	.00-17.00
Marijuana Use	9.50(3.46)	58	8.00-26.00
Benzodiazepine Use	.43(1.87)	58	.00-9.00
Motive: Because it helps me sleep		3(5.2)	
Opioid Use	.43(1.64)	58	.00-8.00
Motive: Because I am addicted		3(5.2)	
Barbiturates Use	.67(2.25)	58	.00-10.00
Motive: Because I am addicted		4(6.9)	
Motive: Because it helps me sleep		1(1.7)	.00-10.00

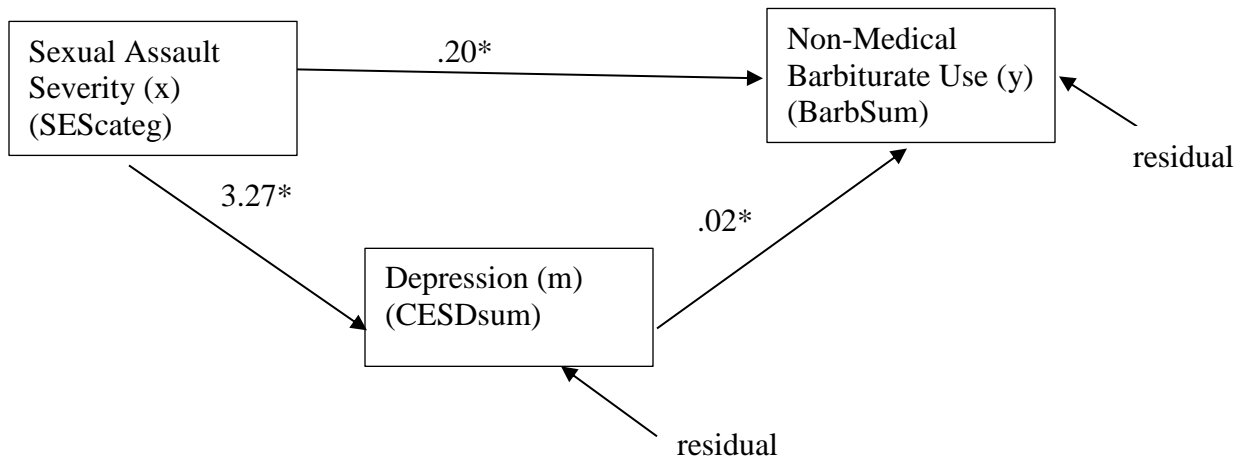


Figure 1. Standardized regression coefficients for the relationship between Sexual Assault Severity and Non-Medical Barbiturate Use mediated by Depression.

Table 2. Bivariate regression correlations between severity of sexual assault, measures of risky health behaviors, and other psychological distress

	Assault Severity	Marijuana Use	Alcohol Use	Benzodiazepine Use	Opioid Use	Barbiturates Use	Depression	PTSD
Assault severity <i>r</i> Sig. (2-tailed)	1							
Marijuana Use <i>r</i> Sig. (2-tailed)	.16*	1						
Alcohol Use <i>r</i> Sig. (2-tailed)	.23**	.21**	1					
Benzodiazepine Use <i>r</i> Sig. (2-tailed)	.15	.16*	.03	1				
Opioid Use <i>r</i> Sig. (2-tailed)	.02	.11	.13	.09	1			
Barbiturates Use <i>r</i>	.19*	.18*	.14	.56**		1		

Sig. (2-tailed)	.02	.03	.10	.00				
Depression <i>r</i>	.24**	.15	.19*	.13			1	
Sig. (2-tailed)	.01	.08	.03	.12				
PTSD <i>r</i>	.42**	.11	.20*	.09				1
Sig. (2-tailed)	.00	.19	.02	.28				
* $p < .05$ ** $p < .001$								

## CHAPTER THREE

### RESULTS

Our sample consisted of 150 college women. Participants were coded to represent level of sexual assault history, with 42.7% ( $n = 64$ ) reporting no history of assault, 18.7% ( $n = 28$ ) reporting experiencing unwanted sexual contact or attempted/completed coercion, and 38.7% ( $n = 58$ ) reporting experiencing attempted or completed rape. The mean score on the PCL for the entire sample was 20.10 ( $SD = 19.35$ ) with a range of 0-76. The mean score on the CES-D was 16.74 ( $SD = 12.45$ ) with a scores ranging from 0-50. For a break down of mean scores on the PCL, CES-D, NMUPD, AUDIT, and CUDIT per level of sexual assault severity, please refer to Table 1.

#### Bivariate Correlations

Bivariate correlations were computed to examine the hypothesis that substance use (i.e., alcohol, marijuana, and types of NMUPD use) was associated with sexual assault severity (see Table 2). Bivariate correlations revealed the following positive associations to sexual assault severity, in rank order. Alcohol use ( $r = .24, p < .05$ ), non-medically prescribed use of barbiturates use ( $r = .19, p < .05$ ), and marijuana use ( $r = .16, p < .05$ ). No other types of substance use were associated with sexual assault severity. With respect to psychological distress and variables of interest, PTSD symptom

severity was significantly associated with sexual assault severity ( $r = .24, p < .05$ ) and alcohol ( $r = .20, p < .05$ ). Depressive symptom severity was also significantly associated with sexual assault severity ( $r = .42, p < .05$ ) and alcohol ( $r = .19, p < .05$ ).

### Mediational Analyses

Mediational analyses were conducted to examine the hypothesis that PTSD and depression symptoms would serve as intervening variables between sexual assault history and substance use. Three mediation analyses were conducted to examine the role of depression and PTSD symptom severity in the association between alcohol, marijuana, barbiturate use and sexual assault severity. The SPSS macro program PROCESS (Hayes, 2012) was used to perform all mediation analyses. Effects for yielded from these mediational analyses were small. Despite comparable effect sizes, only non-medical barbiturate use demonstrated significance.

Specifically, the relationship between sexual assault history and non-medically prescribed barbiturate use was mediated by depression symptom severity. As illustrated in Figure 1, the standardized indirect effect was significant  $b = .06$   $SE = .04$ , 95%  $CI$  [.01 - .21]. These results support the mediational hypothesis. Specifically, 9.34% of variance is explained when depression serves as an intervening variable to severity of sexual assault and non-medical use of barbiturates  $R = .31$ ,  $R^2 = .09$   $F(3,136) = 4.67$ ,  $p < .05$  (See Figure 1).



The mediation analysis conducted examining the intervening role of PTSD symptom severity in the relationship between non-medical barbiturate use  $b = .11$ ,  $SE = .09$ ,  $CI [-.25 - .34]$  and sexual assault severity was non significant. Mediation analyses conducted examining the intervening role of depressive and PTSD symptom severity in the relationship between alcohol and sexual assault severity were non-significant (depression;  $b = .10$ ,  $SE = .13$ ,  $CI [-.10 - .45]$ ; PTSD;  $b = .14$ ,  $SE = .19$ ,  $CI [-.18 - .61]$ ). Further, analyses evaluating the influence of depressive and PTSD symptom severity in the relationship between and marijuana use and sexual assault severity were also non-significant (depression;  $b = .11$ ,  $SE = .10$ ,  $CI [-.02 - .39]$ ; PTSD;  $b = -.05$ ,  $SE = .17$ ,  $CI [-.46 - .26]$ ) use and sexual assault severity were also non-significant.

## CHAPTER FOUR

### DISCUSSION

#### Overview

The goal of the present study was to examine the associations between sexual assault and substance use (e.g., alcohol use, marijuana use, and NMUPD) among college women. Further, we predicted that sexual assault experiences that were more severe in nature would be more likely to be associated with higher rates of substance use (i.e., alcohol use, marijuana use, and NMUPD). This study sought to expand on current research by examining NMUPD as an additional health-risk consequence following sexual assault that is often used as a maladaptive coping strategy.

As predicted, results demonstrated that alcohol was associated with sexual assault severity. Our finding that alcohol use and sexual assault history are linked is corroborated by prior research, which has demonstrated strong associations between these two phenomena (Gidycz et al., 2008; Burnam et al., 1988; Kilpatrick et al., 2000; Kilpatrick et al., 2007; Kilpatrick et al., 2003; Polusny & Follette, 1995; Rheingold et al., 2004). Prior research has examined alcohol use following sexual assault as a means to cope with sexual trauma. Fossos, Kaysen, Neighbors, Lindgren, and Hove (2011) conducted a study that sought to examine alcohol use as a mediator between coerced sexual assault and problem drinking among college students. Given the high prevalence of sexual assault

and problem drinking among college populations, they expected to find that sexual coercion would be positively associated with alcohol use and other negative alcohol-related consequences. Their hypothesis included both male and female students. The study invited 4,103 student to participate and 2,095 student completed the initial screening. After screening for one or more heavy drinking episodes in the past 30 days and a minimum age of 18, the sample consisted of 780 students (57.3%) female. Results revealed that women who report a history of sexual assault are likely to drink and consequently experience alcohol-related problems. However, men who reported sexual assault, did not report psychological distress-related drinking, but still experienced consequent alcohol-related problems. This study suggests that women in particular are more likely to engage in problematic drinking following sexual assault. Although our study did not seek to demonstrate differences in substance use between male and female sexual assault survivors, our results were consistent with the overall association regarding female sexual assault survivors and alcohol use.

Our results also revealed a significant association between sexual assault history and marijuana use. Although research is limited in this area, our results are still consistent with the few studies that focused primarily on marijuana use, which also demonstrate associations with trauma exposure and marijuana use (Reilly, Didcott, Swift, & Hall, 1998; Bonn-Miller et al., 2007). Loflin, Earleywine, and Bonn-Miller (2017) conducted a study that attempted to collect preliminary data on marijuana use after trauma among using a veteran population. The study

was specifically interested making an association between marijuana use PTSD symptomology and trauma. Their primary finding revealed that veterans who reported using cannabis for medicinal purposes related to PTSD symptomology reported increased use and increased PTSD symptoms of arousal compared to veterans who reported recreational cannabis use. Although these results, focus on demonstrating the self-medication hypothesis, they are still valuable to this study, as it also demonstrates overall use among a population that has been exposed to trauma. These results show that individuals with past trauma may be more likely to engage in marijuana use. Due to limited research in this area, we could only corroborate our findings regarding the association of marijuana use and sexual assault trauma with studies that examined general trauma. Nevertheless, our study was able to demonstrate an association between marijuana use and a specific form of trauma (i.e. sexual assault). Future research should seek to examine and replicate this same association between marijuana use and sexual assault. This might be especially beneficial, as various states have begun to legalize marijuana use.

In regards to our hypothesis that NMUPD would be related to assault history, our findings were non-significant for opioid and benzodiazepine use, but were significant for barbiturate use (e.g., Ambien, Halcion, Restoril, temazepam, triazolam). Current research suggests positive associations between sexual assault and use, however, has not previously explored specific types of substance use. It is interesting that given previous research regarding

increasingly high prevalence rates of recreational non-medical prescription drug use, there is very limited research exploring NMUPD as a health-risk consequence to sexual assault-related trauma. To our knowledge, there has only been one previous study that attempted to explore NMUPD as a risky health behavior after sexual assault. That study reported significant associations between sexual assault exposure and NMUPD (McCauley et al., 2011). However, it did not categorize different classes of prescription drugs (stimulants vs. sedatives) making it difficult to know which prescription drugs were being misused and the motives behind use. In this current study, prescription drug classes were categorized and assessed for individually (e.g., benzodiazepine use, opioid use, and barbiturate use) in addition to alcohol and marijuana use. Among all of the variants of substance use, alcohol, marijuana and non-medical use of barbiturates were found to be positively associated with severity of sexual assault. The absence of prescription drug classification in previous research might explain our lack of significant associations between sexual assault and every class of prescription drugs. Additionally, our sample size demonstrated relatively low use of benzodiazepines, opioids, and barbiturates, which may have led to poor variability and may also explain the lack of significance with the other two classes of prescription drugs. Although we did not see significance in all prescription drug classes, it is still valuable to demonstrate barbiturate abuse. Finding an association between barbiturate misuse and sexual assault severity reinforces the association between sexual assault and substance use. We might

also infer that college population may be at higher risk of engaging in barbiturate use after sexual assault due to the normative nature of alcohol and other drugs during this time. Accordingly, previous research has demonstrated a high prevalence of recreational use of non-medically prescribed drugs (Benotsch et al., 2011; McCauley et al., 2011), as well as the use of alcohol to aid in socialization during college years (Stappenbeck, et al., 2014). It is valuable for future research to build off of these findings, and specifically examine barbiturate use after trauma among college populations.

Overall, results were consistent with our second hypothesis that although any experience on the sexual assault continuum (unwanted sexual contact to completed rape) is associated with greater health risk behaviors (i.e., alcohol use and other drug use), these associations are more likely to occur among individuals who report more severe experiences of sexual assault such as attempted or completed rape. This finding is also consistent with previous research (Turchik & Hassija, 2014; Ullman et al., 2014).

Our third hypothesis sought to explore PTSD and/or depression as intervening variables in the relationship between sexual assault history and substance use. As discussed, previous research has already demonstrated PTSD as a significant intervening variable to sexual assault and alcohol use (Ullman et al., 2013) This study however, attempted to expand on previous research and explore PTSD and/or depression as intervening variables to NMUPD use in addition to alcohol and marijuana use. Our results were

significant with our hypothesis, however only depression served as a significant mediator. Results revealed that depression served as an intervening variable between sexual assault and non-medical use of barbiturates (See Figure 1). Although previous research has consistently demonstrated PTSD as a significant mediator between sexual assault and substance use (Ullman et al., 2013), we did not find similar results. This may be explained by the diversity of our sample, which included participants that reported no history of sexual assault. It is possible if we had looked exclusively at those reporting a history of assault the associations between PTSD and substance use may have been stronger. It is not surprising that depression would be a significant mediator considering the high comorbidity rates between PTSD and depression (Nickerson et al., 2013; Kilpatrick et al., 1997). Further, depression is commonly experienced independent from history of sexual assault; therefore, our control group of nonvictims is just as likely to experience depression symptomology as participants who reported past sexual victimization. Consistent with our results, previous research has also demonstrated depression as an intervening variable between sexual assault and substance use.

Goldstein, Flett, and Wekerle (2010) conducted a study that supported the hypothesis that depression can serve as an intervening variable between trauma and risky behavior. Their study found that depression served as an intervening variable between a history of childhood maltreatment and drinking-related consequences. Additionally, Littleton, Taquechel, Buck, Rosman, and Dodd

(2012) conducted a study that examined higher levels of depression and anxiety as mediators between the association between having a sexual assault history and engaging in higher levels of risky behavior such as hazardous drinking and risky sexual behavior. Similarly to our study, sexual assault history and severity was assessed with the SES, depression was also assessed with the CES-D, and the AUDIT was also used to assess for problematic drinking. The study randomly selected 1,620 female participants from a sample of 1,744 women enrolled at one of the three U.S. southeastern universities who completed an online survey for course credit across two academic semesters. Results of their study revealed that both depression and anxiety served as intervening variables between having a history of sexual assault and engaging in hazardous drinking. Although the Littleton and colleagues (2012) included anxiety as an intervening variable and only looked at the risky behavior of hazardous drinking, the results are still consistent with this current study which revealed that depression can serve as an intervening variable between sexual assault and barbiturate use. Participants who experience sexual assault are at an increased risk to also experience depressive symptomology, which creates a pathway to non-medical use of barbiturates. The pathway that depression adds to the relationship between sexual assault severity and non-medical barbiturate use might be explained by depression itself, specifically, the symptoms of depression. According to the DSM-5, Insomnia or restless sleep is a common symptom of depression (American Psychiatric Association, 2013). This relationship may allow us to infer



that after sexual assault depressive symptomology, including restless sleep, may lead sexual assault survivors to seek out a “quick fix” by obtaining non-medically prescribed sleeping medications.

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### Limitations of this Study

Although this study revealed important findings for female college students, there are several limitations. This study was a cross-sectional design, which limits the ability to infer causality. Future research would benefit from a longitudinal design. A longitudinal design would also allow the study to determine directionality of sexual assault and associations with risky health behaviors of alcohol use, marijuana use, and NMUPD. Second, although our study assessed for motives behind NMUPD, we did not include motive results in our analyses. Due to of the low endorsement of NMUPD within our sample it was difficult to speak to meaningful associations between motives and type of use. Of those who reported barbiturate use, most individuals ( $n = 6$ ) reported doing so “because I am addicted” and one individual reported “because it helps me sleep.” These results provide preliminary grounds to infer an association between motives and use, however additional research using populations with greater reported use is needed. Additionally, among those who reported use of opioids ( $n = 6$ ), motives cited included using opioids “because I am addicted.” In regards to benzodiazepines, of those who reported use ( $n = 4$ ), they all reported

“because it helps me sleep.” Future studies would benefit from obtaining a larger sample that includes more individuals who report non-medical prescription drug use to better examine motives for substance use and shed light on the nature of the association between substance use and sexual assault. For example, if a participant reports benzodiazepine use and a motive of “because it relieves my anxiety,” we can infer that use is initiated to reduce psychological distress. Additionally, if assault survivors report barbiturate use and a motive of “because it helps me sleep,” we might be able to infer depressive symptomology such as rumination or insomnia. Therefore, looking at classes of prescription drugs could potentially allow us to identify problematic symptomology that sexual assault survivors are attempting to suppress.

Additionally, our study focused exclusively on college women, which may limit our ability to generalize results to other populations. Future studies might benefit by including men and other trauma samples in the sample in order to explore the associations between psychological and health-risk behaviors. Future research would also benefit from expanding inclusion criteria of trauma exposure to include other trauma groups. For example, assessing various forms of trauma above and beyond sexual assault may reveal potential consequences for trauma exposure in a broader sense. Overall, our results emphasize future need for increased research on NMUPD among populations with a history of trauma exposure. Additionally, our study did not assess for stimulant use. Future research might benefit from including stimulants under the umbrella of NMUPD.

Non-medically prescribed stimulants such as Ritalin are often used as study aids among college populations (Benotsch et al., 2011). That relationship may lead to college students viewing stimulant use as “normal” and seek it out when coping with symptoms of preoccupation and distraction after trauma exposure.

### Conclusion and Implications of Interventions

Despite the many limitation of this study, the results still yield beneficial information for medical and mental health professional that can provide awareness and preventative treatment for women on college campuses. Our main findings revealed positive associations between alcohol use, marijuana use, and non-medical barbiturate use and sexual assault severity. Our findings implicate the need for additional or more extensive prevention programs on college campuses. Although our sample only demonstrated significance for non-medical barbiturate use among all the non-medical prescription drugs that were assessed, there is reason to believe that larger samples might demonstrate further significance, given previous research (McCauley et al., 2011). Previous research has suggested that individuals who engage in NMUPD do not seek assistance from health professionals (McCabe, Cranford, & West, 2008) However, many universities provide health care and mental health treatment on campus that is propagated as a safe environment that includes non-judgment and guaranteed confidentiality, which provide preventative programs for substance use (e.g., alcohol and marijuana), sexual assault, and psychological issues (e.g., depression, PTSD). Given that college campuses typically already

have these opportunities in place, it would be an easy transition to include non-medical use of prescription drug treatment in those programs. Given that our findings revealed depression as an intervening variable to sexual assault severity and non-medical barbiturate use, assessing for NMUPD among individuals who report depressive symptomology would aid in prevention of use, misuse, and/or future addiction. Mental and medical health professionals working on college campuses should be made aware of the prevalence of NMUPD use within this population and should be provided with necessary training and tools to appropriately assess for NMUPD when students and/or clients present with other psychological (e.g., Depression or PTSD symptomology) or other health-risk behaviors (e.g., alcohol and marijuana use) after trauma.

APPENDIX A  
SEXUAL ASSAULT SEVERITY SCALE ITEMS

### **Sexual Experiences Survey (SES-SFV)**

Koss, M. P., Abbey, A., Campbell, R., Cook, S., Norris, J., Testa, M., ... & White, J. (2007). Revising the SES: A collaborative process to improve assessment of sexual aggression and victimization. *Psychology of Women Quarterly*, 31(4), 357-370

1. Someone fondled, kissed, or rubbed up against the private areas of my body (lips, breast/chest, crotch or butt) or removed some of my clothes without my consent (but did not attempt sexual penetration) by:

How many times in the past 12 months? 0 1 2 3+ How many times since age 14? 0 1 2 3+

a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.

b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.

c. Taking advantage of me when I was too drunk or out of it to stop what was happening.

d. Threatening to physically harm me or someone close to me.

e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.

2. Someone had oral sex with me or made me have oral sex with them without my consent by:

How many times in the past 12 months? 0 1 2 3+ How many times since age 14? 0 1 2 3+

a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.

b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.

c. Taking advantage of me when I was too drunk or out of it to stop what was happening.

d. Threatening to physically harm me or someone close to me.

e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.

3. A man put his penis into my vagina, or someone inserted fingers or objects without my consent by:

How many times in the past 12 months? 0 1 2 3+ How many times since age 14? 0 1 2 3+

a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.

b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.

c. Taking advantage of me when I was too drunk or out of it to stop what was happening.

d. Threatening to physically harm me or someone close to me.

- e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.
4. A man put his penis into my butt, or someone inserted fingers or objects without my consent by:  
 How many times in the past 12 months? 0 1 2 3+ How many times since age 14? 0 1 2 3+
- Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.
  - Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.
  - Taking advantage of me when I was too drunk or out of it to stop what was happening.
  - Threatening to physically harm me or someone close to me.
  - Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.
5. Even though it didn't happen, someone TRIED to have oral sex with me, or make me have oral sex with them without my consent by:  
 How many times in the past 12 months? 0 1 2 3+ How many times since age 14? 0 1 2 3+
- Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.
  - Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.
  - Taking advantage of me when I was too drunk or out of it to stop what was happening.
  - Threatening to physically harm me or someone close to me.
  - Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.
6. Even though it didn't happen, a man TRIED to put his penis into my vagina, or someone tried to stick in fingers or objects without my consent by:  
 How many times in the past 12 months? 0 1 2 3+ How many times since age 14? 0 1 2 3+
- Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.
  - Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.
  - Taking advantage of me when I was too drunk or out of it to stop what was happening.
  - Threatening to physically harm me or someone close to me.
  - Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.
7. Even though it didn't happen, a man TRIED to put his penis into my butt, or someone tried to stick in objects or fingers without my consent by:  
 How many times in the past 12 months? 0 1 2 3+ How many times since age 14? 0 1 2 3+

- a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.
- b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.
- c. Taking advantage of me when I was too drunk or out of it to stop what was happening.
- d. Threatening to physically harm me or someone close to me.
- e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.

8. I am:

Female \_\_\_\_\_ Male \_\_\_\_\_

My age is \_\_\_\_\_ years and \_\_\_\_\_ months.

9. Did any of the experiences described in this survey happen to you 1 or more times?

Yes \_\_\_\_\_ No \_\_\_\_\_

What was the sex of the person or persons who did them to you?

Female only \_\_\_\_\_ Male only \_\_\_\_\_ Both females and males \_\_\_\_\_ I reported no experiences \_\_\_\_\_

10. Have you ever been raped?

Yes \_\_\_\_\_ No \_\_\_\_\_



APPENDIX B  
PCL-5 SCALE ITEMS

## **PCL-5**

Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P., & Schnurr, P. P. (2013). The PTSD checklist for DSM-5 (PCL-5). Scale available from the National Center for PTSD at [www.ptsd.va.gov](http://www.ptsd.va.gov).

Instructions: Below is a list of problems that people sometimes have in response to a very stressful experience. Please read each problem carefully and then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month. In the past month, how much were you bothered by:

0	1	2	3	4
Not at all	A little bit	Moderately	Quite a bit	Extremely

1. Repeated, disturbing, and unwanted memories of the stressful experience?
2. Repeated, disturbing dreams of the stressful experience?
3. Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?
4. Feeling very upset when something reminded you of the stressful experience?
5. Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?
6. Avoiding memories, thoughts, or feelings related to the stressful experience?
7. Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?
8. Trouble remembering important parts of the stressful experience?
9. Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?
10. Blaming yourself or someone else for the stressful experience or what happened after it?
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?
12. Loss of interest in activities that you used to enjoy?
13. Feeling distant or cut off from other people?
14. Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?
15. Irritable behavior, angry outbursts, or acting aggressively?
16. Taking too many risks or doing things that could cause you harm?
17. Being "superalert" or watchful or on guard?
18. Feeling jumpy or easily startled?
19. Having difficulty concentrating?
20. Trouble falling or staying asleep?

APPENDIX C  
DEPRESSION SYMPTOMOLOGY SCALE ITEMS

**Center for Epidemiological Studies Depression Scale (CES-D)**

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied psychological measurement*, 1(3), 385-401

INSTRUCTIONS FOR QUESTIONS: Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week. Please circle the response that best describes how you have felt.

- 1 Rarely or none of the time (less than one day)
- 2 Some or a little of the time (1-2 days)
- 3 Occasionally or a moderate amount of time (3-4 days)
- 4 Most or all of the time (5-7 days)

During the past week:

- 1. I was bothered by things that don't usually bother me 1 2 3 4
- 2. I did not feel like eating; my appetite was poor. 1 2 3 4
- 3. I felt that I could not shake off my blues even with help from my family or friends. 1 2 3 4
- 4. I felt that I was just as good as other people. 1 2 3 4
- 5. I had trouble keeping my mind on what I was doing. 1 2 3 4
- 6. I felt depressed. 1 2 3 4
- 7. I felt that everything I did was an effort. 1 2 3 4
- 8. I felt hopeful about the future. 1 2 3 4
- 9. I thought my life had been a failure. 1 2 3 4
- 10. I felt fearful. 1 2 3 4
- 11. My sleep was restless. 1 2 3 4
- 12. I was happy. 1 2 3 4
- 13. I talked less than usual. 1 2 3 4
- 14. I felt lonely. 1 2 3 4
- 15. People were unfriendly. 1 2 3 4
- 16. I enjoyed life. 1 2 3 4
- 17. I had crying spells. 1 2 3 4
- 18. I felt sad. 1 2 3 4
- 19. I felt that people dislike me. 1 2 3 4
- 20. I could not get "going." 1 2 3 4

APPENDIX D  
ALCOHOL USE TEST ITEMS

### **Alcohol Use Disorders Identification Test (AUDIT)**

Babor, T. F., & Grant, M. (1989). From clinical research to secondary prevention: International collaboration in the development of the Alcohol Disorders Identification Test (AUDIT). *Alcohol Health and Research World*, 13, 371-374.

1. How often do you have a drink containing alcohol?
  - (0) Never (Skip to Questions 9-10)
  - (1) Monthly or less
  - (2) 2 to 4 times a month
  - (3) 2 to 3 times a week
  - (4) 4 or more times a week
2. How many drinks containing alcohol do you have on a typical day when you are drinking?
  - (0) 1 or 2
  - (1) 3 or 4
  - (2) 5 or 6
  - (3) 7, 8, or 9
  - (4) 10 or more
3. How often do you have six or more drinks on one occasion?
  - (0) Never
  - (1) Less than monthly
  - (2) Monthly
  - (3) Weekly
  - (4) Daily or almost daily
4. How often during the last year have you found that you were not able to stop drinking once you had started?
  - (0) Never
  - (1) Less than monthly
  - (2) Monthly
  - (3) Weekly
  - (4) Daily or almost daily
5. How often during the last year have you failed to do what was normally expected from you because of drinking?
  - (0) Never
  - (1) Less than monthly
  - (2) Monthly
  - (3) Weekly
  - (4) Daily or almost daily

6. How often during the last year have you been unable to remember what happened the night before because you had been drinking?
- (0) Never
  - (1) Less than monthly
  - (2) Monthly
  - (3) Weekly
  - (4) Daily or almost daily
7. How often during the last year have you needed an alcoholic drink first thing in the morning to get yourself going after a night of heavy drinking?
- (0) Never
  - (1) Less than monthly
  - (2) Monthly
  - (3) Weekly
  - (4) Daily or almost daily
8. How often during the last year have you had a feeling of guilt or remorse after drinking?
- (0) Never
  - (1) Less than monthly
  - (2) Monthly
  - (3) Weekly
  - (4) Daily or almost daily
9. Have you or someone else been injured as a result of your drinking?
- (0) No
  - (2) Yes, but not in the last year
  - (4) Yes, during the last year
10. Has a relative, friend, doctor, or another health professional expressed concern about your drinking or suggested you cut down?
- (0) No
  - (2) Yes, but not in the last year
  - (4) Yes, during the last year

APPENDIX E  
MARIJUANA USE TEST ITEMS





8. Have you ever thought about cutting down, or stopping, your use of cannabis?

Never almost daily	Less than monthly	Monthly	Weekly	Daily or almost daily
0	1	2	3	4

APPENDIX F  
NMUPD TEST ITEMS

**Non-Medical Use of Prescription Drugs (NMUPD) modified from AUDIT for this study**

1. How often do you consume benzodiazapines (e.g., Valium, Xanax, Ativan, Klonopin, diazepam, lorazepam) that were not prescribed to you or that were taken at a dose that was not recommended?

- (0) Never
- (1) Monthly or less
- (2) 2 to 4 times a month
- (3) 2 to 3 times a week
- (4) 4 or more times a week

2. Which of the following best describes your primary reason or motivation for consuming benzodiazapines (e.g., Valium, Xanax, Ativan, Klonopin, diazepam, lorazepam) that were not prescribed to you or that were taken at a dose that was not recommended?

- (0) Because it gives me a high
- (1) It counteracts the effects of other drugs
- (2) Because of experimentation
- (3) Because its safer than street drugs
- (4) Because I am addicted
- (5) Because it helps me sleep
- (6) Because it helps my anxiety

3. How many benzodiazapines (e.g., Valium, Xanax, Ativan, Klonopin, diazepam, lorazepam) do you consume on a typical day?

- (0) 1
- (1) 2
- (2) 3
- (3) 4
- (4) 5 or more

4. How often do you consume opioids (e.g., Vicodin, OxyContin, Tylenol 3 with codeine, Percocet, Darvocet, morphine, hydrocodone, oxycodone) that were not prescribed to you or that were taken at a dose that was not recommended?

- (0) Never
- (1) Monthly or less
- (2) 2 to 4 times a month
- (3) 2 to 3 times a week
- (4) 4 or more times a week

5. Which of the following best describes your primary reason or motivation for consuming opioids (e.g., Vicodin, OxyContin, Tylenol 3 with codeine, Percocet, Darvocet, morphine, hydrocodone, oxycodone) that were not prescribed to you or tha were taken at a dose that was not recommended?

- (0) Because it gives me a high
- (1) It counteracts the effects of other drugs
- (2) Because of experimentation

- (3) Because its safer than street drugs
  - (4) Because I am addicted
  - (5) Because it relieves pain
6. How many opioids (e.g., Vicodin, OxyContin, Tylenol 3 with codeine, Percocet, Darvocet, morphine, hydrocodone, oxycodone) do you consume on a typical day?
- (0) 1
  - (1) 2
  - (2) 3
  - (3) 4
  - (4) 5 or more
7. How often do you consume barbiturates (sleeping medications such as, Ambien, Halcion, Restoril, temazepam, triazolam) that were not prescribed to you or that were taken at a dose that was not recommended?
- (0) Never
  - (1) Monthly or less
  - (2) 2 to 4 times a month
  - (3) 2 to 3 times a month
  - (4) 4 or more times a week
8. Which of the following best describes your primary reason or motivation for consuming barbiturates (sleeping medications) (e.g., Ambien, Halcion, Restoril, temazepam, triazolam) that were not prescribed to you?
- (0) Because it gives me a high
  - (1) It counteracts the effects of other drugs
  - (2) Because of experimentation
  - (3) Because its safer than street drugs
  - (4) Because I am addicted
  - (5) Because it helps me sleep
  - (6) Because it helps my anxiety
9. How many barbiturates (sleeping medications) (e.g., Ambien, Halcion, Restoril, temazepam, triazolam) do you consume on a typical day?
- (0) 1
  - (1) 2
  - (2) 3
  - (3) 4
  - (4) 5 or more
10. How often during the last year have you found that you were not able to stop consuming prescription pills once you started?
- (0) Never
  - (1) Less than monthly
  - (2) Monthly
  - (3) Weekly
  - (4) Daily or almost daily

11. How often during the last year have you failed to do what was normally expected from you because of prescription pills that were not prescribed to you or that were taken at a dose that was not recommended?

- (0) Never
- (1) Less than monthly
- (2) Monthly
- (3) Weekly
- (4) Daily or almost daily

12. How often during the last year have you needed a prescription drug first thing in the morning to get yourself going?

- (0) Never
- (1) Less than monthly
- (2) Monthly
- (3) Weekly
- (4) Daily or almost daily

13. How often during the last year have you had a feeling of guilt or remorse for using prescription drugs that are not prescribed to you or that were taken at a dose that was not recommended?

- (0) Never
- (1) Less than monthly
- (2) Monthly
- (3) Weekly
- (4) Daily or almost daily

14. Has a relative, friend, doctor, or another health professional expressed concern about your use of prescription drugs or suggested you cut down?

- (0) No
- (2) Yes, but not in the last year
- (4) Yes, during the last year

APPENDIX G  
IRB APPROVAL

**Human Subjects Review Board  
Department of Psychology  
California State University,  
San Bernardino**

**PI:** Hassija, Christina; Zielen, Krystal  
**From:** John P. Clapper  
**Project Title:** Sexual Victimization Among College Females: Severity and Risky Behaviors  
**Project ID:** H-16FA-17  
**Date:** 11/21/16

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**Disposition: Administrative Review**

Your IRB proposal is approved to include 200 participants. If you need additional participants, an addendum will be required. This approval is valid until 11/21/17.

**Good luck with your research!**



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John P. Clapper, Co-Chair  
Psychology IRB Sub-Committee



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