Title
Sexual Violence in the United States: A Tale of Gender and Force

Author
Cook, Mekeila C.

Publication Date
2014

Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA

Los Angeles

Sexual Violence in the United States: A Tale of Gender and Force

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Public Health

by

Mekeila Coday Cook

2014

ABSTRACT FOR THE DISSERTATION

Sexual Violence in the United States: A Tale of Gender and Force

by

Mekeila Coday Cook

Doctor of Philosophy in Public Health

University of California, Los Angeles, 2014

Professor Donald Morisky, Chair

This dissertation begins with an overview of the Transactional Model and the Experiential Avoidance model and empirical research that is useful in understanding the factors associated with sexual violence and subsequent risk behaviors. Three independent papers using data from the National Survey of Family Growth 2006-2010 are presented. Paper 1 examines sexual violence among men, perpetrated by women. The purpose of the paper was to understand if there was a difference in condom use, number lifetime partners and substance use between men who experienced forced sex by a woman and those who did not reported forced sex. There was a statistically significant association between forced sex and substance use among men. The results indicate that men who experienced forced sex had, on average, three more sexual partners over their life time compared to men who did not experience forced sex. Additionally, substance use mediated the relationship between forced sex and number of sexual partners among men who reported forced sex.

Paper 2 examines the point in a woman's sexual life when abused occurred (e.g., at first sex, after first sex, or at first sex and another time thereafter) and assessed whether there is a difference in coping behaviors that may place the victim at greater risk for HIV infection. The purpose of this paper was to determine if condom use, number of lifetime partners and substance use differed in women in women

based on if they reported forced sex and the point in the woman's sexual life that forced sex occurred. There was no statistically significant difference in condom use. Compared to women who did not report forced sex, women who reported forced sex after first sex and women who reported being re-victimized had on average three more sexual partners than did non-victimized women. There was not a statistically significant difference in number lifetime partners between women who were forced at first sex and women who reported no forced sex history.

Paper 3 examines whether force sex tactic reported was associated with avoidant coping behaviors as manifested in inconsistent condom use, number of sexual partners and substance use. The purpose of this study was to understand if the force sex tactic type and strength impacted condom use, number of lifetime partners and substance use in men and women who reported forced sex. There was a positive trend in stronger force sex tactic reported and number of partners among men and women; although at marginally significant levels. There was also a significant relationship between current substance use and the force sex tactic given drugs or alcohol in both men and women.

The dissertation of Mekeila Coday Cook is approved.

John K. Williams

Chandra L. Ford

Gilbert Gee

Donald Morisky, Committee Chair

University of California, Los Angeles

2014

TABLE OF CONTENTS

MEKEILA C. COOK

EDUCATION

Doctorate of Philosophy Candidate in Public Health
Fielding School of Public Health at University of California, Los Angeles Graduate: June 2014
Dissertation: *Sexual Violence in the United States: A Tale of Gender and Force*
Advisor: Don Morisky

Masters of Science in Counseling Psychology
Tennessee State University, Nashville, TN Graduated: December 2004
Thesis: *An Examination of the Acquisition and Maintenance of Stigmatizing Attitudes toward HIV Positive People*

Bachelors of Science in Psychology
Tennessee State University, Nashville, TN Graduated: May 2002

PUBLICATIONS

Ernst, F., Hogan, B., Vallas, M., Cook, M., and Fuller, D. *Superior self-regulatory skills in African American college students: Evidence from alcohol and tobacco use.* Journal of Black Studies, 2009 **40**(2) p. 337-346.

WORKING PAPERS

Racism, HIV/AIDS disparities and HIV prevention among Blacks: A review
- Principle investigator: Chandra Ford, PhD; UCLA
- UCLA Fielding School of Public Health, Community Health Sciences

Evaluation of Microbicide Trial Participation and Social Harm
- Principle Investigator: Delivette Castor
- Public Health Institute, USAID

GRANTS AND FELLOWSHIPS

Health Resources and Services Administration Fellowship	2012-2013
Doctoral Training Grant in Social/Behavioral Determinants of HIV Prevention	2011-2012
UCLA AIDS Institute Research Grant- Behavioral Sciences	2009-2011
California Wellness Foundation Scholarship	2006-2007
Bette & Hans Lorenz Fellowship	2006-2007

PROFESSIONAL EXPERIENCE

University of California Los Angeles, Undergraduate Education; *College Academic Mentor* (September 2008- June 2014)
Advise 50-55 undergraduates about program planning and academic policies each week
Orchestrate quarterly workshops for the graduate and professional school application process
Assist with annual training of 15 incoming academic counselors on rules and regulations
Facilitate and implement presentations for students on study skills college adjustment
Manage monthly payroll activities, ensuring employees were paid as expected and on time

Public Health Institute, Global Health Fellows Intern (USAID); *HIV Research Intern* (June 2013- September 2013)

Provided technical support and evaluated 3 projects on male circumcision in Tanzania, Lesotho, South Africa
Reviewed, evaluated and scored applications submitted for an USAID call for applications
Designed study to investigate the association of gender-based violence on microbicide trial participation
Developed research protocol to assess impact of built environment on HIV vulnerability in South Africa

Meharry Medical College; *Senior Research Assistant/Community Liaison*
(September 2004- September 2006)
Developed research protocol for HIV/AIDS Health Disparities for 2 National Institute of Health grants
Assembled and arranged appropriate psychometric testing instruments for data collection
Supervised research recruitment efforts, inclusive of site visits and inspections
Administered and scored appropriate psychometric research assessments
Managed community advisory board with HIV organizations, local leaders, health departments
Coordinated HIV conference composed of 6 panel discussions, exhibits, and keynote speaker

TEACHING AND TRAINING EXPERIENCE

Independent Contractor; *HIV Educational Trainer and Advisor*
(June 2009-September 2010)
Trained 12 student educators on HIV prevention education, cultural competency and sensitivity
Developed 2-day HIV/AIDS training curriculum for the MESAHI outreach project in Kenya
Acted as expert consultant for MESAHI's funding applications

University of California Los Angeles, Undergraduate Education; *Teaching Assistant*
(September 2008-June 2009)
Taught study skills and test preparation for 97 incoming freshman enrolled in the Program for Research Excellence in Education and Research Sciences (PEERS)
Evaluated writing and comprehension skills for each PEERS student

SELECTED POSTERS AND PRESENTATIONS

HIV/AIDS inequalities: Intersectionality, racism, and epidemiologic methods
- Principal investigator: Chandra Ford, PhD; UCLA
- Oral presentation: 2011 Social Determinants of Health Disparities; Duke University

Racism, HIV/AIDS disparities and HIV prevention among Blacks: A review
- Principle investigator: Chandra Ford, PhD; UCLA
- Poster presentation: 2011 Science on Discrimination and Health Conference; Washington, DC

Analysis of condom use at last sex and sexual debut using the National Survey of Family Growth (NSFG)
- Principle investigator: Mekeila Cook, MS; UCLA
- Poster presentation: 2009 American Public Health Association Conference; Philadelphia, PA
- Awarded the Excellence in Research Award in Population, Reproductive and Sexual Health, Student Session

TECHNICAL SKILLS

PC and Macintosh Operating Systems, Microsoft Office, Stata, Statistical Package for Social Sciences (SPSS), Endnote, Internet

CHAPTER 1: Dissertation Introduction

Captured in local as well as national media, sexual violence is a prominent public health concern. For example, the Jerry Sandusky child abuse case that garnered national news coverage resulted in the former Penn State University football coach being found guilty of 45 of 48 counts of sexual abuse against adolescent and teenage boys in 2012 [1]. Additional fallout from the case occurred when a witness of the abuse alerted Penn State administrators who in turn, never notified the local authorities. The inaction of the university administration may have resulted in the continuation of abuse by Sandusky. Another shocking incident that grabbed global attention and incited international outrage occurred when two college students were attacked on a public bus in New Delhi, India. Six young men were accused of beating the male college student and beating and repeatedly raping the female college student with an iron rod [2]. Both victims were stripped of their clothes and thrown from the bus. Ten days later the female victim died of her injuries. Five of the six attackers are currently awaiting trial for rape and murder; they face the death penalty if convicted [2].

While these two examples have made national and international news, oftentimes victims do not report sexual violence to authorities and may not seek medical attention or counseling services to deal with the trauma they experienced. In a recent survey of US men (N=7,421) and women (N=9,086) that quantified lifetime sexual violence, it was estimated that in 2010, 1.4% of men and 18.3% of women had ever experienced rape at some point in their life [3]. Given the gravity of sexual violence as a public health concern, this dissertation had four main objectives; the first objective was to understand the prevalence of sexual violence among US men and women. The second goal was to explore how certain coping mechanisms may place survivors of sexual violence at risk for HIV. The third objective was to examine the relationship between sexual violence and substance use. The final goal was to understand if the type of force tactic used in the sexually violent event impacted coping behaviors that place people at increased risk for HIV and substance use.

Sexual Violence Terminology

Sexual violence albeit a well-investigated topic, is plagued by the lack of a consistent definition. Within the sexual violence literature terms such as rape, forced sex, sexual assault, and childhood sexual abuse are often used interchangeably and have overlapping definitions. The variation in definitions makes shifting through the literature laborious. It creates barriers to assessing the full extent of sexual violence and makes quantifying the impact on public health a challenge. A number of researchers have brought attention to the problem of unclear and overlapping definitions of sexual violence in the literature [4-6]. Researchers have called for interdisciplinary and collaborative research efforts to create continuity in definitions [4, 5]; however establishing an agreed upon set of definitions across disciplines remains to be seen. Sexual violence is an umbrella term that includes rape (forced sex), sexual assault, and childhood sexual abuse; wherein each of these terms lay various definitions.

Rape and forced sex

Despite the variations in definition, there have been areas of improvement in developing accurate and relevant definitions. An early definition of forcible rape stated: "the carnal knowledge of a female [obtained] forcibly and against her will. Assaults or attempts to commit rape by force or threat of force are also included: however, statutory rape (without force) and other sex offences are excluded" (pp. 99-100) [7]. According to Von and colleagues this definition is rooted in the ideology that women were the property of their fathers and/or husbands [7]. Therefore, if a woman was raped it was a crime against the property owner [7]. Historical rape law contended that in order for rape or unlawful sexual intercourse to occur it had to be forced, penile penetration of the vagina, with a lack of consent. Victims were expected to have physical injuries that would be consistent with resisting the perpetrator(s) [8] and husbands could not be convicted for rape. This definition has been used for prosecutions of sexual assault and rape cases for the last 85 years. However, there were gaps in the definition that made some sexual violence cases difficult to prosecute (e.g. rape of men and the use of objects during the attack). As a result of the

women's movement of the 1960 and 70's, traditional rape laws were challenged in the legal system which lead to reformations of the rape law [8] and the expansion of sexual assault laws.

Recently the Federal Bureau of Investigation (FBI) updated its definition of forcible rape in January 2012, to be defined as "the penetration, no matter how slight, of the vagina or anus with any body part or object, or oral penetration by a sex organ of another person, without the consent of the victim" [9]. The clear differences in the definitions highlight the importance of including both male and female victims, as well as forced anal and oral sex. Additionally, the inclusion of and the use of foreign objects as forcible rape and not defined as sexual assault carry stiffer sentencing. This more comprehensive definition of forcible rape has strong public health implications for how the research community collects data, frames research questions, and will likely increase the value of information gleaned from sexual violence studies. This information has the potential to substantially improve rape prevention efforts as well as victim advocacy and services for victims of forced sex.

Sexual Assault

Sexual assault is defined as "manual, genital, or oral contact with the victim's genitalia without consent and obtained by force, threat, or fraud" pg. 99 [7]. Due to the stringent parameters of the original definition of rape, sexual assault has been applied in legal proceeding to address a wider range of sexual crimes including attempted rape, indecent assault and battery, and sodomy [7]. Previously, sexual assault also included the penetration of the vagina or anus with a foreign object. With the new definition of forcible rape, federal cases of sexual violence will likely be prosecuted with forcible rape regardless of the gender of the victim or the object used in the rape, resulting in harsher sentencing.

Childhood Sexual Abuse

One clear problem in childhood sexual abuse (CSA) research is a lack of consensus in definitions. Because the age of the victim is an important factor, age adds to the variation in childhood sexual abuse definitions. For example, CSA often has various age cut-off points that range from 12 to 18 [10-15] or is

defined more liberally such as in the Welles and colleagues' study who employed the phrase "as a child or adolescent" [16]. In a study conducted by Wyatt (1986) the age cut-off for CSA "under the age of 17" [5]. Alternatively, Classen defined CSA as sex with a person under the age of 15 [17]. The debate seems to lie in the time during maturity or adolescence in which a person can understand sexual intercourse and has the ability to consent to sexual intercourse. In legal terms, the age of consent according to the FBI is age 18 [18]. However, there are state laws that have younger ages of consent [18].

Researchers have tried to bypass the argument about the age of consent in the literature by assessing the age difference between sexual partners. Generally, this portion of the CSA definition refers to a person being five year or older than the child [5]. For example, if a 17 year old has sex with a 12 year old, this would be considered childhood sexual abuse. In some states, this is also the legal grounds for statutory rape [18]_sex between a person above the age of consent with a person below the age of consent, regardless of whether both parties understand and agree to the sexual act [18].

For the purposes of this study, forced sex was defined as the penetration of the vagina through means of force- whether verbal, physical, or through coercion, without full consent of the victim. When referencing cited research, I will use the terminology utilized by the author(s). Furthermore, this study included forced sex that occurred during childhood and adulthood. Both were included because regardless of when forced sex occurred, victims are at increased risk for negative health outcomes resulting from the forced sex experience.

Trauma

Trauma is defined by the Oxford English Dictionary as a psychic injury, especially one caused by emotional shock the memory of which is repressed and remains unhealed; an internal injury, especially to the brain, which may result in a behavioral disorder of organic origin [19]." Sexual violence is generally considered a traumatic experience, especially if force is used [20]. Studies have linked forced sex with a number of psychological (i.e. post-traumatic stress, borderline personality disorder, depression and

anxiety) [14, 15, 21, 22] and behavioral outcomes such as binge-purge eating, self-mutilation, excessive or dysfunctional sexual activities [22-25].

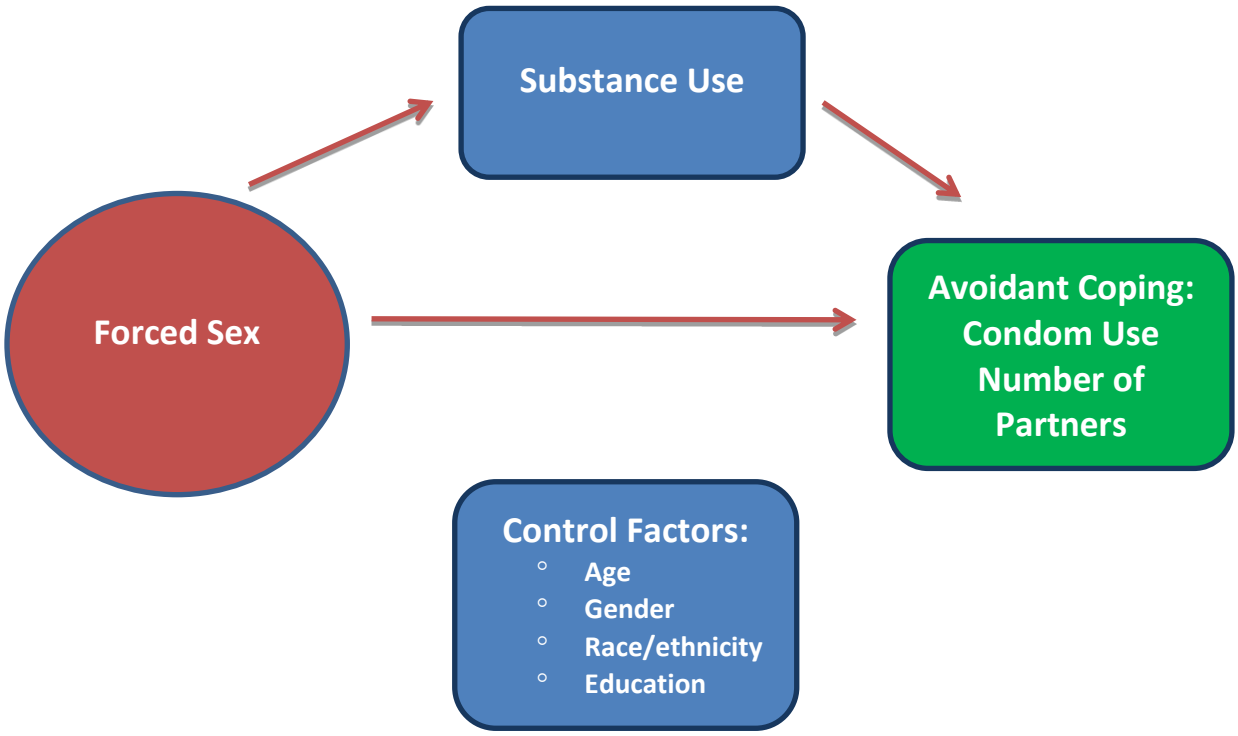
Trauma resulting from forced sex can impact how a person copes with the experience(s). Brier and others have suggested that "acting out" behaviors such as those mentioned above may represent an attempt by the victim to cope with "triggered posttraumatic emotional states that may overwhelm internal affect regulation capabilities and thereby motivated the need for avoidance [22]." Employing certain behaviors helps to distract and reduce the awareness of overwhelming emotions that arise from memories of the sexual trauma experienced [22].

Post-Traumatic Stress and Sexual Violence

Post-traumatic stress disorder is defined by the Diagnostic and Statistical Manual on Mental Disorders, Edition 5 as "the development of characteristic symptoms following exposure to one or more traumatic events". The traumatic event can be re-experienced in numerous ways; commonly as "recurrent, involuntary and intrusive recollection of the event". Post-traumatic stress is very common among sexual abuse victims (regardless of if the abuse occurs in childhood, adolescence, or adulthood) and has been associated with depression, anxiety, substance use, suicide ideation [26-29] and HIV infection among men who have sex with men [30] and among sexually victimized women [31].

Theoretical Framework

Figure 1: Transactional Model + Experiential Avoidant Model



This study employs two theoretical models, the Transactional Model [28] and the Experiential Avoidance Model [32]. The Transactional Model, originally developed to understand childhood sexual abuse, provides a comprehensive overview of how sexual trauma influences psychological symptomology through coping styles. This model outlines 4 coping styles: active coping, emotional release, cognitive restructuring, and avoidance coping. Data collected on the National Survey of Family Growth (NSFG) yielded information that allowed for analysis on avoidance coping behavior, which will be the focus of coping for this study.

The Transactional Model attempts to address limitations found in previous childhood sexual abuse theories and focuses on five main constructs: 1. Abuse Stress, 2. Coping Strategies, 3. Cognitive

Appraisals, 4. Support Resources, and 5. Psychological Symptoms. The Transaction Model examines how abuse stress leads to psychological symptoms through the mechanisms of coping strategies, cognitive appraisals and support resources among victims of childhood sexual abuse. This model is unique in that it does not assume that abuse stress is stagnant and one-directional, rather it employs a bi-directional approach to understanding the interactions between the constructs. For instance, Spaccarelli's Transactional Model suggests that there are a number of factors that affect how a person copes with abuse; indicating that how the victim appraises the abuse, the type of social support the victim receives, and other factors such as age, personality, and gender all affect coping behaviors which later impacts psychological and behavioral outcomes. This model does not assume that all abuse victims will result in negative psychological sequelae; rather the interplay between the developmental processes occurring before and after the abuse are what ultimately impact psychological symptomology [28]. The model highlights both positive and negative experiences between the victims and the environment following the abuse which also affects psychological and behavioral outcomes.

Abuse Stress

Abuse stress influences mental health and is related to the perception of the stressor as a threat to personal harm or loss, whether the loss is considered emotional, physical or both [28]. Abuse stress consists of three event types: a. the abuse event itself, b. abuse-related events, and c. abuse disclosure event. According to the Transactional Model, each event can be an independent source of stress that interplays between coping and cognitive appraisal and thereby leading to either normative or maladaptive psychological symptoms.

I. Abuse Events

Abuse Event is the experience of sexual abuse. Assuming that unwanted sexual contact is stressful, repeated and continuous sexual abuse over time would likely result in higher levels of stress [28]. Studies have defined severity of abuse in a number of ways but generally include: the duration

of the abuse — where longer periods of abuse are considered more severe abuse cases, the relationship to the perpetrator—incestuous sexual abuse being more severe than abuse by a stranger or acquaintance, number of incidents involving various perpetrators—the more incidences and/or the more perpetrators, the more severe, the type of abuse-- penetrative abuse being more severe than non-penetrative abuse (i.e. fondling) [33, 34], and in the case of children, the age of the child at abuse onset [14]. Force used can also affect the level of trauma or stress experienced during the violent attack. People who experience threats of force or force during the sexual abuse event tend to have more negative health outcomes such as avoidant coping [35], suicide ideation [36], suicide attempts in men [37], suffer from post-traumatic stress disorder [29], and psychosocial impairment such as borderline personality disorder [21].

II. Abuse Related Events

Abuse-related events refer to stressful events that occur as a result of the sexual abuse onset. In childhood sexual abuse (CSA), this usually refers to stress following a change in family dynamics. This can include family conflict, parental separation, and victim isolation [28]. There is considerable debate in the literature surrounding family dynamics and sexual abuse. Some authors have suggested that being a part of a dysfunctional family may precede sexual abuse [38]. Others suggest that discovery of sexual abuse could generate family conflict and dysfunction [28]. In a retrospective qualitative study of 29 women seeking treatment for incestuous sexual abuse, many of the victims either had mothers or fathers in which parental alcohol or drug use was prevalent, one or both of the parents were emotionally distant or unavailable, and parental supervision was lacking [39]. In this particular study women who were sexually abused by their brothers had on average six other siblings. For women who were abused by their fathers, they had approximately four siblings [39]. The authors suggest that larger families allow greater potential for family dysfunction through the lack of parental supervision and greater strain on resources that lead to parental stress (i.e. less expendable income) [39].

There is a considerable amount of research dedicated to understanding family dynamics of CSA victims. An example is taken from adolescent runaways and homeless youth who experience high rates of physical and sexual abuse. A study of homeless youth found that among 190 male and female youths, the rate for sexual abuse was 37.4% [40]. In a similar study of sexual- minority homeless youth, 29% of males and females reported sexual abuse [41]. In a study of 372 male and female homeless youth, 35% reported being physically abused by 4 or more perpetrators. Explanations offered by the researchers regarding the number of abusers, was that runaways experience a high rate of family transition such as divorce, separation, remarriage and/or parental dating [41].

III. Disclosure Events

Disclosure events relate to the stress associated with disclosing the sexual abuse experience either to parents/family, partners, friends, or to authorities. In a small qualitative study of 14 adult men and women who experienced CSA by female perpetrators, the authors noted that the response from professionals impacted the victim's healing process [42]. In each of the 14 cases with exception to one, disclosure occurred years later during adulthood and in the context of seeking mental health services. Six of the respondents reported a positive disclosure experience, two respondents reported only negative experiences, and six reported both a positive and negative experience. Of the victims that report a positive disclosure experience (e.g. supportive and understanding), they report feeling less distress about the abuse and relief from disclosing and that the disclosure experience facilitated healing [42]. The negative experiences were perceived by the respondents as the mental health professional being uncomfortable, minimizing the experience and/or the professional expressing shock at the revelation that the perpetrator was female. The impact of the negative experiences ranged from feelings of distrust and betrayal by professionals to anger, confusion and denial that the abuse really happened [42]. For example the following quote is from a male victim:

> "The message that I got from the psychologist was there's no problem and that I should consider myself lucky that I had sexual contact with a woman at such a young age [6]. [After the appointment] I told myself, just shut up, and don't worry about it. For the following 4 to 5 years, I tried to convince myself that I didn't have a problem." [42]

Disclosure can have serious and long-lasting effects, as is illustrated above. Even into adulthood, people in the aforementioned study struggled with disclosing sexual abuse during childhood and most reported feeling stress about disclosure because they feared people would not believe them. Furthermore, the time that lapses for disclosure can affect mental health. In a retrospective study among adult women who experienced CSA before the age of 18, findings revealed that even in adulthood women who disclosed the abuse more than one month after it occurred had significantly higher prevalence of PTSD and major depressive episodes in the last year compared to women who disclosed within one month of the abuse [43]. Additionally, the association between delayed disclosure and PTSD remained significant after controlling for demographic and rape characteristics [43].

Abuse stress is measured in this dissertation in two ways. In papers one and two, respondents answered a yes or no question about sexual abuse. In paper three, the abuse event is specifically measured by capturing the characteristics of the forced sex experience. Respondents answer questions regarding the tactics used during the forced sex event, for example given drugs or alcohol or threatened to end relationship. Each factor is specifically discussed in the respective papers.

Cognitive Appraisals and Psychological Symptoms

Cognitive appraisal refers to how the victim understands and perceives who they are in the context of having experienced sexual abuse [28]. Additionally, cognitive appraisal consists of the victim perceiving themselves as being physical damage as well as the victim's perception of others. Cognitive appraisal impacts how the victim view's their self-worth. Previous research indicates that low self-esteem, self-blaming for the abuse and an overall negative self-image is common among sexual abuse

victims [39]. Spaccarelli suggests that some victims of sexual abuse may view themselves as "damaged" [28]. According to Spaccarelli, this viewpoint can translate into a fear of infertility [28]. Victims who perceived themselves as physically damaged may also have a preoccupation with inadequate sexual functioning [28]. This pre-occupation can result in sexual dysfunctions following the sexual abuse [6] and/or sexual aversion [44]. Low self-esteem can lead to depression and may partially explain negative mental health outcomes among sexually victimized men and women. In the context of the current study, negative cognitive appraisal may impact condom use behaviors via an inability to negotiate condom use. Additionally, negative cognitive appraisal may impact number of partners one has over their lifetime. Victims of sexual abuse may not feel autonomous of their body which could affect their ability to refuse or decline sexual advances. This inability to refuse sex may result in an increased number of lifetime sexual partners.

Sexual victimization may lead to an inability to effectively connect with others in an emotional intimate (not necessarily sexually) way. Cognitive appraisal that leads to low self-esteem may drive victims of sexual abuse to seek emotional intimacy through sexual activity in order to fill the emotional intimacy void. This motivation to seek intimacy may translate to having an increased number of sexual partners.

Finally cognitive appraisal affects how victims evaluate other people. Spaccarelli suggests that abuse victims may have more negative views about people and as a result of the fear associated with the abuse, may generalize an entire gender or race as untrustworthy [28]. Conversely, other studies suggest that victims of sexual abuse may not be able to adequately distinguish between character traits that may make a person trustworthy or not. For instance, in an experimental design study by Wilson, Calhoun, and Bernat (1999) the authors assessed the latency period for identifying potentially dangerous situations among women, women who had been victimized once, and those who had been sexually re-victimized. The women listened to an audio recording vignette of a dating situation in which rape could occur. It

took women who had been re-victimized significantly longer to recognize the potential rape danger compared to women who had no abuse experience [45].

Support Resources and Environmental Factors

Support resources refer to the current relationships a person has to help them cope with stressors, namely family or friends. Social support plays an important role in psychological functioning in people who have experienced forced sex. For example, Runtz et al employed structured equation modeling to assess the relationship between childhood sexual and physical abuse with coping and social support. The results showed that the effects of sexual or physical abuse in childhood on adult psychological health were completely mediated through their effects on coping and social support [46]. The findings from the Runtz et al study suggest that social support acted as a buffer from the negative psychological outcomes often associated with childhood sexual abuse. Other studies support this claim and suggest that sexual abuse victims with strong social support are often able to cope better than victims with little support. Families can often be a source of support, especially for children. In a review of the social support literature, Ullman suggested that unsupportive responses or negative reactions to the disclosure of CSA were common and related to negative outcomes such as psychological symptoms, somatic and health symptoms and difficulty in adult relationships [47].

Another study by Tremblay et al. of 50 sexually abused children found that the children experienced both internalizing problems (e.g. withdrawal, somatic complaints, anxiety and depression) and externalizing problems (delinquent and/or aggressive behavior) following the abuse [48]. Avoidance coping was associated with lower self-worth and greater internalizing and externalizing problems [48], however, having supportive family and friends was associated with positive self-worth and fewer externalizing behaviors [48].

Environmental factors were measured by two factors that addressed the respondent's family structure. The first factor was whether or not the respondent grew up with both parents in the household or if s/he

grew up in a single-parent home. The second factor was whether or not the respondent lived on his or her own before 18 or lived in the parents' or caregiver's home until age 18. Each factor is specifically discussed in the respective papers.

Other Factors

A determination about the effect of abuse cannot be fully addressed by the aforementioned factors alone. It is important to note that there are antecedent factors such as race/ethnicity, age, gender and educational attainment as well as one's social environment that affect how one perceives and responds to the abuse.

There have been very few articles that specifically investigated racial/ethnic differences in men and women who have a history of sexual victimization. According to Tyler's review of CSA studies, there is a movement in the sexual violence literature to include more racially and ethnically diverse samples but many publications still report on predominately White adolescent samples [29]. Tyler highlights the notions that uncertainty remains about sexual violence prevalence among different racial/ethnic populations. Tyler reported that of 14 racially and ethnically diverse studies, 3 studies found no racial/ethnic differences in report of child sexual abuse and one study found that White adolescent girls were at higher risk for sexual abuse than Latina girls. Another study included in the review indicated that the duration of sexual abuse was longer for White girls than for Latina or African-American girls [29]. Tyler reported in one reviewed article that only included males, African-American males were more likely to be abused by an immediate family member and Latino males by an extended family member. Another study reviewed that included on females found Latinas were more likely to be abused by their biological father while African American girls were more likely to be abused by a step-father [29]. Tyler did not provide descriptions for the other seven articles reviewed. Additional studies are needed to better understand the relationship between race/ethnicity and sexual victimization among women.

Age is an important fact to consider in terms of sexual violence during childhood and/or adolescence. Some researchers have argued that forced sex occurring at a younger age has more severe consequences; whereby other investigators state that abuse that occurs later in adolescence may have worse health outcomes. Reasons for the dispute in the literature are related to cognitive appraisal and coping mechanisms. It has been suggested that sexual abuse occurring at younger ages may not result in negative health outcomes because the child does not have an understanding of sexuality and does not know that sexual acts with an adult is inappropriate. They lack knowledge of the stigma surrounding the abuse. In many cases, very young children who are abused take their cues from adults' reactions to discovery of the abuse. Adolescent and teenage victims are generally mature enough to understand sexuality and to decipher when sexual behavior is inappropriate. Because adolescents and teens are more developmentally advanced they are better equipped to make cognitive appraisals about the abuse and employ a broad range of coping mechanisms.

There is also little understanding of differences in educational attainment among men and women who have been sexually victimized and those who have not. In the sexual violence literature, many articles use samples from college campuses [17]. The experiences of people sampled from such specific populations, as college campuses, may not be representative of the overall population. Luster and Small state that college samples are a "relatively advantaged" sample and people in college may exhibit more effective coping mechanisms that mediate the effects of experiencing sexual abuse [25]. Additional analysis is needed to better understand the educational attainment differences in women and men who have experienced forced sex and those who have no forced sex experience.

In accordance with the Transactional Model, this dissertation measured: race/ethnicity, age, gender and educational attainment. It was also necessary to obtain a detailed account of the respondent's sexual history. The sexual activity factors assessed in this dissertation varied in each paper but included: age at first sex, treatment for sexually transmitted infections, and ever exchanged sex for drugs or money. A detailed description and rational for including each factor is found in the respective papers.

Coping Strategies

The Transactional model implies that coping mechanisms are "proximal determinants" of psychological outcomes and that coping styles may either facilitate or protect from the risk for of psychological symptomology. The Transactional Model identifies four coping strategies among sexual abuse victims: 1) active coping, 2) emotional release, 3) cognitive restructuring and 4) avoidant coping. **Active coping** includes resisting sexual abuse directly, intentional disclosure of abuse, and seeking emotional support [28]. It has been postulated that resisting sexual abuse allows the intended victim to retain some sense of autonomy and internal control, which facilitates improved self-esteem [28]. Disclosing the abuse to a trusted person can be protective albeit initially anxiety-inducing. Disclosure can be beneficial in multiple ways; 1. The trusted individual could provide physical protection for the victim, 2. Report of the abuse could result in cessation of the abuse and 3. The emotional support can assist with psychological symptomology. As previously discussed in the disclosure section, reactions by family and friends can have a significant impact on later mental health.

Emotional release can come in a number of forms and includes directly expressing anger towards the abuser, writing an "unsent letter", and symbolic control in which case a victim through the help of a mental health specialist, attempts to master feelings of guilt, shame and powerlessness. Another form of emotional release is expressive writing. A study of 70 women with a history of childhood sexual abuse who presented with depression, PTSD and/or sexual problems participated in five 30-minute expressive writing sessions. The theme of the writing session was either focused on sexual schema or trauma [49]. The authors report that women in both writing groups exhibited improved depressive and PTSD symptomology and that women in the sexual schema writing intervention showed improvements in sexual functioning [49].

Cognitive restructuring focuses on modifying how the victim understands the sexual abuse and the subsequent implications the experience has on the victim's life. Cognitive restructuring relies upon

reframing the abuse and posing it as a challenge to overcome. In treatment, the therapist focuses the coping process on dealing with the victim's feelings and the reactions to the abuse in an effort to assist the victim to understand their feelings about the abuse. A randomized control trial of thirty-four adult women with a CSA history and current PTSD participated in an intervention that employed cognitive restructuring and imagery modification to address perceiving themselves as damaged (e.g. feelings of being contaminated). The women were randomly assigned to the intervention group or the waitlist control group. The intervention included one 90-minute session and one 50-minute session. The intervention entailed discussing derma cell life cycle and understanding that the "contaminated skin" that came into contact with the perpetrator had been rebuilt through the skin cell regeneration process [50]. Participants also listened to daily imagery modification tapes for seven days. Women in the both the intervention and waitlisted groups reported a statistically significant reduction in feelings of being contaminated in terms of intensity, vividness, uncontrollability and distress. The findings were more pronounced among the intervention group [50].

Avoidance Coping

This dissertation focused exclusively on avoidant coping because it is considered to be the riskiest form of coping [28] and it is believed to be the coping style that places victims of sexual abuse at risk for acquiring HIV. **Avoidance coping** is a strategy in which the victim, either consciously or unconsciously, attempts to deny or avoid the reality of the abuse experience. Avoidance can come in the form of disassociation, detachment-distancing, and behavioral avoidance [28].

It has been established in the literature that active coping (i.e. positive thinking and willfully addressing problems) is related to healthy adjustment to stressful situations [35] while avoidance is considered maladaptive coping style [22]. Research has suggested that active denial or avoidance among sexual abuse victims may result in more psychological symptomology and poorer long-term psychological adjustment [51]. The **Experiential Avoidance Model**, as described by Hayes et al is "the

phenomenon that occurs when a person is unwilling to remain in contact with particular private experiences (e.g., bodily sensations, emotions, thoughts, memories, behavioral predispositions) and takes steps to alter the form or frequency of these events and the contexts that occasion them" [32]. In other words, experiential avoidance is at work when a person employs (whether consciously or unconsciously) any method, strategy, or behavior in an effort to avoid or escape the form or frequency of facing or remembering an experience [32], such as memories of forced sex. According to Experiential Avoidance Model, people may enact behaviors and strategies to avoid feeling, thinking about an event or situation they have defined as negative or damaging. Avoidance coping has been associated with outbursts of anger, irritability, depression, anxiety, and multiple sex partners in adolescent girls [52]. Some behavioral forms of coping reported in the sexual violence literature considered to be maladaptive are dissociation, binge-purge eating, substance use, self-mutilation, risky sexual behavior and suicide attempt [24, 53-55]. Research suggests that people employ these behaviors in an effort to deal with stressors such as depression, anxiety and post-traumatic stress [24, 53-55]. While tension reducing behaviors such as sexual activity and substance use can have immediate stress-reducing benefits, having sex with multiple partners can have negative long-term effects such as increased risk of HIV infection. These models purport that these behaviors are more likely to occur in cases where abuse-related stress is high and that this stress has an indirect effect on HIV risk behaviors by increasing the likelihood that victims will employ unhealthy coping strategies.

In this dissertation avoidant coping behaviors were assessed in terms of behaviors that place people at risk of HIV infection following. Three factors were measured: condom use at last sex, lifetime number of sexual partners and substance use behaviors. Condom use at last vaginal sex was coded as yes (1) or no (0). The number of lifetime sexual partners is a continuous variable. Substance use asked the respondent about alcohol or drug use in the previous 12 months. Substance use was measured in papers one and two as a mediating variable and in paper three as an outcome variable. A detailed description of each factor is found in each of the respective papers.

Dissertation Specific Aims

A brief account of each study is presented below, followed by the full papers.

Specific Aim / Paper 1: This study had three main aims; the first goal was to explore the associated differences in demographic characteristics between men who reported forced sex by women and those who do not report forced sex. The second goal was to examine the prevalence rate of forced sex in men victimized by women. The third goal of this study sought to investigate whether or not men who experienced forced sex also reported avoidant coping behaviors as manifested in risky sexual practices and substance use. These aims were asses using the following four research questions:

Research question 1: Does condom use at last sex differ between men who have experienced forced sex and those who have not experienced forced sex?

Research question 2: Does the number of female partners over a man's lifetime differ between men who reported forced sex and those who do not report forced sex?

Research question 3: What is the role of substance use in condom use among men who have and who have not experienced forced sex?

Research question 4: What is the role of substance use in number of partners among men who have and who have not experienced forced sex?

Specific Aim / Paper 2: This study sought to investigate whether or not the point in a woman's sexual life in which forced sex occurred impacts avoidant coping behaviors as manifested in risky sexual practices and substance use. Forced sex was captured in three ways: forced sex occurring at first sex, forced sex occurring after initiating consensual first sex, and forced sex occurring at first sex and another time after first sex. Additionally, this study attempted to understand if the point at which victimization occurs impacts coping, namely if victimized women exhibit differing avoidant coping behaviors by employing substance use and/or engaging in risky sexual behaviors differ based on when forced sex

occurred relative to previous sexual experience. To examine these aims, the following research questions will be assessed:

Research question 1: Does condom use at last sex differ between women who report forced sex at first sex, those who report forced sex after first sex, and those who report forced sex more than once compared to women with no forced sex history?

Research question 2: Does the number of male partners over a woman's lifetime differ between women who report forced sex at first sex, those who report forced sex after first sex, and those who report forced sex more than once compared to women with no forced sex history?

Research question 3: What is the impact of substance use on the association between condom use and report of forced sex?

Research question 4: What is the impact of substance use on the relationship between number of partners and report of forced sex?

Specific Aim / Paper 3: The purpose of this study was to understand how the type of force used during the sexual abuse event impacts avoidance coping mechanisms as manifested through sexual risk behaviors and substance use. Force sex tactics include: a) perpetrator gave victim drugs or alcohol, b) perpetrator was bigger or older, c) perpetrator threatened to end the relationship, d) perpetrator verbally pressured, e) perpetrator threatened physical harm, f) perpetrator physically held victim down, and g) perpetrator physically injured victim. These aims were assessed with the following three research questions:

Research question 1: How does the strength of the force sex tactic used impact condom use behaviors?

Research question 2: How does the strength of the force sex tactic used impact number of sexual partners?

Research question 3: How does the strength of the force sex tactic used impact substance use?

Bibliography

1. Curry, C., Loyd, B., and Avila, J. *Jerry Sandusky, ex-Penn State Coach, Guilty on 45 of 48 Sex Abuse Counts*. abc NEWS 2012 [cited 2013 December 19, 2013]; Available from: http://abcnews.go.com/US/jerry-sandusky-found-guilty-45-48-sex-abuse/story?id=16623842&singlePage=true.

2. Banerji, A. and Mohanty, S., *India Gang Rape Conviction Angers Many as Delhi Teen Sentenced to 3 Years in Juvenile Detention*, in *Huffington Post WORLD*. 2013, Reuters: New Delhi.

3. Black, M.C., Basile, K.C., Breiding, M.J., Smith, S.G., Walters, M.L., Merrick, M.T., Chen, J., and Stevents, M.R., *The National Intimate Partner and Sexual Violence Survey (NISVS): 2010 Summary Report*, C.f.D.C.a.P. National Center for Injury Prevention and Control, Editor. 2011, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention Atlanta, GA

4. Rellini, A., *REVIEW: Review of the Empirical Evidence for a Theoretical Model to Understand the Sexual Problems of Women with a History of CSA.* The Journal of Sexual Medicine, 2008. **5**(1): p. 31-46.

5. Wyatt, G.E. and Peters, S.D., *Issues in the definition of child sexual abuse in prevalence research.* Child Abuse & Neglect, 1986. **10**(2): p. 231-240.

6. Loeb, T.B., Williams, J.K., Carmona, J.V., Rivkin, I., Wyatt, G.E., Chin, D., and Asuan-O'Brien, A., *Child Sexual Abuse: Associations With the Sexual Functioning of Adolescents and Adults.* Annual Review of Sex Research, 2002. **13**: p. 307.

7. Von, J., Kilpatrick, D.G., Burgess, A., and Hartman, C., *Rape and sexual assault* in *Violence in America: A Public Health Approach*, M.L. Rosenberg and M. Fenle, Editors. 1991, Oxford: New York. p. 95-122.

8. Allgeier, E.R. and Lamping, J.C., *Theories, politics, and sexual coercion*, in *Sexually Aggressive Women: Current Perspectives and Controversies*, P.B. Anderson and C. Struckman-Johnson, Editors. 1998, Guilford Press: New York. p. 49.

9. Anderson, C.L., *Males as Sexual Assault Victims.* Journal of Homosexuality, 1982. **7**(2-3): p. 145-162.

10. Zink, T., Klesges, L., Stevens, S., and Decker, P., *The Development of a Sexual Abuse Severity Score: Characteristics of Childhood Sexual Abuse Associated With Trauma Symptomatology, Somatization, and Alcohol Abuse.* Journal of Interpersonal Violence, 2009. **24**(3): p. 537-546.

11. Wyatt, G.E., Guthrie, D., and Notgrass, C.M., *Differential effects of women's child sexual abuse and subsequent sexual revictimization.* Journal of Consulting and Clinical Psychology, 1992. **60**(2): p. 167-173.

12. Wingood, G.M. and DiClemente, R.J., *Child sexual abuse, HIV sexual risk, and gender relations of African-American women.* American Journal of Preventive Medicine, 1997. **13**(5): p. 380-384.

13. Steel, J., Sanna, L., Hammond, B., Whipple, J., and Cross, H., *Psychological sequelae of childhood sexual abuse: abuse-related characteristics, coping strategies, and attributional style.* Child Abuse & Neglect, 2004. **28**(7): p. 785-801.

14. Sciolla, A., Glover, D.A., Loeb, T.B., Zhang, M., Myers, H.F., and Wyatt, G.E., *Childhood Sexual Abuse Severity and Disclosure as Predictors of Depression Among Adult African-American and Latina Women.* The Journal of Nervous and Mental Disease, 2011. **199**(7): p. 471-477 10.1097/NMD.0b013e31822142ac.

15. Schoedl, A.F., Costa, M.C.P., Mari, J.J., Mello, M.F., Tyrka, A.R., Carpenter, L.L., and Price, L.H., *The Clinical Correlates of Reported Childhood Sexual Abuse: An Association Between Age at Trauma Onset and Severity of Depression and PTSD in Adults.* Journal of Child Sexual Abuse, 2010. **19**(2): p. 156-170.

16. Welles, S.L., Baker, A.C., Miner, M.H., Brennan, D.J., Jacoby, S., and Rosser, B.R.S., *History of Childhood Sexual Abuse and Unsafe Anal Intercourse in a 6-City Study of HIV-Positive Men Who Have Sex With Men.* American Journal of Public Health, 2009. **99**(6): p. 1079-1086.

17. Classen, C.C., Palesh, O.G., and Aggarwal, R., *Sexual Revictimization.* Trauma, Violence, & Abuse, 2005. **6**(2): p. 103-129.

18. Glosser, A., Gardiner, K., and Fishman, M., *Statutory rape: A guide to state laws and reporting requirements*, H.a.H. Services, Editor. 2004: Washington, DC. p. 135.

19. Dictionary, O.E., *"trauma, n."*, Oxford University Press.

20. Kallstrom-Fuqua, A.C., Weston, R., and Marshall, L.L., *Childhood and adolescent sexual abuse of community women: mediated effects on psychological distress and social relationships.* Journal of Consulting and Clinical Psychology, 2004. **72**(6): p. 980-992.

21. Zanarini, M.C., Yong, L., Frankenburg, F.R., Hennen, J., Reich, D.B., Marino, M.F., and Vujanovic, A.A., *Severity of reported childhood sexual abuse and its relationship to severity of borderline psychopathology and psychosocial impairment among borderline inpatients.* Journal of Nervous and Mental Disease, 2002. **190**(6): p. 381-387.

22. Briere, J., Hodges, M., and Godbout, N., *Traumatic stress, affect dysregulation, and dysfunctional avoidance: A structural equation model.* Journal of Traumatic Stress, 2010. **23**(6): p. 767-774.

23. Beitchman, J.H., Zucker, K.J., Hood, J.E., DaCosta, G.A., Akman, D., and Cassavia, E., *A review of the long-term effects of child sexual abuse.* Child Abuse & Neglect, 1992. **16**(1): p. 101-118.

24. Polusny, M.A. and Follette, V.M., *Long-term correlates of child sexual abuse: Theory and review of the empirical literature.* Applied and Preventive Psychology, 1995. **4**(3): p. 143-166.

25. Luster, T. and Small, S.A., *Sexual abuse history and number of sex partners among female adolescents.* Fam Plann Perspect, 1997. **29**(5): p. 204-11.

26. Aosved, A.C., Long, P.J., and Voller, E.K., *Sexual revictimization and adjustment in college men.* Psychology of Men & Masculinity, 2011. **12**(3): p. 285-296.

27. Hanson, K.R., *The psychological impact of sexual assault on women and children: A review.* Annals of sex research, 1990. **3**(2): p. 187-232.

28. Spaccarelli, S., *Stress, appraisal, and coping in child sexual abuse: A theoretical and empirical review.* Psychological Bulletin, 1994. **116**(2): p. 340-362.

29. Tyler, K.A., *Social and emotional outcomes of childhood sexual abuse: A review of recent research.* Aggression and Violent Behavior, 2002. **7**(6): p. 567-589.

30. Reisner, S.L., Falb, K.L., and Mimiaga, M.J., *Early Life Traumatic Stressors and the Mediating Role of PTSD in Incident HIV Infection Among US Men, Comparisons by Sexual Orientation and Race/Ethnicity: Results From the NESARC, 2004–2005.* JAIDS Journal of Acquired Immune Deficiency Syndromes, 2011. **57**(4): p. 340-350 10.1097/QAI.0b013e31821d36b4.

31. Wyatt, G.E., Myers, H.F., Williams, J.K., Kitchen, C.R., Loeb, T., Carmona, J.V., Wyatt, L.E., Chin, D., and Presley, N., *Does a History of Trauma Contribute to HIV Risk for Women of Color? Implications for Prevention and Policy.* American Journal of Public Health, 2002. **92**(4): p. 660-665.

32. Hayes, S.C., Wilson, K.G., Gifford, E.V., Follette, V.M., and Strosahl, K., *Experimental avoidance and behavioral disorders: a functional dimensional approach to diagnosis and treatment.* J Consult Clin Psychol, 1996. **64**(6): p. 1152-68.

33. Myers, H., Sumner, L., Ullman, J., Loeb, T., Carmona, J., and Wyatt, G., *Trauma and Psychosocial Predictors of Substance Abuse in Women Impacted by HIV/AIDS.* The Journal of Behavioral Health Services and Research, 2009. **36**(2): p. 233-246.

34. Hanson, R.F., Kilpatrick, D.G., Falsetti, S., A., and Resnick, H.S., *Violent Crime and Mental Health*, in *Traumatic Stress: From Theory to Practice*, J.R. Freedy and S.E. Hobfoll, Editors. 1995, Plenum Press: New York. p. 129.

35. Bal, S., Van Oost, P., De Bourdeaudhuij, I., and Crombez, G., *Avoidant coping as a mediator between self-reported sexual abuse and stress-related symptoms in adolescents.* Child Abuse & Neglect, 2003. **27**(8): p. 883-897.

36. Bryant, S.L. and Range, L.M., *Type and severity of child abuse and college students' lifetime suicidality.* Child Abuse & Neglect, 1997. **21**(12): p. 1169-1176.

37. Easton, S.D., Renner, L.M., and O'Leary, P., *Suicide attempts among men with histories of child sexual abuse: Examining abuse severity, mental health, and masculine norms.* Child Abuse & Neglect, 2013. **37**(6): p. 380-387.

38. Bhandari, S., Winter, D., Messer, D., and Metcalfe, C., *Family characteristics and long-term effects of childhood sexual abuse.* British Journal of Clinical Psychology, 2011. **50**(4): p. 435-451.

39. Rudd, J.M. and Herzberger, S.D., *Brother-sister incest—father-daughter incest: a comparison of characteristics and consequences.* Child Abuse & Neglect, 1999. **23**(9): p. 915-928.

40. Rotheram-Borus, M.J., Mahler, K.A., Koopman, C., and Langabeer, K., *Sexual abuse history and associated multiple risk behavior in adolescent runaways.* Am J Orthopsychiatry, 1996. **66**(3): p. 390-400.

41. Tyler, K.A. and Cauce, A.M., *Perpetrators of early physical and sexual abuse among homeless and runaway adolescents.* Child Abuse & Neglect, 2002. **26**(12): p. 1261-1274.

42. Denov, M.S., *To a safer place? Victims of sexual abuse by females and their disclosures to professionals.* Child Abuse & Neglect, 2003. **27**(1): p. 47-61.

43. Ruggiero, K.J., Smith, D.W., Hanson, R.F., Resnick, H.S., Saunders, B.E., Kilpatrick, D.G., and Best, C.L., *Is Disclosure of Childhood Rape Associated with Mental Health Outcome? Results from the National Women's Study.* Child Maltreatment, 2004. **9**(1): p. 62-77.

44. Finkelhor, D. and Browne, A., *THE TRAUMATIC IMPACT OF CHILD SEXUAL ABUSE: A Conceptualization.* American Journal of Orthopsychiatry, 1985. **55**(4): p. 530-541.

45. Wilson, A.E., Calhoun, K.S., and Bernat, J.A., *Risk recognition and trauma-related symptoms among sexually revictimized women.* Journal of Consulting and Clinical Psychology, 1999. **67**(5): p. 705-710.

46. Runtz, M.G. and Schallow, J.R., *Social support and coping strategies as mediators of adult adjustment following childhood maltreatment.* Child Abuse & Neglect, 1997. **21**(2): p. 211-226.

47. Ullman, S.E., *Social Reactions to Child Sexual Abuse Disclosures: A Critical Review.* Journal of Child Sexual Abuse, 2002. **12**(1): p. 89-121.

48. Tremblay, C., Hébert, M., and Piché, C., *Coping strategies and social support as mediators of consequences in child sexual abuse victims.* Child Abuse & Neglect, 1999. **23**(9): p. 929-945.

49. Meston, C.M., Lorenz, T.A., and Stephenson, K.R., *Effects of Expressive Writing on Sexual Dysfunction, Depression, and PTSD in Women with a History of Childhood Sexual Abuse: Results from a Randomized Clinical Trial.* The Journal of Sexual Medicine, 2013. **10**(9): p. 2177-2189.

50. Jung, K. and Steil, R., *A Randomized Controlled Trial on Cognitive Restructuring and Imagery Modification to Reduce the Feeling of Being Contaminated in Adult Survivors of Childhood Sexual Abuse Suffering from Posttraumatic Stress Disorder.* Psychotherapy and Psychosomatics, 2013. **82**(4): p. 213-220.

51. Leitenberg, H., Greenwald, E., and Cado, S., *A retrospective study of long-term methods of coping with having been sexually abused during childhood.* Child Abuse & Neglect, 1992. **16**(3): p. 399-407.

52. Spaccarelli, S. and Fuchs, C., *Variability in symptom expression among sexually abused girls: Developing multivariate models.* Journal of Clinical Child Psychology, 1997. **26**(1): p. 24.

53. Deliramich, A.N. and Gray, M.J., *Changes in Women's Sexual Behavior Following Sexual Assault.* Behavior Modification, 2008. **32**(5): p. 611-621.

54. Klancecky, A.K., Harrington, J., and McChargue, D.E., *Child Sexual Abuse, Dissociation, and Alcohol: Implications of Chemical Dissociation via Blackouts Among College Women.* The American Journal of Drug and Alcohol Abuse, 2008. **34**(3): p. 277-284.

55. Testa, M., Vanzile-Tamsen, C., and Livingston, J.A., *The role of victim and perpetrator intoxication on sexual assault outcomes.* J Stud Alcohol, 2004. **65**(3): p. 320-9.

CHAPTER 2: Paper 1: Male victims of sexual violence perpetrated by women

Abstract

A small percentage of articles on sexual violence have focused on male victims perpetrated by women. The purpose of this study was to investigate the association between forced sex and HIV risk behaviors and substance use in men using the National Survey for Family Growth (NSFG) dataset. This study was guided by the Transactional Model and the Experiential Avoidance Model. Of 8,108 total men, 5% (N= 501) reported ever being forced to have sex by a woman in their lifetime. The mean age that forced sex occurred was 18. Findings from this study show that men who have been forced to have sex may be at greater risk for HIV infection. Men who experienced forced sex had more sexual partners and initiated sex at a younger age than men who were not forced. Additionally condom use in the full sample was generally low; 33% of all men reported condom use at last sex. Substance use partially mediated the association between forced sex and number of sexual partners. In an effort to better understand the overall sexual life experiences of men and improve sexual health, future research should consider longitudinal analysis that examine multiple sexual life experiences, including exposure to sexual assault.

Word Count: 201

INTRODUCTION

Sexual violence in the US is a long standing and well-documented public health concern that has garnered much research attention in the last 30 years, especially in the HIV literature [1, 2]. Sexual violence researchers have extensively studied the sexual behaviors of women who have been sexually victimized in an effort to understand short and long term consequences of sexual violence. The sexual violence discourse is overwhelmingly biased towards female victims and male perpetrators. However, comparatively there are few studies that have examined the sexual behaviors of sexually victimized men. Relative to the volume of articles published on the topic of sexual violence, a small percentage has focused on male victims of sexual violence. While male victims have been the subject in some research, much of these studies were conducted with small, non-randomized samples and convenience samples, generally among college males. An exception is research conducted among men who have sex with men (MSM). In recent years the sexual violence literature has shifted to focus on sexual violence in intimate partnerships among MSM [3-6]. Despite this shift, the literature has continued to grow among male perpetrators of violence in intimate heterosexual partnerships [7]. However, the sexual behaviors of heterosexual men who have experienced sexual violence have largely gone understudied.

Among the few national studies of adult men that were conducted over a decade ago, large differences in sexual victimization incidence rates are reported. According to the National Violence Against Women Survey (NVAWS) in 2000, 3% of men reported being a victim of attempted or completed rape in their lifetime [8]. In a separate paper using the NVAWS, Tjaden and Thoennes (2006) estimated that 93,000 men were raped in the previous 12 months [9]. A recent national study, the National Intimate Partner and Sexual Violence Survey, questioned men and women regarding forced sex. Of the 7,421 men, 1.4% reported experiencing rape or forced sex [10]. Unfortunately, neither study specified whether the assailant was male or female, which may impact victim reporting or significantly compromise the interpretation of the results [8, 10].

The variations in sexual violence prevalence may be indicative of a true fluctuation in sexual violence, under-reporting by victims, and/or methodological discrepancies in how researchers sample, test, and describe sexual violence among men. Regardless of the reason for the range in incidence, researchers suggest that these percentages likely do not reflect the full extent of the problem.

This limitation in the research could be a bias in the research community that does not fully recognize the importance of understanding male sexual behavior and how forced sex could impact later sexual behaviors. This oversight could also be symptomatic of a larger societal attitude that over-sexualizes men's behaviors. The general consensus may assume that men in general will have a high number of sexual partners [11, 12]. As a result of this assumption, the behavioral impact of sexual violence may be intertwined with assumed male sexual behavior. In other words, the literature may be missing vital information about differences in sexual behavior between men with a history of forced sex and those without a history of forced sex.

Given the dearth of recent data on male victims of forced sex by female perpetrators, the purpose of this study is to investigate the association between forced sex and HIV risk behaviors in men using the National Survey of Family Growth dataset, a population based survey of US adolescents and adults.

LITERATURE REVIEW

An area of research in which sexual violence against men has proliferated is in the HIV and sexual health–related journals. Much of this literature reviews the long-term effects of childhood sexual abuse, [13] and risk for HIV among men who have sex with men [13, 14], or samples prison populations to investigate sexual violence within the prison system [15-18]. The majority of the HIV-related literature focuses on male sexual violence victims by male perpetrators. There is a paucity of information relating to male sexual violence victims of female perpetrators. A potential reason for the lack of research in female perpetrated sexual violence on men offered by Choudhary et al. (2010) and Tewksbury (2007) is a discrepancy in appropriate questions and wording of surveys to adequately address unwanted sexual

intercourse [19, 20]. When researchers include males in studies about sexual violence, the typical focus is on the male as the aggressor of sexual violence. In many studies researchers fail to ask if male participants have ever been sexually victimized [19]. Further, in the rare occasion when researchers do ask about victimization, they often neglect to ask whether the perpetrator was male or female and the nature of their relationship to the perpetrator [21]. Many researchers declare in their conclusions and recommendations for future research the necessity of including male sexual violence victims in data collection efforts [20]. Choudhary et al. call for large detailed data collection efforts with diverse samples of men in order to make appropriate assessments of the effect forced sex has on behavioral and psychological outcomes in men [20].

HIV Risk and Sexual Violence

While it may be assumed that victims of sexual violence would attempt to avoid situations in which sexual intercourse is possible [22] and though some people do react to sexual victimization in this way, a large body of research suggests that the reaction is more complex and varied. Research suggests that people with a history of sexual violence do continue to engage in sexual intercourse and often times with greater risk for acquiring and transmitting HIV and sexually transmitted infections (STI) than people who have not been sexually victimized. A history of sexual violence has been associated with behaviors that increases risk for HIV infection [13, 14, 23]. Studies among female victims, have found that they report more sexual partners, use condoms inconsistently, exchange sex for drugs or money, as well as use and abuse alcohol and drugs [24, 25]. Similar findings have been reported in sexual abuse victims who are MSM [14, 26] [27].

There is a dearth of research investigating the behavioral risk factors in male victims abused by women among heterosexual-identifying men. Yet studies assessing behavioral outcomes of sexually victimized men who have sex with men may provide some insight about what could be expected among heterosexual men, despite the contextual difference. For example, in a study of 1001 men who have sex

with men, men who report sexual abuse were significantly more likely to report unprotected anal intercourse, exchange sex for money or drugs, inject drugs, test positive for syphilis, and report being HIV positive [14] compared to men who have sex with men with no sexual abuse history[14] . Similar findings have been found in other studies involving sexually victimized men who have sex with men [13, 26-28].

Studies among childhood sexual abuse survivors note that sexual abuse impacts the development of the victim's sexual identity and sexual behaviors [29]. Some studies have suggested that the gender of the perpetrator may contribute to sexual identity confusion for male victims [30, 31]. It is important that research assess behavioral outcomes in men who have been victimized by males as well as female perpetrators and include men who identify as heterosexual.

Psychological and Physical Response to Sexual Violence

Among the few empirical studies that assess female-perpetrated sexual violence against men, there are conflicting findings in how men respond to the forced sex experience. Some men do not report negative effects following sexual violence while others experience a range in level of distress. In a study of 21 college males who reported being forced to have sex by a woman, Struckman-Johnson found that 25% of the respondents reported they felt "good" at the time the forced sexual experience occurred while another 25% reported they felt "bad" about the experience [21]. The remaining 50% reported they felt "neutral" about the experience [21]. Researchers have theorized about potential factors that could impact how a man perceives the sexual assault and include whether or not alcohol or drugs were involved, the type of relationship the victim had with the female perpetrator, the age disparity between the victim and the perpetrator, and the type of force that was used during the sexual attack [32-34].

An alternative perspective to investigating forced sex as a primarily deleterious experience is offered in Okami's investigation. Okami's exploratory study of 37 men and women assessed the variability of positive versus negative experiences of childhood sexual contact with an adult. Nearly 82%

of males and 18% of females rated the childhood sexual contact as a positive experience both at the time the contact occurred and retrospectively [35]. Approximately 70% of positive reports state that the physical/sexual response was the most important factor of the positive experience [35]. In other words, experiencing sexual pleasure or satisfaction was the most important aspect in rating the childhood sexual contact as positive.

Conversely, some men report psychological and sexual problems resulting from sexual violence by women. In a qualitative study of 11 sexually abused men who were seeking sex therapy, all participants reported experiencing sexual dysfunction following the forced sex experience perpetrated by women. Whether the abuse occurred in childhood and adulthood, the men seeking sex therapy had similar psychological and physiological responses to attempts at sexual intercourse following the abuse [36]. Physiological responses were described as long periods of impotence (e.g. inability to achieve an erection and/or inability to ejaculate) during attempts at sexual activity [36]. Most men, regardless of the relationship with the female perpetrator (mother, babysitter, partner etc.), experienced post-traumatic stress, fear, guilt and social isolation resulting from the sexual abuse [36]. There were clear differences in how some men internalized the forced sex experience and how the experience manifested in future sexual activity. While there have been studies to better understand the psychological response to sexual victimization in men [2, 19, 30, 37], there is little information available about sexual risk behavioral outcomes following experience of sexual violence in men, specifically perpetrated by women.

Theoretical Framework

The Transactional Model [38] provides a comprehensive view of how sexual abuse stress influences psychological symptomology through coping strategies, cognitive appraisals, and environmental factors/support resources. Abuse stress is related to the perception of the stressor as a threat to personal harm or loss, whether the loss is considered emotional, physical or both and consists of three event types, a. the abuse event itself, b. abuse-related events, and c. abuse disclosure event. The

current study focused on the abuse event and the point in the respondent sexual life that forced sex occurred. Assuming that unwanted sexual contact is stressful, repeated and continuous sexual abuse over time would likely result in higher levels of distress [38]. The abuse event is captured by ever experienced forced sex or no report of forced sex. Cognitive appraisal refers to how the victim understands and perceives who they are in the context of having experienced sexual abuse and others [38]. While an important factor to consider, this construct was not measured in the current study because the survey laced questions specific to cognitive appraisal. Findings were interpreted through the lenses of cognitive appraisal. Support resources refer to current relationships a person has to help cope with stressors as well as the environmental factors that affect support [38]. Support resources and environmental factors were assessed in the current study via family structure.

The Transactional Model outlines 4 coping styles: active coping, emotional release, cognitive restructuring, and avoidance coping. Data collected on the National Survey of Family Growth 2006-2010 (NSFG) yielded information that allowed for analysis on avoidance coping behavior, which will be the focus of coping for this study. Because the Transactional model emphasizes psychological symptomology, I adapted the model to include the Experiential Avoidance Model [39]. Experiential Avoidance Model, as described by Hayes et al is "the phenomenon that occurs when a person is unwilling to remain in contact with particular private experiences (e.g., bodily sensations, emotions, thoughts, memories, behavioral predispositions) and takes steps to alter the form or frequency of these thoughts and the contexts that occasion them" [39]. In other words, experiential avoidance is at work when a person employs (whether consciously or unconsciously) any method, strategy, or behavior to avoid or escape the form or frequency of facing or remembering a traumatic experience [39], such as memories of forced sex. According to Experiential Avoidance Model, people may enact behaviors and strategies to escape feeling, thinking about the event or situation they have defined as negative, damaging, or traumatic.

Post-Traumatic Stress and Sexual Violence

Post-traumatic stress disorder is defined by the Diagnostic and Statistical Manual on Mental Disorders, Edition 5 as "the development of characteristic symptoms following exposure to one or more traumatic events" (2013). The traumatic event can be re-experienced in numerous ways; commonly as "recurrent, involuntary and intrusive recollection of the event." Post-traumatic stress is very common among sexual abuse victims [40], regardless of whether the abuse occurs in childhood, adolescence, or adulthood and has been associated with depression, anxiety, substance use, suicide ideation [2, 38, 41, 42] and HIV infection among men who have sex with men [43].

Avoidant Coping strategy

The Experiential Avoidance Model highlights behavioral responses to trauma that have been identified as avoidant. Some behavioral forms of coping reported in the sexual violence literature that are considered to be maladaptive include dissociation, binge-purge eating, substance use, self-mutilation, suicide attempt and risky sexual behavior [25, 44-47]. While tension reducing behaviors such as sexual activity and substance use can have immediate stress-diminishing benefits, risky sexual practices with multiple partners and inconsistent condom use can have negative long-term effects such as increased risk of HIV infection. The model used in the current study purported that tension-reducing behaviors are more likely to occur in cases where abuse-related stress is high and that this stress has an indirect effect on HIV risk behaviors by increasing the likelihood that victims will employ unhealthy avoidance coping behaviors.

Substance Use and Sexual Violence

It has been well-established in the literature that substance use is associated with risky sexual behaviors. Alcohol use for example has been linked with lowered sexual inhibition, impaired decision-making ability, inconsistent condom use, and promiscuity. Research has also indicated that substance use is associated with experience of sexual abuse [44, 48, 49]. In particular, male youths who have

experienced childhood sexual abuse report more frequent alcohol use than non-abused male youths [50, 51]. In Hamburger's et al. study of CSA, among 1,851 adolescents boys with a history of CSA, they were 2.5 times more likely to report binge drinking compared to non-abused boys [51]. Despite these findings, the nature of the relationship between substance use and sexual victimization remains unclear. Some theorists have suggested that substance use problems develop as a result of experiencing sexual abuse, generally as a coping mechanism [38, 44, 52]. Others have suggested that substance use increases a person's susceptibility to sexual violence [53].

Environmental Factors and Support resources

Studies on adolescent sexual activity suggest parental involvement and child monitoring reduces early sexual behavior in youth [54, 55]. There is growing literature to suggest that even among sexually abused children, parental supervision mitigates the risk of the child having multiple sexual partners [56]. Furthermore, growing up in a 2-parent home is considered an environmental factor that could impact risk for sexual violence. Chandy, Blum, and Resnick report in their study of abused middle and high school youth, having both parents in the home allayed the negative effects of sexual abuse, namely early sexual onset among girls [57]. Additionally, Spaccarelli suggests that children who do not receive adequate attention may be more vulnerable to coercion from older perpetrators, especially parental figures [38].

Similarly, living on one's own before the age of 18 can put an adolescent at risk for sexual abuse. A study of homeless youth found that among 190 male and female youths, the rate for sexual abuse was 37.4% [58]. In a similar study of sexual- minority homeless youth, 29% of males and females reported sexual abuse [59]. In both studies, abused homeless adolescents reported more sexual partners and less condom use compared to homeless youth who did not report sexual abuse [58, 59]. Although running away from an abusive home life may be a way to escape abuse, without adequate social support, the youth could be at greater risk for sexual abuse and/or re-victimization.

Other Factors

There have been very few articles that specifically investigated racial differences in men who have a history of sexual victimization. In Choudhary's assessment of 1,828 men using the Behavioral Risk Factor Surveillance System (BRFSS), bivariate analysis indicated that young, White, single, low-income men were more likely to report victimization [20]. Additional studies are needed to better understand how the role, if any, race and education play in sexual victimization among men. Additionally, there is little information about relationship harmony among men who have experienced sexual victimization. In a study by Bifulco et al, the researchers report that victims of childhood sexual abuse (CSA) experienced more marital discord characterized by higher divorce and separation compared to those with no CSA [60]. Research is needed to understand if there are differences in marital status among men who experience forced sex. There is also little understanding of differences in educational attainment among men who have been sexually victimized and those who have not. In the sexual violence literature, many studies use college samples [61]. The experiences of people sampled from such specific populations, such as college campuses, may not be representative of the overall population. There are few studies that look at level of education and report of sexual violence in men. For instance, demographic information collect by Choudhary et al. found among the victimized sample of 2,750 men, 71% had less than a college degree [20]. Finally, there has been research to suggest that men who have been incarcerated are at increased risk of sexual abuse (generally while incarcerated); there is little evidence to suggest that prior sexual victimization is a risk factor for incarceration. While this is beyond the scope of this study, it was considered an important factor to include in the analysis as a control variable because of the other potential high risk behaviors associated with incarceration (e.g., increased number of partners and substance use).

Given the low representation of male victims of sexual violence in the sexual violence literature the purpose of this study is two-fold: first, to explore the socio-demographic characteristics among US men who have experienced forced sex. The second goal was to investigate the association between

forced sex and HIV risk behaviors in men who have been forced to have sex by women. While there have been a number of publications that focus on male victimization, the majority of the papers either do not directly inquire about the gender of the perpetrator or focus primarily on men as perpetrators. This paper highlights the under-investigated area of female perpetrated forced sex against men in the hopes to: 1) bring attention to a significant proportion of the US population silently suffering the consequences of sexual victimization 2) better understand if risky sexual behaviors are associated with forced sex by women in heterosexual men; and 3) better understand how substance use affects the relationship between forced sex and risky sexual behaviors (e.g. low condom use and increased number of partners.

I accomplished the above stated goals by first, exploring the associated differences in demographic characteristics between men who report forced sex and those who do not report forced sex by women. Second, given the dearth of recent data on forced sex among men by female perpetrators, I examined the prevalence rate of forced sex in men victimized by women. Lastly, I sought to investigate whether or not men who experienced forced sex report avoidant coping behaviors as manifested in risky sexual practices and substance use.

Research Questions

Research question 1 asked: Does condom use at last sex differ between men who have experienced forced sex and those who have not experienced forced sex? **Hypothesis**: Men who experience forced sex will have lower odds of condom use at last sex compared to men with no history of forced sex.

Research question 2 asked: Does the number of female partners over a man's lifetime differ between men who reported forced sex and those who do not report forced sex? **Hypothesis**: Men who experience forced sex will report a higher number of female sexual partners than men who have not been victimized.

Research question 3 asked: What is the role of substance use and condom use among men who have and who have not experienced forced sex? **Hypothesis**: Substance use will mediate the association between forced sex and condom use.

Research question 4 asked: What is the role of substance use and number of partners among men who have and who have not experienced forced sex? **Hypothesis**: Substance use will mediate the association between forced sex and number of partners.

METHODS

Participants

Participants in this study were men who responded to the National Survey for Family Growth (NSFG), Cycle 2006-10. The NSFG is a cross-sectional, multi-stage area probability sample conducted by the National Center for Health Statistics of the Centers for Disease Control and Prevention. The NSFG collected data on reproductive health, contraception use, and family planning among US men and women of reproductive ages.

Data were collected from the US population on a rolling basis in four phases between June 2006 and June 2010. Males between ages 15 and 44 were included in data collection resulting in a total sample size of 10,403. The response rate for men invited to participate was 75% [62]. Teenagers and Black and Hispanic adults were targeted for recruitment and oversampled in order to produce more reliable statistics for these populations. The interviews were conducted via in-person interviewing and data was recorded on laptops. Sensitive data (e.g. HIV risk behaviors, sexual violence, and substance use) were collected using audio computer-assisted self-interviewing (ACASI) software. Each respondent was compensated $40 for their time.

Eligibility criteria for the current study included men aged 18 years or older (forced sex questions were limited to men 18 years and older) and having ever had sex. The resulting sample size was 8,108.

The University of California, Los Angeles Institutional Review Board exempted this secondary data analysis from review.

Procedure

Measures

Outcome Variables

The HIV risk factors are condom use and number of lifetime partners. In research questions one and three the outcome variable is condom use. Condom use at last vaginal sex was coded as yes (1) or no (0). In research questions two and four the outcome variable is number of sexual partners. The number of lifetime sexual partners is a continuous variable. The NSFG publicly available data files were top-coded at 50 or more partners, which represented 6% of respondents.

Covariate Variables

Forced Sex

The main predictor variable was ever forced to have sex. The question asked, "Have you ever been forced by a female to have vaginal intercourse against your will." Responses were coded as yes (1) or no (0). A similar question was used in a recent study by Butler in which the survey asked women if they had ever been sexually assaulted or raped (Butler, 2013).

Mediating Variable

Alcohol use was assessed with the question, "During the last 12 months, how often did you have 5 or more drinks within a couple of hours?" Due to small cell sizes, I collapsed the response options into a dichotomous response (never and ever). This question resembles the alcohol use question asked on the behavioral Risk Factor Surveillance System (BRFSS) from the Centers for Disease Control [63]. Drug use was measured with the question, "During the last 12 months, how often did you use (state specific

drug)?" This question was asked separately for each drug (e.g. marijuana, cocaine, crack, crystal meth, and injection drug use). Response items were dichotomized (never used and ever used).

Demographic Characteristics

Socio-demographic characteristics were used to control for differences in the sample and included age, race/ethnicity, marital status, education, income, and receiving public assistance. Marital status was coded as: currently married, cohabitating with opposite sex partner, divorced or separated due to marital discord, and never been married. Education was assessed in terms of highest grade completed or highest degree received and response options were: high school diploma or less, some college, college degree, graduate degree. Support resource is measured using family structure and assessed by if the respondent grew up with both parents in the household.

Sexual Activity

Sexual activity includes questions about age at first sex and treatment for sexually transmitted infections. Age at first vaginal sex was assessed by asking, "The first time vaginal sex occurred, how old were you?".

Missing Values

The National Center for Health Statistics (NCHS) accounted for missing data in the NSFG using imputation analysis. The NCHS statisticians created 600 recode variables for the items anticipated to be utilized the most in the public-data file. The frequency of missing values was quite low; no more than 2% of all NSFG files required imputation. Additional information about missing and NSFG data collection has been published by the NCHS and can be found elsewhere [64]. For the purposes of this study, where indicated, I utilized recoded variables with imputed values.

Statistical Methods

Univariate and Bivariate Analysis

Stata 12 was used to conduct univariate analysis on all variables to describe the characteristics of the sample and determine the distribution of each variable. Chi-square tests for categorical variables and Student's t-test for continuous variables were used to examine differences by forced sex among selected variables. Significance level was set at 0.05 to test the differences between men who report forced sex and those who do not report forced sex. I ran analysis of variance to further test for difference between forced sex and the background variables.

Multivariate Analysis

Weighted multivariate logistic regression and multivariate linear regression analyses were conducted to analyze the factors expected to be independently associated with a history of forced sex and self-reported HIV- risk behaviors. The main outcome variables were ever experienced forced sex and HIV-risk behaviors as measured by condom use and number of sexual partners. The Sobel Test of Mediation was employed to assess whether substance use mediated the association between the forced sex and condom use and forced sex and number of partners. The predictor variables included demographic characteristics, growing up with both parents in the home, and ever spent time in jail or juvenile detention.

RESULTS

Descriptive Analysis

Table 1 presents the descriptive analysis of the men assessed by report of forced sex or no forced sex using the NSFG. Of the total sample, 5% of men (N= 501) reported ever being forced to have sex by a woman in their lifetime. The average age men were forced was 18 years old. Interestingly, 24% of victimized men reported forced sex occurring before age 15; while 26% reported forced sex occurred

between the ages of 15-17. The remaining 50% reported forced sex at age 18 or older. The youngest age reported was less than 1 years old. The mean age of the overall sample was 31 years old and the majority of the sample had either completed high school or had some college schooling (56%). The racial make-up of the sample is similar to that of the US population: 60% of the men were White, 20% were Latino, and 12% were Black and 8% were Other (Asian or multi-racial). Forty-six percent of men were married, 6% were divorced or separated and 15% were cohabitating with a woman and 33% had never been married.

Given the lack of research assessing race and forced sex, this study yielded interesting findings. While Table 1 illustrates racial differences among all men, specifically within each race category proportions show that minority men had higher proportions of forced sex compared to White men. Twelve percent of all Black men, 6% of all Latino men, and 7% of all Other men reported forced sex compared to 4% of all White men (not tabled). Marriage was lower and cohabitation was higher in men who report forced sex compared to men who report no forced sex. Additionally, spending time in jail or juvenile detention in the last year was twice as high in men with a history of forced sex compared to men with no such history X^2 (1, N=8,108) = 114.31, $p<0.001$. Of men who experienced forced sex, 48% report growing up within a 2-parent household compared to 63% of men with no forced sex history growing up in a 2-parent home.

There is a significant difference in age at first consensual sex and having ever experienced forced sex. Men who reported forced sex initiated sex at an earlier age than men who do not report sexual violence (Coef. -1.58, $p<0.001$). On average, age at first sex among men with a history of forced sex was 15.8 years old whereas men with no forced sex history were 17.2 years old at first sex. The average number of lifetime female sexual partners in men who report forced sex was 16, while the number of lifetime female sexual partners in men with no forced sex was 10 (Coef.1.02, $p<0.01$). Condom use at last vaginal sex was not statistically significant between men with a forced sex history and those with no such history. Substance use was statistically significant with forced sex among men. For marijuana,

crack, and crystal meth, a higher proportion of men who reported forced sex reported drug use compared to men with no forced sex history.

Table 1: Demographic Characteristics, Sexual Violence and Sexual Activity in Men

Variables	N	Full Sample (N= 8,108)[a] Percent	No Forced Sex (N= 7,607)[a] Percent	Forced Sex (N= 501)[a] Percent	P-Value
Age-- Mean (SD)	8,108	30.6 (7.69)	30.6 (7.69)	30.6 (7.54)	
Race:					<0.001
White	4,141	60.2	61.2	41.9	
Black	1,381	11.7	10.9	26.7	
Hispanic	1,898	19.8	19.7	20.4	
Other	688	8.4	8.2	11.1	
Marital Status:	8,108				0.010
Married		46.0	46.1	38.2	
Divorced/Separated		6.3	6.4	6.3	
Cohabitate		14.7	14.3	22.1	
Never married		33.2	33.2	33.5	
Education:	8,108				<0.001
Less than HS		22.8	22.3	29.7	
High School		27.9	28.0	26.6	
Some College		28.1	27.8	31.9	
College degree		15.2	15.6	7.9	
Grad/Professional		6.1	6.2	3.8	
Family Structure:					
Grew up in 2-parent home	8,108	63.4	64.2	48.2	<0.001
Spent time in jailed- 12 mo	8,108	7.3	6.9	15.1	<0.001
Sexual Activity:					
Age at 1st vaginal sex-- Mean (SE)	8,108	17.2 (.078)	17.2 (.083)	15.8 (.234)	<0.001
Condom use-last vaginal sex	8,045	33.4	33.2	35.7	0.439
No. of partners-lifetime--Mean (SE)	8,108	10.7 (.262)	10.4 (.274)	15.7 (.919)	0.001
Drug Use- 12 mo.:					
More than 5 drinks	8,104	32.5	32.2	37.6	0.058
Marijuana	8,091	25.1	24.5	34.4	0.002
Cocaine	8,103	6.4	6.2	8.7	0.078
Crack	8,102	0.9	0.77	3.9	<0.001
Crystal Meth	8,104	1.3	1.1	4.1	<0.001
IDU	8,105	0.34	0.31	0.92	0.073

Note. Weighted sample; IDU= Injection Drug User

[a] Number may not add up to total due to missing values for a specific variable

Multivariate Analysis

Sexual Violence and Socio-demographic Background

Table 2 presents weighted statistics on forced sex, socio-demographic characteristics, sexual activity and substance use. Given the significant associations found using bivariate analysis and the lack of published literature on forced sex among men, I ran multivariate analysis to better understand the

association between forced sex and the socio-demographic and substance use. The outcome factor is forced sex and the independent factors are: socio-demographic characteristics, sexual activity and substance use. Table 2 displays the results of the weighted logistic regression Black men had 2.9 higher odds of reporting forced sex compared to White men ($p<0.001$). Asian and multi-racial men had 2.0 higher odds of reporting forced sex than White men ($p< 0.05$). There was no significant difference in report of forced sex between Latino men and White men. Men who had some college but no college degree had 1.73 higher odds of reporting forced sex than did men with a college degree ($p=0.036$). Men who initiated sex at an older age reported lower odds of forced sex compared to men who initiated sex at younger ages ($p=0.010$). There was no statistically significant difference in growing up in a 2-parent household or having spent time in jail between men with a history of forced sex and those with no such history. Crack use was the only drug with statistically significant differences between men with a history of forced sex and those with no history of forced sex. Crack use among men who reported forced sex was two-fold that of men with no forced sex history when all substances were included in the analysis.

Table 2: History of Forced Sex by Demographic Characteristics, Sexual Behaviors and Substance Use in Men

Variables	N= 7978	AOR/Coef.	C.I.
Age		1.00	(.972, 1.02)
Race:			
White		1	
Black		2.85***	(2.11, 3.85)
Hispanic		1.41	(.981, 2.03)
Other		2.03*	(1.15, 3.60)
Marital Status:			
Married		1	
Divorced/Separated		0.78	(.477, 1.26)
Cohabitate		1.20	(.774, 1.86)
Never married		0.84	(.558, 1.25)
Education:			
College degree		1	
Less than HS		1.67	(.927, 3.00)
High School diploma		1.14	(.687, 1.91)
Some College		1.73*	(1.04, 2.89)
Grad/Professional		1.37	(.572, 3.27)
Grew up in 2-parent home		0.72	(.503, 1.03)
Spent time in jailed- 12 mo		0.94	(.840, 1.06)
Sexual Activity (Coef.):			
Age at 1st vaginal sex		0.93**	(.888, .983)
No. of partners-lifetime		1.02**	(1.00, 1.03)
Substance Use:			
5+ drinks in one sitting		1.15	(.841, 1.51)
Marijuana		1.20	(.821, 1.76)
Cocaine		0.79	(.477, 1.31)
Crack		2.98**	(1.36, 6.51)
Crystal-Meth		1.99	(.951, 4.17)
Injection drugs		1.05	(.379, 2.91)
Outcome Variable: Forced sex			

Note. Logistic and Linear Regression; Weighted sample

AOR= Adjusted Odds Ratio; Coef= Coefficient

* p=<0.05, **p=<.01, ***p=<.001; 1=Referent

Condom Use, Sexual Violence, and Substance Use

Table 3 presents the results of research question one which investigated the association between condom use and forced sex and research question three which tested the mediating effect substance use has on the relationship between condom use and forced sex. Model 1, (unadjusted model) assessed forced sex and condom use. Condom use was 1.11 times higher in men who report forced sex compared to men who report no forced sex although not statistically significant.

In model 2 the main socio-demographic variables: age, race, marital status, education, jail time, and growing up in a single-parent household were added to the model. The association between condom use and forced sex remained non-significant when the control variables were added to the analysis. In model 3, sexual activity was included in the analysis. There was not a statistically significant association between forced sex and condom use at last sex, holding constant age, race/ethnicity, marital status, educational attainment, age at first sex, and number of sexual partners.

Model 4 tested the association between condom use and forced sex controlling for socio-demographic characteristics and sexual activity, jail time, and family structure with substance use. There was not a statistically significant association between condom use and forced sex with substance use.

Table 3: Condom Use by Forced Sex, Sexual Behaviors and Substance Use; NSFG 2006-2010

	Model 1 (N= 8045)		Model 2 (N= 8042)		Model 3 (N= 7994)		Model 4 (N= 7972)	
Variables	**UOR**	**C.I.**	**AOR**	**C.I.**	**AOR**	**C.I.**	**AOR**	**C.I.**
Ever forced to have sex	1.11	(.845, 1.47)	1.05	(.777, 1.43)	1.14	(.830, 1.56)	1.14	(.836, 1.56)
Sexual Activity:								
Age at 1st vaginal sex					1.04**	(1.01, 1.06)	1.03**	(.979, .996)
No. of partners-lifetime					0.99***	(.977, .994)	0.99**	(.978, .995)
Substance Use:								
5+ drinks in one sitting							0.88	(.722, 1.06)
Marijuana							0.84^	(.707, 1.01)
Cocaine							0.61**	(.437, .840)
Crack							1.21	(.652, 2.24)
Crystal-Meth							1.05	(.577, 1.92)
Injection drugs							0.82	(.344, 1.97)

Outcome variable: Condom use at last sex

Controlled for age, race/ethnicity, marital status, education level, jail time, and 2-parent household

Note. Logistic regression; Weighted sample

UOR= Unadjusted Odd Ration; AOR= Adjusted Odds Ratio

* p=<0.05, **p=<.01, ***p=<.001

Test of Mediation

The criteria for mediation are: 1) a significant relationship between the independent variable (forced sex) and the dependent variable (condom use); 2) a significant relationship between the independent variable (forced sex) and the mediating variable (substance use); and 3) the mediator (substance use) must be a significant predictor of the dependent variable (condom use) in the equation that includes both the mediator (substance use) and the independent variable (forced sex). The

associations between forced sex, condom use and substance use did not meet the above criteria; therefore mediation analysis was not conducted.

Number of Sexual Partners, Sexual Violence, and Substance Use

Table 4 displays results for research question two which tested the association between forced sex and number of sexual partners and for research question four that tested the impact substance use had on the association between forced sex and number of partners. Model 1, the unadjusted model, assessed forced sex in men and number of partners. Men who reported forced sex had on average 5 more sexual partners over his lifetime compared to men who report no forced sex experience at baseline.

In model 2 the main socio-demographic variables: age, race, marital status, education, jail time, and growing up in a single-parent household were added to the model. Holding these variables constant, men who experienced forced sex had, on average, 4.5 more sexual partners over his lifetime compared to men who have not experienced forced sex. These results suggest socio-demographic characteristics help to explain a portion of the variance between forced sex and number of sexual partners. In Model 3 sexual activity was added to the regression model. The coefficient of forced sex dropped from 4.51 to 2.78 and remains statistically significant ($p<0.01$). Model 4 relates to research question four and assessed the impact substance use has on the relationship between number of partners and forced sex. When binge drinking, marijuana, cocaine, crack, crystal meth, and injection drug use are each included in the analysis the coefficient for forced sex and number of partners decreases from 2.78 to 2.62 ($p<0.01$) indicating a test of mediation is warranted.

Table 4: Number of Female Partners by Forced Sex, Sexual Behaviors and Substance Use NSFG 2006-2010

	Model 1 (N= 8108)		Model 2 (N= 8105)		Model 3 (N= 7994)		Model 4 (N= 7972)	
Variables	**U Coef.**	**C.I.**	**A Coef.**	**C.I.**	**A Coef.**	**C.I.**	**A Coef.**	**C.I.**
Ever forced to have sex	5.32***	(3.42, 7.23)	4.51***	(2.60, 6.42)	2.78**	(.887, 4367)	2.62**	(.723, 4.53)
Sexual Activity:								
Age at 1st vaginal sex					-1.13***	(-1.26, -1.01)	-1.08***	(-1.20, -.964)
Condom used last sex					-1.70***	(-2.64, -.754)	-1.41**	(-2.33, -.481)
Substance Use:								
5+ drinks in one sitting							2.06***	(1.13, 3.00)
Marijuana							0.47	(-.645, 1.59)
Cocaine							4.42***	(1.78, 7.05)
Crack							1.21	(-3.78, 6.19)
Crystal-Meth							-1.57	(-4.82, 1.69)
Injection drugs							-0.30	(-8.11, 7.51)

Outcome Variable: Number of female lifetime partners

Controlled for age, race/ethnicity, marital status, education level, jail time, and 2-parent household

Note. Linear regression; Weighted sample

U Coef= Unadjusted Coefficient; A Coef= Adjusted Coefficient

* p=<0.05, **p=<.01, ***p=<.001

Test of Mediation

Table 5 illustrates the associations between forced sex, number of partners and each substance in separate analysis. This table was used to inform about data included in the Sobel-Goodman analysis. Substance use consisted of: binge drinking, cocaine, pot, crack, and crystal meth. Each substance was included in the Sobel-Goodman analysis separately and each was independently associated with both forced sex and number of partners. Furthermore, the association between forced sex and number of partners remained statistically significant when each substance was included in the model. The mediating effect of each substance was tested separately with forced sex and number of partners. Table 6 provides the results of the Sobel-Goodman test of mediation analysis. Marijuana, cocaine, and crack all partially mediated the association between forced sex and number of partners. Binge drinking and crystal meth did not mediate the association between forced sex and number of partners.

Table 5: Forced Sex among Men: Number of Partners by Each Substance Reported Separately NSFG 2006-2010

	Binge Drink (N= 7992)		Marijuana (N= 7978)		Cocaine (N= 7989)		Crack (N= 7988)		Crystal Meth (N= 7990)		Injection (N= 8022)	
Variables	**A Coef.**	**C.I.**	**A Coef.**	**C.I.**	**A Coef.**	**C.I.**	**A Coef.**	**C.I.**	**A Coef.**	**C.I.**	**A Coef.**	**C.I.**
Ever forced to have sex	4.14***	(3.11, 5.17)	4.06***	(30.4, 5.09)	4.07***	(3.04, 5.09)	4.07***	(2.52, 6.75)	4.15***	(3.11, 5.18)	4.11***	(3.08, 5.13)
Sexual Activity:												
Age at 1st vaginal sex	-1.11***	(-1.18, -1.04)	-1.10***	(-1.17, -1.03)	-1.12***	(-1.19, -1.05)	-1.13***	(-1.20, -1.06)	-1.14***	(-1.21, -1.07)	-1.13***	(-1.20, -1.06)
Condom used last sex	-1.30***	(-1.86, -.752)	-1.26***	(-1.81, -.709)	-1.22***	(-1.77, -.671)	-1.39***	(-1.94, -.836)	-1.42***	(-1.98, -.871)	-1.42***	(-1.97, -.868)
Substance Use:	2.19***	(1.65, 2.73)	2.38***	(1.81, 2.95)	4.45***	(3.48, 5.41)	4.64***	(2.53, 6.75)	0.77	(-1.17, 2.70)	2.35	(-1.11, 5.80)

Outcome Variable: Number of female lifetime partners

Controlled for age, race/ethnicity, marital status, education level, jail time, and 2-parent household

Note. Linear regression; Weighted sample

U Coef= Unadjusted Coefficient; A Coef= Adjusted Coefficient

* p=<0.05, **p=<.01, ***p=<.001

Table 6: Indirect Effect of Substance use as a Mediator of Forced Sex and Number of Partners

Substance	N	Coef.	SE	Z	P-value
Binge Drinking	7,992	0.026	0.047	0.56	0.576
Marijuana	7,978	0.145	0.051	2.85	0.004
Cocaine	7,989	0.107	0.054	1.99	0.047
Crack	7,988	0.104	0.035	2.99	0.003
Crystal-Meth	7,990	0.022	0.029	0.77	0.442

DISCUSSION

Overall, the findings in the current study supported the proposed hypotheses, with the exception of the relationship between condom use and forced sex. In assessing the relationship between forced sex and socio-demographic characteristics, Black men were three times as likely to report forced sex and Other men were twice as likely to reported forced sex compared to White men. This is an important finding given that many previous studies that assess sexual victimization in men often report race as a demographic characteristic but do not assess the difference in victimization by race. One exception is in a study by Light and Monk-Turner that utilized the 1994-1996 Violence and Threats of Violence Against Women and Men in the US Survey (NVAW). The NVAW is a nationally represented dataset and the researchers included race in the analysis of sexual assault in men (N=219). They reported in their study that 80% of victims were White men, whereas 10% of victims were African American/Black and 10% were of other racial categories [33]. Although the NVAW is a national survey, it yielded only 2.7% of men who endorsed experiencing force sex. Additionally, their definition of rape included attempted and completed rape, whereas the current study defined forced sex as penetrative vaginal sex. The smaller sample size and difference in definitions may account for the differences of reported forced sex by race among men.

Research will need to better clarify a unilateral definition for forced sex in order to gain a more accurate depiction of sexual victimization among men. To that end, it is necessary that definitions of

sexual violence distinguish between attempted rape and rape. While both attempted rape and completed rape are traumatic, research has shown that forced penetrative sex is associated with more severe psychological symptomology compared to non-penetrative sexual assault [65]. It is recommended that future studies include attempted rape and completed rape as separate factors.

In research question one the hypothesis stated that there is a difference in condom use at last vaginal sex between men with a history of forced sex compared to men with no such history. This association was not statistically significant and the hypothesis was not upheld. The decision to use a condom (or not) during sexual activity depends on a number of factors, such as the relationship with the sex partner, level of intimacy or closeness, and desire to prevent pregnancy and/or sexually transmitted infections. Taken together, a person's decision to use or not use a condom during sexual activity is not one-dimensional; rather it is multi-faceted and complex. Assessing condom use over a given period of time (i.e., last 3 months) may provide contextual information about overall condom use behaviors and not solely on one incident (last sex).

In research question two, the hypothesis that men who experience forced sex will have more sexual partners over his lifetime was statistically significant ($p=0.002$), and is not rejected. Among men who report forced sex, it is estimated that they will have approximately three more partners over their life time compared to men who do not report forced sex. While this may be considered a relatively small difference, it is important to assess risk in its totality. Engaging in multiple sex acts with multiple partners (who may also have high HIV risk behaviors) places victimized men at increased risk for HIV or STI infection and transmission. This finding lends support to the theory that men who have a forced sex history may rely upon stress-reducing, avoidance behaviors such as sexual activity, which may ultimately lead to having higher number of lifetime partners. Additionally in this specific model that assessed number of partners and forced sex, men who experienced forced sex were more likely to report having more partners and less likely to use a condom at last sex compared to men with no forced sex history. This is a finding illustrates the vulnerability to acquiring HIV or other STI among victimized men and

aligns with research findings in previous studies [50, 66]. The overall goal of this study to assess if there were differences between men who have experienced forced sex and those who have not was supported by the research findings and illustrated men who have experienced forced sex tended to report more HIV risk behaviors than men who reported no forced sex history.

A rather surprising finding in this study was the magnitude of difference in reported number of partners by marital status after accounting for race/ethnicity, age, education, jail time, and family structure. As expected, men who were never married reported twice as many female partners compared to married men. Cohabitating men had on average three more partners compared to married men. However, separated or divorced men overall had approximately seven more female partners over the course of their lifetime compared to married men. This is considerably higher than never married and cohabitating men in the sample, especially given that the mean number of lifetime partners for men in this sample was 10 (See Appendix A). This is a revealing finding given the high divorce rate in the US. According to the Census Bureau in 2009 the divorce rate among men was 9.2 per 1,000 men and 9.7 per 1,000 in women among people who were 15 years and older in the previous 12 months [67]. Results of the current study suggest that separated and divorced men are a segment of the population that would benefit from targeted HIV prevention messages, especially if they have a history of sexual trauma.

Substance use, namely binge drinking and cocaine use, was associated with forced sex at a statistically significant level. The results indicate that men who reported binge drinking had approximately two more sex partners compared to men who did not report binge drinking. Similarly men who reported cocaine use had approximately four more female partners.

In research question three, the hypothesis that substance use mediated the association between condom use and forced sex was not upheld. However, the hypothesis for research question four that stated substance use mediates the association between forced sex and number of partners in men was not rejected and this finding aligns with previous studies. For example, Ullman and colleagues used

structural equation modeling to examine the relationship between interpersonal trauma (sexual abuse), substance use to cope, post-traumatic stress disorder and problem drinking/drug use in the past year among 1,836 women. They found that using alcohol or drugs to cope mediated the relationship between interpersonal trauma (abuse) and problem drinking in the past year [44]. One main difference between the Ullman, et.al.'s study and the current study is that they did not measure sexual activity or assess the relationship between substance use coping and sexual behavior. The current study contributes to the literature by isolating sexual violence and highlights its association to high risk behaviors such as increased number of partners.

The study findings support the Transactional + Experiential Avoidance Theory which suggest men may use substances to help them escape thinking about painful memories such as forced sex. Avoidance coping strategy, while effective in temporarily removing the unwanted invasive thoughts about sexual abuse, creates other vulnerabilities such as substance dependence, increased number of sexual partners and less condom use which increases HIV risk behaviors in sexually victimized men [38]. It is important to note that substance use maybe antecedent to the forced sex experience which may place men at greater risk for being victimized. Given that the average age was 18 when men experienced forced sex, it is very plausible that substance use or abuse developed prior to the forced sex event. A recommendation is to asses when substance use begins relative to when the forced sex event occurred. This type of data would allow the researcher to infer that alcohol or drug use makes men susceptible to sexual violence or perhaps as a coping mechanism whereby sexually victimized men use alcohol or drug to cope with the trauma resulting from the sexual assault.

An important factor to consider when interpreting the study findings is that sexual violence (e.g. forced sex) often occurs within the context of other forms of abuse or trauma, such as physical or emotional abuse. Researchers have purported that sexual violence victims also experience other forms of trauma. While the current study focused exclusively coping behaviors and sexual violence, similar coping strategies may be employed if a person experienced other forms of trauma in addition to forced

sex. It is necessary for future studies to account for multiple traumatic events in order to elucidate coping responses to various forms of trauma.

Limitations

Despite the aforementioned strengths of this study, there are some limitations. Because this is a cross-sectional analysis, causality could not be determined. Future research will need to consider longitudinal analysis that inquire about overall sexual life experiences in order to gain a better understanding of men's overall sexual life experiences, including exposure to sexual assault. This will allow researchers to make more confident inferences as to the relationship between forced sex and HIV risk behaviors (e.g. number of sexual partners and condom use) as well as alcohol and drug use. While the importance of having a representative dataset cannot be understated, a limitation inherent in national data collection is the inability to offer detailed follow-up questions. This problem is obvious with the current study in that NSFG only collected data on the gender of the perpetrator and neglected to collect data on the relationship with the perpetrator as well as the length of time the abuse occurred. The relationship between the victim and perpetrator has serious implications for the level of trauma experienced by the victim [65]. For example, research has revealed that people victimized by a family member have more severe post-traumatic stress than people victimized by a stranger [65]. Additionally, victims who experience intimate partner violence may experience a longer duration of sexual victimization. Men who are sexually assaulted once may have different psychological and behavioral outcomes compared to men who are repeatedly victimized.

Another limitation of the dataset is that the questions about forced sex were restricted to people aged 18 years and above. The age range for the overall sample was 15-44, yet only people above 18 were questioned about forced sex. This excludes a population that may be especially vulnerable to sexual violence.

Finally, the full extent of forced sex among minorities may not be realized due to under-reporting, a regular occurrence in the sexual violence discourse. The National Crime Victim Survey (2008) reports that 70% of victims did not report attempted rape to the police and 59% of victims did not report completed rape or sexual assault to authorities [33]. Additionally there may be ethnic and cultural barriers, such as mistrust of researchers and legal authorities that prevent minority men from reporting sexual violence, irrespective of the aggressor's gender. Research studies have investigated the impact of the Tuskegee Study of Untreated Syphilis in the Negro Male study on African-Americans' willingness to participate in medical research such as HIV Clinical trials. Overwhelmingly, authors report that past occurrences such as the Tuskegee study create barriers to research enrollment and participation and an overall mistrust of researchers and medical practice [68, 69]. Additional research in under-reporting among sexual victimization in men and specifically among ethnic and racial minorities is warranted.

Despite the aforementioned limitations associated with this study, this study provided information to fill the current gaps in the sexual violence literature that pertain to HIV risk among sexually victimized men by establishing generalizable findings on male victims and laid the foundation for future studies to investigate the potential impact of race and ethnicity may have on reports of forced sex and HIV risk behaviors among men,. Results from this study have the potential to provide context for developing tailored interventions to address the traumatic experience of sexual violence in men.

CONCLUSION

The results of the current study determined that among heterosexual men in this sample, the rate of forced sex perpetrated by women occurred in five percent of men which was higher than the three percent of men previously reported by Tjaden and Thoennes in 1996 [9] and the 1.4% reported by Black et al [10].

To my knowledge, there has not been a study to specifically examine HIV risk behavior outcomes among adult US men who had experienced forced sex by women. This study has identified that men who

experienced forced sex were prone to have more female partners over their lifetime and that condom use decreases with an increase in sexual partners. Additionally, men who binge drink and/or use cocaine have an increased number of sexual partners, all of which have the potential to increase a man's risk for HIV infection.

The findings of this study contributed to the overall body of research by identifying a gap in the current sexual violence literature and applying a theoretically-driven strategy to assess the relationship between forced sex and HIV risk behaviors in men. There are a number of other ways this study contributes to the sexual violence literature. First, the current study employed a nationally represented dataset to assess forced sex in adult men. Many of the previous studies have relied upon small convenience samples, generally of college-aged men. One notable exception is the aforementioned study by Tjaden and Thoennes in 1996. A key finding in the current study was that men with less than a high school diploma had higher odds of reporting forced sex than did men with a college education ($p<.05$); thereby highlighting a large segment of the US male population that is often not accounted for in previous studies that primarily rely upon college convenience samples.

Second, this study highlighted an under-represented group in the overall sexual violence literature, namely heterosexual men. As previously discussed, much of the sexual violence research focuses on female victims or male victims who are MSM. This study illustrates that a relatively large portion of the US population have been sexually victimized and calls for additional research.

Finally and most importantly, this study illustrates an overall bias in the sexual violence literature that overwhelming focuses research attention on men as perpetrators of sexual violence and women as victims of sexual violence. Given that 5% of men in this sample experienced forced sex by women, this study calls for a shift in how the research community approaches sexual violence and gender.

Appendix A

Table 3.1: Condom Use by Forced Sex, Sexual Behaviors and Substance Use; NSFG 2006-2010 (Full Analysis)

	Model 1 (N= 8045)		Model 2 (N= 8042)		Model 3 (N= 7994)		Model 4 (N= 7972)	
Variables	**UOR**	**C.I.**	**AOR**	**C.I.**	**AOR**	**C.I.**	**AOR**	**C.I.**
Ever forced to have sex	1.11	(.845, 1.47)	1.05	(.776, 1.43)	1.14	(.830, 1.56)	1.14	(.836, 1.56)
Age			0.96***	(.948, .969)	0.96***	(.951, .973)	0.96***	(.947, .969)
Race:								
White			1		1		1	
Black			1.62***	(1.32, 1.99)	1.74***	(1.42, 2.14)	1.65***	(1.02, 1.51)
Hispanic			1.27**	(1.05, 1.54)	1.26*	(1.04, 1.53)	1.24*	(1.02, 1.51)
Other			1.21	(.924, 1.58)	1.16	(.891, 1.51)	1.14	(.885, 1.48)
Marital Status:								
Married			1		1		1	
Divorced/Separated			3.24***	(2.46, 4.26)	3.76***	(2.76, 5.12)	3.94***	(2.90, 5.37)
Cohabitate			1.35*	(1.04, 1.76)	1.46**	(1.12, 1.89)	1.53***	(1.18, 1.99)
Never married			5.90***	(4.81, 7.25)	6.30***	(5.06, 7.85)	7.02***	(5.65, 8.73)
Education:								
College degree			1		1		1	
Less than HS			0.98	(.788, 1.22)	1.05	(.837, 1.31)	1.04	(.832, 1.31)
High School diploma			0.87	(.718, 1.06)	0.92	(.753, 1.12)	0.90	(.734, 1.10)
Some College			1.10	(.873, 1.38)	1.15	(.911, 1.45)	1.15	(.908, 1.45)
Grad/Professional			1.19	(.802, 1.76)	1.13	(.756, 1.68)	1.14	(.758, 1.70)
Grew up in 2-parent home					1.14	(.959, 1.35)	1.56	(.974, 1.37)
Ever spent time in jailed					1.05	(.979, 1.12)	1.03	(.961, 1.10)
Sexual Activity:								
Age at 1st vaginal sex					1.04**	(1.01, 1.06)	1.03**	(1.01, 1.06)
No. of partners-lifetime					0.98***	(.977, .994)	0.99**	(.979, .996)
Substance Use:								
5+ drinks in one sitting							0.88	(.722, 1.06)
Marijuana							0.84	(.707, 1.01)
Cocaine							0.61**	(.437, .840)
Crack							1.21	(.654, 2.24)
Crystal-Meth							1.05	(.577, 1.92)
Injection drugs							0.82	(.344, 1.97)

Outcome variable: Condom use at last sex

Note. Logistic Regression; Weighted sample

UOR= Unadjusted Odd Ration; AOR= Adjusted Odds Ratio

* p=<0.05

**p=<.01

***p=<.001

1= Referent

Bibliography

1. Loeb, T.B., Gaines, T., Wyatt, G.E., Zhang, M., and Liu, H., *Associations between child sexual abuse and negative sexual experiences and revictimization among women: Does measuring severity matter?* Child Abuse & Neglect, 2011. **35**(11): p. 946-955.

2. Aosved, A.C., Long, P.J., and Voller, E.K., *Sexual revictimization and adjustment in college men.* Psychology of Men & Masculinity, 2011. **12**(3): p. 285-296.

3. Dunkle, K.L., Wong, F.Y., Nehl, E.J., Lin, L., He, N., Huang, J., and Zheng, T., *Male-on-Male Intimate Partner Violence and Sexual Risk Behaviors Among Money Boys and Other Men Who Have Sex With Men in Shanghai, China.* Sexually Transmitted Diseases, 2013. **40**(5): p. 362-365 10.1097/OLQ.0b013e318283d2af.

4. Strasser, S.M., Smith, M., Pendrick-Denney, D., Boos-Beddington, S., Chen, K., and McCarty, F., *Feasibility study of social media to reduce intimate partner violence among gay men in metro atlanta, georgia.* West J Emerg Med, 2012. **13**(3): p. 298-304.

5. Stephenson, R., de Voux, A., and Sullivan, P.S., *Intimate Partner Violence and Sexual Risk-taking among Men Who Have Sex with Men in South Africa.* West J Emerg Med, 2011. **12**(3): p. 343-7.

6. Finneran, C. and Stephenson, R., *Intimate Partner Violence Among Men Who Have Sex With Men: A Systematic Review.* Trauma, Violence, & Abuse, 2013. **14**(2): p. 168-185.

7. Raj, A., Santana, M.C., La Marche, A., Amaro, H., Cranston, K., and Silverman, J.G., *Perpetration of Intimate Partner Violence Associated With Sexual Risk Behaviors Among Young Adult Men.* American Journal of Public Health, 2006. **96**(10): p. 1873-1878.

8. Tjaden, P. and Thoennes, N., *Full Report of the Prevalence, Incidence, and Consequences of Violence Against Women: Findings from the National Violence Against Women Survey*, U.D.o. Justice, et al., Editors. 2000: Rockville, MD. p. 71.

9. Tjaden, P. and Thoennes, N., *Extent, nature, and consequence of rape vicitimization: Findings from teh National Violence Against Women Survey*, U.D.o. Justice, Editor. 2006, National Institute of Justice.

10. Black, M.C., Basile, K.C., Breiding, M.J., Smith, S.G., Walters, M.L., Merrick, M.T., Chen, J., and Stevents, M.R., *The National Intimate Partner and Sexual Violence Survey (NISVS): 2010 Summary Report*, C.f.D.C.a.P. National Center for Injury Prevention and Control, Editor. 2011, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention Atlanta, GA

11. Bowleg, L., *Love, Sex, and Masculinity in Sociocultural Context: HIV Concerns and Condom Use among African American Men in Heterosexual Relationships.* Men and Masculinities, 2004. **7**(2): p. 166-186.

12. Bowleg, L., Teti, M., Massie, J.S., Patel, A., Malebranche, D.J., and Tschann, J.M., *'What does it take to be a man? What is a real man?': ideologies of masculinity and HIV sexual risk among Black heterosexual men.* Culture, Health & Sexuality, 2011. **13**(5): p. 545-559.

13. Paul, J.P., Catania, J., Pollack, L., and Stall, R., *Understanding childhood sexual abuse as a predictor of sexual risk-taking among men who have sex with men: The Urban Men's Health Study.* Child Abuse & Neglect, 2001. **25**(4): p. 557-584.

14. Bartholow, B.N., Doll, L.S., Joy, D., Douglas Jr, J.M., Bolan, G., Harrison, J.S., Moss, P.M., and McKirnan, D., *Emotional, behavioral, and HIV risks associated with sexual abuse among adult homosexual and bisexual men.* Child Abuse & Neglect, 1994. **18**(9): p. 745-761.

15. Robinson, R.K., *Masculinity as Prison: Sexual Identity, Race, and Incarceration.* California Law Review, 2011. **99**(5): p. 1309-1408.

16. Richters, J., Butler, T., Schneider, K., Yap, L., Kirkwood, K., Grant, L., Richards, A., Smith, A., and Donovan, B., *Consensual Sex Between Men and Sexual Violence in Australian Prisons.* Archives of Sexual Behavior, 2012. **41**(2): p. 517-524.

17. Dumond, R.W., *THE SEXUAL ASSAULT OF MALE INMATES IN INCARCERATED SETTINGS.* International Journal of the Sociology of Law, 1992. **20**(2): p. 135-157.

18. Lipscomb, G.H., Muram, D., Speck, P.M., and Mercer, B.M., *Male victims of sexual assault.* JAMA, 1992. **267**(22): p. 3064-6.

19. Tewksbury, R., *Effects of Sexual Assaults on Men: Physical, Mental and Sexual Consequences.* International Journal of Men's Health, 2007. **6**(1): p. 22-35.

20. Choudhary, E., Coben, J., and Bossarte, R.M., *Adverse Health Outcomes, Perpetrator Characteristics, and Sexual Violence Victimization Among U.S. Adult Males.* Journal of Interpersonal Violence, 2010. **25**(8): p. 1523-1541.

21. Struckman-Johnson, C., *Forced Sex on Dates: It Happens to Men, Too.* The Journal of Sex Research, 1988. **24**(ArticleType: research-article / Full publication date: 1988 / Copyright © 1988 Taylor & Francis, Ltd.): p. 234-241.

22. Finkelhor, D. and Browne, A., *The Traumatic Impact Of Child Sexual Abuse: A Conceptualization.* American Journal of Orthopsychiatry, 1985. **55**(4): p. 530-541.

23. Ellickson, P.L., Collins, R.L., Bogart, L.M., Klein, D.J., and Taylor, S.L., *Scope of HIV risk and co-occurring psychosocial health problems among young adults: Violence, victimization, and substance use.* Journal of Adolescent Health, 2005. **36**(5): p. 401-409.

24. Wingood, G.M. and DiClemente, R.J., *Rape among African American women: Sexual, psychological, and social correlates predisposing survivors to risk of STD/HIV.* Journal of Womens Health, 1998. **7**(1): p. 77-84.

25. Polusny, M.A. and Follette, V.M., *Long-term correlates of child sexual abuse: Theory and review of the empirical literature.* Applied and Preventive Psychology, 1995. **4**(3): p. 143-166.

26. Mimiaga, M.J., Noonan, E., Donnell, D., Safren, S.A., Koenen, K.C., Gortmaker, S., O'Cleirigh, C., Chesney, M.A., Coates, T.J., Koblin, B.A., and Mayer, K.H., *Childhood Sexual Abuse Is Highly Associated With HIV Risk-Taking Behavior and Infection Among MSM in the EXPLORE Study.* Jaids-Journal of Acquired Immune Deficiency Syndromes, 2009. **51**(3): p. 340-348.

27. Kamen, C., Etter, D., Flores, S., Sharp, S., Lee, S., and Gore-Felton, C., *Sexual Risk Behaviors by Relationship Type and Trauma History Among HIV-Positive Men Who Have Sex with Men.* Archives of Sexual Behavior, 2013. **42**(2): p. 257-265.

28. Welles, S.L., Baker, A.C., Miner, M.H., Brennan, D.J., Jacoby, S., and Rosser, B.R.S., *History of Childhood Sexual Abuse and Unsafe Anal Intercourse in a 6-City Study of HIV-Positive Men Who Have Sex With Men.* American Journal of Public Health, 2009. **99**(6): p. 1079-1086.

29. Hensel, D.J., Fortenberry, J.D., and Orr, D.P., *Factors Associated with Event Level Anal Sex and Condom Use During Anal Sex Among Adolescent Women.* Journal of Adolescent Health, 2010. **46**(3): p. 232-237.

30. Lisak, D., *The psychological impact of sexual abuse: Content analysis of interviews with male survivors.* Journal of Traumatic Stress, 1994. **7**(4): p. 525-548.

31. Sweet, T. and Welles, S.L., *Associations of Sexual Identity or Same-Sex Behaviors With History of Childhood Sexual Abuse and HIV/STI Risk in the United States.* Jaids-Journal of Acquired Immune Deficiency Syndromes, 2012. **59**(4): p. 400-408.

32. Douglas, E.M., Hines, D.A., and McCarthy, S.C., *Men Who Sustain Female-to-Male Partner Violence: Factors Associated With Where They Seek Help and How They Rate Those Resources.* Violence and Victims, 2012. **27**(6): p. 871-894.

33. Light, D. and Monk-Turner, E., *Circumstances Surrounding Male Sexual Assault and Rape: Findings From the National Violence Against Women Survey.* Journal of Interpersonal Violence, 2009. **24**(11): p. 1849-1858.

34. Platt, J.J. and Busby, D.M., *Male Victims: The Nature and Meaning of Sexual Coercion.* The American Journal of Family Therapy, 2009. **37**(3): p. 217-226.

35. Okami, P., *Self-reports of "positive" childhood and adolescent sexual contacts with older persons: An exploratory study.* Archives of Sexual Behavior, 1991. **20**(5): p. 437-457.

36. Sarrel, P.M. and Masters, W.H., *Sexual molestation of men by women.* Archives of Sexual Behavior, 1982. **11**(2): p. 117-131.

37. Próspero, M. and Fawson, P., *Sexual Coercion and Mental Health Symptoms Among Heterosexual Men: The Pressure to Say "Yes".* American Journal of Men's Health, 2010. **4**(2): p. 98-103.

38. Spaccarelli, S., *Stress, appraisal, and coping in child sexual abuse: A theoretical and empirical review.* Psychological Bulletin, 1994. **116**(2): p. 340-362.

39. Hayes, S.C., Wilson, K.G., Gifford, E.V., Follette, V.M., and Strosahl, K., *Experimental avoidance and behavioral disorders: a functional dimensional approach to diagnosis and treatment.* J Consult Clin Psychol, 1996. **64**(6): p. 1152-68.

40. Kendall-Tackett, K.A., Williams, L.M., and Finkelhor, D., *Impact of sexual abuse on children: a review and synthesis of recent empirical studies.* Psychol Bull, 1993. **113**(1): p. 164-80.

41. Hanson, K.R., *The psychological impact of sexual assault on women and children: A review.* Annals of sex research, 1990. **3**(2): p. 187-232.

42. Tyler, K.A., *Social and emotional outcomes of childhood sexual abuse: A review of recent research.* Aggression and Violent Behavior, 2002. **7**(6): p. 567-589.

43. Reisner, S.L., Falb, K.L., and Mimiaga, M.J., *Early Life Traumatic Stressors and the Mediating Role of PTSD in Incident HIV Infection Among US Men, Comparisons by Sexual Orientation and Race/Ethnicity: Results From the NESARC, 2004–2005.* JAIDS Journal of Acquired Immune Deficiency Syndromes, 2011. **57**(4): p. 340-350 10.1097/QAI.0b013e31821d36b4.

44. Ullman, S.E., Relyea, M., Peter-Hagene, L., and Vasquez, A.L., *Trauma histories, substance use coping, PTSD, and problem substance use among sexual assault victims.* Addictive Behaviors, 2013. **38**(6): p. 2219-2223.

45. Deliramich, A.N. and Gray, M.J., *Changes in Women's Sexual Behavior Following Sexual Assault.* Behavior Modification, 2008. **32**(5): p. 611-621.

46. Klancecky, A.K., Harrington, J., and McChargue, D.E., *Child Sexual Abuse, Dissociation, and Alcohol: Implications of Chemical Dissociation via Blackouts Among College Women.* The American Journal of Drug and Alcohol Abuse, 2008. **34**(3): p. 277-284.

47. Testa, M., Vanzile-Tamsen, C., and Livingston, J.A., *The role of victim and perpetrator intoxication on sexual assault outcomes.* J Stud Alcohol, 2004. **65**(3): p. 320-9.

48. Kilpatrick, D.G., Acierno, R., Saunders, B., Resnick, H.S., Best, C.L., and Schnurr, P.P., *Risk factors for adolescent substance abuse and dependence: Data from a national sample.* Journal of Consulting and Clinical Psychology, 2000. **68**(1): p. 19-30.

49. Logan, T.K., Walker, R., Cole, J., and Leukefeld, C., *Victimization and substance abuse among women: Contributing factors, interventions, and implications.* Review of General Psychology, 2002. **6**(4): p. 325-397.

50. Schraufnagel, T.J., Davis, K.C., George, W.H., and Norris, J., *Childhood sexual abuse in males and subsequent risky sexual behavior: A potential alcohol-use pathway.* Child Abuse & Neglect, 2010. **34**(5): p. 369-378.

51. Hamburger, M.E., Leeb, R.T., and Swahn, M.H., *Childhood maltreatment and early alcohol use among high-risk adolescents.* J Stud Alcohol Drugs, 2008. **69**(2): p. 291-5.

52. Rellini, A., *REVIEW: Review of the Empirical Evidence for a Theoretical Model to Understand the Sexual Problems of Women with a History of CSA.* The Journal of Sexual Medicine, 2008. **5**(1): p. 31-46.

53. Kilpatrick, D.G., Acierno, R., Resnick, H.S., Saunders, B.E., and Best, C.L., *A 2-year longitudinal analysis of the relationships between violent assault and substance use in women.* Journal of Consulting and Clinical Psychology, 1997. **65**(5): p. 834-847.

54. Kalina, O., Geckova, A.M., Klein, D., Jarcuska, P., Orosova, O., van Dijk, J.P., and Reijneveld, S.A., *Mother's and father's monitoring is more important than parental social support regarding*

sexual risk behaviour among 15-year-old adolescents. European Journal of Contraception and Reproductive Health Care, 2013. **18**(2): p. 95-103.

55. Roche, K.M., Mekos, D., Alexander, C.S., Astone, N.M., Bandeen-Roche, K., and Ensminger, M.E., *Parenting influences on early sex initiation among adolescents: How neighborhood matters.* Journal of Family Issues, 2005. **26**(1): p. 32-54.

56. Luster, T. and Small, S.A., *Sexual abuse history and number of sex partners among female adolescents.* Fam Plann Perspect, 1997. **29**(5): p. 204-11.

57. Chandy, J.M., Blum, R.W., and Resnick, M.D., *Gender-specific outcomes for sexually abused adolescents.* Child Abuse & Neglect, 1996. **20**(12): p. 1219-1231.

58. Rotheram-Borus, M.J., Mahler, K.A., Koopman, C., and Langabeer, K., *Sexual abuse history and associated multiple risk behavior in adolescent runaways.* Am J Orthopsychiatry, 1996. **66**(3): p. 390-400.

59. Tyler, K.A. and Cauce, A.M., *Perpetrators of early physical and sexual abuse among homeless and runaway adolescents.* Child Abuse & Neglect, 2002. **26**(12): p. 1261-1274.

60. Bifulco, A., Brown, G.W., and Adler, Z., *EARLY SEXUAL ABUSE AND CLINICAL DEPRESSION IN ADULT LIFE.* British Journal of Psychiatry, 1991. **159**: p. 115-122.

61. Classen, C.C., Palesh, O.G., and Aggarwal, R., *Sexual Revictimization.* Trauma, Violence, & Abuse, 2005. **6**(2): p. 103-129.

62. Chandra, A., Billioux, Vennea G, Copen, Casey E., Balaji, Alexandra, DiNenno, Elizabeth, *HIV testing in the US household population aged 15-44: Data from the National Survey of Family Growth, 2006-2010*, in *National Health Statistics Reports*, N.C.f.H. Statistics, Editor. 2012, National Center for Health Statistics: Rockville, MD.

63. Bensley, L.S., Van Eenwyk, J., and Simmons, K.W., *Self-reported childhood sexual and physical abuse and adult HIV-risk behaviors and heavy drinking.* American Journal of Preventive Medicine, 2000. **18**(2): p. 151-158.

64. Lepkowski, J., Mosher, WD, Davis, KE, Groves, RM, Van Hoewyk, J., *The 2006–2010 National Survey of Family Growth: Sample design and analysis of a continuous survey*, N.C.f.H. Statistics, Editor. 2010, Vital Health Stat Washington, DC.

65. Kallstrom-Fuqua, A.C., Weston, R., and Marshall, L.L., *Childhood and adolescent sexual abuse of community women: mediated effects on psychological distress and social relationships.* Journal of Consulting and Clinical Psychology, 2004. **72**(6): p. 980-992.

66. DiIorio, C., Hartwell, T., and Hansen, N., *Childhood Sexual Abuse and Risk Behaviors Among Men at High Risk for HIV Infection.* American Journal of Public Health, 2002. **92**(2): p. 214-219.

67. Elliot, D.B. and Simmons, T., *Marital Events of Americans: 2009- American Community Survey Reports*, U.C. Bureau, Editor. 2011: Washington DC.

68. Scharff, D.P., Mathews, K.J., Jackson, P., Hoffsuemmer, J., Martin, E., and Edwards, D., *More than Tuskegee: Understanding Mistrust about Research Participation.* Journal of Health Care for the Poor and Underserved, 2010. **21**(3): p. 879-897.

69. Moreno-John, G., Gachie, A., Fleming, C.M., NÁpoles-Springer, A., Mutran, E., Manson, S.M., and PÉrez-Stable, E.J., *Ethnic Minority Older Adults Participating in Clinical Research: Developing Trust.* Journal of Aging and Health, 2004. **16**(5 suppl): p. 93S-123S.

CHAPTER 3: Paper 2: Sexual violence among US women: Forced sex at first sex, after sexual debut and re-victimization

Abstract

Prior studies indicate that sexual abuse has deleterious effects on later psychological and behavioral outcomes. Many studies focus primarily on the age at which forced sex occurred. This study sought to focus on the point in a woman's sexual life where abused occurred (e.g., at first sex, after first sex, or at first sex and another time thereafter) and assessed whether there is a difference in number of partners, condom use, and substance use based on the point at which forced sex occurred. Risky sexual behavior can place victimized women at greater risk of acquiring HIV and other sexually transmitted infections. This study was guided by two theoretical models, the Transactional Model and the Experiential Avoidance Model.

Using the National Survey of Family Growth 2006-2010 for women (N=10,046), weighted multivariate regression analyses were employed to test the hypotheses. There was no statistically significant difference in condom use based on point in a women's sexual live that sexual abuse occurred. There was a statistically significant difference in number of partners based on victimization history. Women who reported forced sex after first sex and women who reported being re-victimized had on average three more sexual partners than did non-victimized women. Marijuana and cocaine use were associated with having an increased number of sexual partners among victimized women. Furthermore, substance use partially mediated the association between forced sex and number of partners. This study contributed to the overall public health literature by assessing the point at which forced sex occurred and providing needed context to understanding the differences in HIV-risk behaviors.

Word Count: 258

INTRODUCTION

Sexual violence in the US has been a long-standing and well-documented public health issue that has garnered much research attention, especially in the HIV literature [1]. Sexual violence includes an extensive and diverse range of actions including "rape within marriage or dating relationships, rape by strangers or acquaintances, unwanted sexual advances or sexual harassment, systematic rape, sexual slavery and other forms of violence- particularly common in armed conflicts, sexual abuse of mentally or physically disabled people, rape and sexual abuse of children, and 'customary' forms of sexual violence, such as forced marriage or cohabitation and wife inheritance" [2].

According to the National Violence Against Women Survey (NVAWS), nearly 18% of women and 3% of men reported being a victim of attempted or completed raped in their lifetime [3]. Tjaden and Thoennes (2000) using the NVAWS, estimate that 300,000 women are raped in any given year [4]. A relatively recent national data collection of intimate partner violence and sexual violence shows that little has changed in the last decade. In the 2010 National Intimate Partner and Sexual Violence Survey (NISVS), 18% of women and 1% of men reported ever experiencing forced sex [5]. Additionally, 1.3 million women reported forced sex in the 12 months prior to being surveyed [5]. While the aforementioned studies provide an estimate of the prevalence of sexual violence in women, it likely does not capture the full picture of violence since many women do not report victimization to law enforcement.

Forced Sex by Developmental Period

It is unclear whether the effects of forced sex differ based upon when the experience occurs-- in childhood vs. adolescences vs. adulthood. There is not a clear consensus in the literature if timing of forced sex has an impact on psychological and/or behavioral outcomes. The victim's appraisal of forced sex experiences may depend on the developmental level of the victim [6]. Younger victims may be naïve to sexuality and may not recognize sexual behavior with an adult as inappropriate [7] or understand the stigma associated with sexual abuse. As children move into adolescence and become more aware of

sexuality, they may appraise sexual abuse in a different way, as traumatic and stigmatizing, ultimately impacting how they cope with sexual abuse [7]. A study by Schoedl et al investigated differences in psychological sequela in women abused either before or after age 12. Women who experienced abuse *before* age 12 had a higher relative risk of having severe depressive symptoms compared to women abused after age 12 [8]. The same study found that women abused *after* age 12 were 10 times more likely to have a relative risk for reporting post-traumatic stress symptoms compared to women abused before age 12 [8]. In Schoedl's study, the psychological outcomes following abused differed based on the developmental stage that the victim experienced forced sex.

The trajectory and health outcomes of abuse can vary based on the stage of development in which the abuse occurs [6]. For example, girls who enter adolescence with a history of sexual abuse may be vulnerable to abuse during adolescence that could lead to adverse health outcomes whereas a girl who is victimized for the first time during adolescence may experience different health outcomes. Previous research indicates a history of forced sex are associated with risky sexual practices such as low condom use, compulsive sexual behavior and unwanted pregnancies [9]. Spaccarelli suggests that some people who experience forced sex during childhood may cope better than victims who experience forced sex during adolescence or adulthood [7]. Depending on the cognitive development of the child, s/he may not understand the abuse experience and therefore may not internalize it as negative [7].

Since some people may not associate sex in childhood as negative, they may have different health and behavioral outcomes following the event. Okami's exploratory study of 37 men and women assessed the variability of "positive" versus "negative" experiences of childhood sexual contact with an adult. Nearly 82% of males and 18% of females rated the childhood sexual contact as a positive experience both at the time the contact occurred and retrospectively [10]. Approximately 70% of positive reports state that the physical/sexual response was the most important factor of the positive experience [10]. In other words, experiencing sexual pleasure or satisfaction was the most important aspect in rating the childhood sexual contact as positive according to this study.

Re-victimization

People who have been sexually victimized are at increased risk for being victims of sexual violence again [1, 11, 12]. One of the strongest predictors of sexual re-victimization is prior childhood sexual abuse [13]. In a study conducted among 243 community college students, Urquiza et al found that 67% of the women who reported adult rape also experienced childhood sexual abuse [14]. According to a review article by Classen, et.al., two-thirds of people who experience sexual violence once will be victimized again [15]. Reasons for the increase risk of re-victimization remains unclear. Some theories have proposed that childhood sexual abuse creates a disruption in cognitive development that impacts decision making skills [16]. This disruption then affects partner selection [16] and communication with sexual partners which in turn may increase risk for re-victimization in women [1, 17]. This vulnerability to re-victimization as an adult usually occurs as a result of childhood sexual abuse [12, 17]. Furthermore, posttraumatic stress disorder is highly correlated with re-victimization. A study based on a path analysis to test the relationship between childhood sexual abuse and re-victimization found that adult sexual re-victimization and child sexual abuse was mediated by self-blame, posttraumatic stress, and consensual sexual behavior in adulthood [17].

Current Study

Previous studies have primarily focus on the age at which forced sex occurred and given the assertion that some people do not evaluate their childhood sexual experience as negative, this study sought to focus on the point in a woman's sexual life (for example, sexual debut or after previous sexual experience) where abused occurred. Being that prior studies have shown that women respond to and cope with forced sex differently given the developmental period at the time of the abuse, forced sex was captured in three ways: a) forced sex occurring at first sex, b) forced sex occurring after first sex, and c) forced sex occurring at first sex and another time after first sex. Additionally, this study attempts to understand if victimization is associated with avoidant coping behaviors as manifested through lack of

condom use, multiple sexual partners and substance use. While there have been a number of publications that focus on victimization, the majority of the papers either assess childhood sexual abuse or adult abuse. Few studies investigate how prior sexual experience, or the lack thereof, may impact HIV risk behaviors following exposure to sexual violence. This paper highlights the under-investigated area of forced sex in the hopes of identifying areas in which interventions can be developed based on the special needs of women victimized at various points in their sexual life.

LITERATURE REVIEW

HIV in the US

HIV remains an epidemic, disproportionately affecting some US populations more than others, despite having entered the third decade of treatment and prevention efforts. Approximately 1 in 4 people living with HIV in the US are women [18] and heterosexual contact is the primary route of transmission among women (84%) followed by injection drug use [18]. Racial and ethnic minority women, especially Black women, remain disproportionately affected by HIV compared to White women. Of the 9,500 women who tested positive for HIV in 2010, 64% were Black women, 18% were White women, and 15% were Latina women [18]. Research among HIV positive women have found that sexual violence occurs in 50% of women living with HIV, much higher than among HIV negative women (approximately 33%) [19]. As discussed below, one reason for the higher prevalence of sexual violence may be that women who experienced forced sex may be vulnerable to engaging in HIV risk behaviors such as inconsistent condom use, having multiple partners, and using alcohol or drugs during sex. While numerous studies have investigated the relationship between sexual victimization and HIV risk behaviors among women, few have utilized a multi-racial/ethnic nationally represented dataset of adult women.

HIV Risk and Sexual Violence

The risk for HIV infection and other sexually transmitted infections is inherent in sexual violence, especially since condoms generally are not used during the sexual attack. Research indicates that risk of

HIV infection is higher among people who have been sexually victimized [16, 20-22] and researchers have offered theories that suggest the trauma of experiencing forced sex can negatively impact cognitive functioning and decision making [14, 23]. Chin et al reported that victims of sexual abuse in childhood suffer from cognitive impairments, an inability to regulate emotions, adverse physical health (i.e. somatization) and risky sexual behaviors in adulthood [16]. Chin and colleagues go on to state that women who have been sexually abused generally have poorer judgment about situations and people. This impairment in judgment is likely caused by a disrupted path of adolescent development resulting from the experience of child sexual abuse [16] and hampers a person's ability to form healthy interpersonal relationships as well as develop their own sexual identity and sexual needs apart from their partner [16].

Experiences of sexual violence are often associated with risky behaviors. Researchers have found correlations between sexual violence and higher number of sexual partners [16, 20, 24], lack of condom use [16, 25, 26], and higher reports of sexually transmitted diseases [26], all of which place people at increased risk for HIV infection. For example, Lang and colleagues conducted a longitudinal study of young African American women and found that women who experienced rape were not only more likely to report more sexual partners and more inconsistent condom use, but also reported using alcohol or drugs during sex more often than women who did not report sexual victimization [26].

Unintended pregnancy is a public health concern in the US and is especially high among victims of abuse [27, 28] and may lead to abortion [29]. While an understudied area in the sexual violence literature, research has illustrated a relationship between experience of forced sex and elective abortion [30]. An early study of African American women who reported childhood sexual abuse found that abused women were 1.5 times more likely to report having an abortion compared to African American women with no forced sex history [31]. A study by Fisher and colleagues found that among 1,127 Canadian women who had undergone a second induced abortion were 58% more likely to report childhood sexual abuse (CSA) compared to women who present for the first abortion [32], while women

who presented for a third induced abortion had two-fold higher odds of CSA compared to women who presented for the first abortion.

Exchanging sex for money or drugs is a high risk behavior for contracting HIV and other STI. Research indicates that women who have experienced sexual violence may be at greater risk for exchanging sex for money or drugs [33, 34]. A nationally represented study of 2,810 Swedish adults found that a higher proportion of those who experienced sexual abuse in childhood or adolescence reported sex work than those with no sexual abuse history [33]. Another study of 361 Canadian drug using youths found that 32% had experienced sexual abuse. The authors reported that sexual abuse was independently associated with sex work (OR: 3.7; $p<0.001$) [34].

Theoretical Framework

The Transactional Model [7] provides a comprehensive view of how sexual abuse stress influences psychological symptomology through coping strategies, cognitive appraisals, and environmental factors/support resources. Abuse stress is related to the perception of the stressor as a threat to personal harm or loss, whether the loss is considered emotional, physical or both and consists of three event types, a. the abuse event itself, b. abuse-related events, and c. abuse disclosure event. The current study focused on the abuse event and the point in the respondent sexual life that forced sex occurred. Assuming that unwanted sexual contact is stressful, repeated and continuous sexual abuse over time would likely result in higher levels of stress [7]. Abuse event is captured by forced at first sex, after first sex, or both. Cognitive appraisal refers to how the victim understands and perceives who they are in the context of having experienced sexual abuse and others [7]. While an important factor to consider, this construct was not tested in the current study because of data limitations. Support resources refer to current relationships a person has to help cope with stressors as well as the environmental factors that affect support [7]. Support resources and environmental factors were assessed in the current study via family structure.

The Transactional Model outlines 4 coping styles: active coping, emotional release, cognitive restructuring, and avoidance coping. Data collected on the National Survey of Family Growth 2006-2010 (NSFG) yielded information that allowed for analysis on avoidance coping behavior, which will be the focus of coping for this study. Because the Transactional model emphasizes psychological symptomology, I adapted the model to include the Experiential Avoidance Model [35]. Experiential Avoidance Model, as described by Hayes et al is "the phenomenon that occurs when a person is unwilling to remain in contact with particular private experiences (e.g., bodily sensations, emotions, thoughts, memories, behavioral predispositions) and takes steps to alter the form or frequency of these thoughts and the contexts that occasion them" [35]. In other words, experiential avoidance occurs when a person employs (whether consciously or unconsciously) any method, strategy, or behavior to escape the form or frequency of facing or remembering a traumatic experience [35], such as memories of forced sex. According to Experiential Avoidance Model, people may enact behaviors and strategies to escape feeling, thinking about the event or situation they have defined as negative, damaging, or traumatic.

Avoidant Coping strategy

The Experiential Avoidance Model highlights behavioral responses to trauma that have been identified as avoidant. Some behavioral forms of coping reported in the sexual violence literature considered to be maladaptive are dissociation, binge-purge eating, substance use, self-mutilation, suicide attempt and risky sexual behavior [36-40]. While tension reducing behaviors such as sexual activity and substance use can have immediate stress-diminishing benefits, risky sexual practices with multiple partners and inconsistent condom use can have negative long-term effects such as increased risk of HIV infection. This model used in the current study purported that these behaviors are more likely to occur in cases where abuse-related stress is high and that this stress has an indirect effect on HIV risk behaviors by increasing the likelihood that victims will employ unhealthy avoidance coping behaviors.

Substance Use and Sexual Violence

It has been well-established in the literature that substance use is associated with risky sexual behaviors. Alcohol use for example has been linked with lowered sexual inhibition, impaired decision-making ability, inconsistent condom use, and promiscuity. Research has also indicated that substance use is associated with experiences of sexual abuse [36, 41, 42]. The Centers for Disease Control and Prevention has identified people with a history of emotional, physical, or sexual abuse as a vulnerable population for substance use and HIV infection [43]. In a study that employed the Washington State Behavioral Risk Factor Surveillance System (BRFSS), among the 1,969 women who reported both sexual and physical abuse the authors report a 6-fold increase in risk of heavy drinking compared to women with no abuse history [44].

Environmental Factors and Support resources

Studies on adolescent sexual activity suggest parental involvement and child monitoring reduces early sexual behavior in youth [45, 46]. There is growing literature to suggest that even among sexually abused children, parental supervision mitigates the risk of multiple sexual partners [47]. Furthermore growing up in a 2-parent home is considered an environmental factor that could impact risk for sexual violence. Previous research of childhood sexual abuse suggests that having both parents in the home buffered negative psychological and behavioral outcomes following the abuse. Chandy, Blum, and Resnick report in their study of abused middle and high school youth that among girls, having both parents in the home allayed the negative effects of sexual abuse, namely early sexual onset [48]. A separate study that assessed coping behaviors and support among 50 sexually abused children found that they experienced both internalizing problems (e.g. withdrawal, somatic complaints, anxiety and depression) and externalizing problems (delinquent and/or aggressive behavior) following the abuse [49]. The authors go on to report that avoidance coping was associated with lower self-worth and greater internalizing and externalizing problems [49], however, having supportive family and friends was

associated with positive self-worth and fewer externalizing behaviors [49]. Furthermore, Spaccarelli suggests that children who do not receive adequate attention may be more vulnerable to coercion from older perpetrators, especially parental figures [7].

Similarly, living on one's own before the age of 18 can put adolescents at risk for sexual abuse. Previous studies suggest that teens are at greater risk of sexual violence when they do not have a stable living environment [50]. A study of homeless youth found that among 190 male and female youths, the rate for sexual abuse was 37.4% [51]. In a similar study of sexual- minority homeless youth, 29% of males and females reported sexual abuse [52]. In both studies, abused homeless adolescents reported more sexual partners and less condom use compared to homeless youth who were not sexually abused [51, 52]. Although running away from a sexually abusive home life may be a way to escape the abuse, without adequate social support, runaways could be at greater risk for re-victimization.

Other Factors

There have been very few studies that specifically investigated racial differences in women who have a history of sexual victimization. According to Tyler's review of CSA studies, there is a movement in the sexual violence literature to include more racially and ethnically diverse samples but many publications still report on predominately White adolescent samples [53]. Tyler highlights that there uncertainty remains regarding the prevalence of sexual violence among different racial/ethnic populations. She reports that of 14 studies conducted among racially and ethnically diverse samples, three studies found no racial differences in report of child sexual abuse. One of the studies found that White adolescent girls were at higher risk for sexual abuse than Latina girls [53]. Additional studies are needed to better understand the relationship between race and sexual victimization among women.

Relationship conflict among women who have experienced sexual victimization is an understudied area. While a number of studies assess mental health and how symptomology may impact interpersonal relationships, few studies have assessed harmony or conflict in intimate relationships. In a

study by Bifulco et al, the researchers report that victims of childhood sexual abuse (CSA) experienced more marital discord characterized by higher divorce and separation compared to those with no CSA [54]. More research is needed to understand if there are differences in marital status among women who experience forced sex.

There is also little understanding of differences in educational attainment among women who have been sexually victimized and those who have not. In the sexual violence literature, many articles use samples from college campuses [15]. The experiences of people sampled from such specific populations, such as college campuses, may not be representative of the overall population. Luster and Small stated that college samples are a "relatively advantaged" sample and people in college may exhibit more effective coping mechanisms that mediate the effects of experiencing sexual abuse [47]. Additional analysis is needed to better understand the educational attainment differences in women who experienced forced sex and those who have no forced sex experience.

Study Overview

Research Questions

Research question 1: Does condom use at last sex differ between women who report forced sex at first sex, those who report forced sex after first sex, and those who report forced sex more than once compared to women with no forced sex history? **Hypothesis**: Compared to women who have never experienced forced sex, it is expected that women with a history of forced sex regardless of when forced sex occurred, will report lower odds of condom use. The odds of condom use are expected to be the lowest among re-victimized women.

Research question 2: Does the number of male partners over a woman's lifetime differ between women who report forced sex at first sex, those who report forced sex after first sex, and those who report forced sex more than once compared to women with no forced sex history? **Hypothesis**: Compared to women who report no forced sex, women who report forced sex, regardless of when the forced sex

occurred will report a higher number of partners. The highest number of reported partners is expected to be among re-victimized women compared to non-victimized women.

Research question 3: What is the impact of substance use on the association between condom use and report of forced sex? **Hypothesis**: Substance use will mediate the relationship between condom use and forced sex. Mediation will be most pronounced for re-victimized women.

Research question 4: What is the impact of substance use on the relationship between number of partners and report of forced sex? **Hypothesis**: Substance use will mediate the relationship between number of partners and forced sex. Mediation will be most pronounced for re-victimized women.

METHODS

Participants

Participants in this study were women who responded to the National Survey for Family Growth (NSFG), Cycle 2006-2010. The NSFG is a cross-sectional, multi-stage area probability sample conducted by the National Center for Health Statistics of the Centers for Disease Control and Prevention. The NSFG collected data on reproductive health, contraception use, and family planning among US men and women of reproductive ages.

The data were collected from the US population on a rolling basis in four phases between June 2006 and June 2010. Women between ages 15 and 44 were included in data collection resulting in a total sample size 12,279 women. The response rate for women invited to participate was 78% [55]. Teenagers and Black and Hispanic adults were targeted for recruitment and oversampled in order to produce more reliable statistics for these populations. The interviews were conducted via in-person interview and data was recorded on laptops. Sensitive data (e.g. HIV risk behaviors, sexual violence, and substance use and pregnancy termination) were collected using audio computer-assisted self-interviewing software. Each respondent was compensated $40 for their time.

Eligibility criteria for the current study included women aged 18 years or older, and having ever had sex. The resulting sample size was 10,046. The University of California, Los Angeles Institutional Review Board exempted this secondary data analysis from review.

Procedure

Outcome Variables

The HIV risk factors are condom use and number of lifetime partners. In research questions one and three the outcome variable is condom use. Condom use at last vaginal sex was coded as yes (1) or no (0). In research questions two and four the outcome variable is number of sexual partners. The number of lifetime sexual partners is a continuous variable. The NSFG publicly available data files were top-coded as 50 or more partners, which represented 1.3% of female respondents.

Covariate Variables

Victimization History

Victimization history is captured at three different points in a woman's sexual life: force sex at first sex, force sex after first sex, and force sex both at first sex and after first sex. The initial force sex question asks, "Would you say that this first vaginal intercourse was voluntary or not voluntary, that is, did you choose to have sex on your own free will or not". Responses were coded as yes (1) or no (0). Respondents who answered in the affirmative to this question were defined as having been forced *at first* sex.

The second question asks, "At any time in your life/besides the time you already reported, have you ever been forced by a male to have vaginal intercourse against your will". Responses were coded as yes (1) or no (0). Respondents who answered in the affirmative to this question were defined as having been forced *after first* sex. A similar question was used in a recent study by Butler in which the survey asked women if they had ever been sexually assaulted or raped [56].

The re-victimized variable was computed by combining the affirmative responses to force sex at first sex and force sex after first sex. The term re-victimized *only* captures women who were forced at first sex and again after first sex. Due to the survey design, the re-victimized variable was not able to capture women whose first sex was consensual but experienced forced sex more than once after initiating consensual first sex. The responses were coded as yes (1) or no (0).

Demographic Characteristics

Socio-demographic characteristics included age, race/ethnicity, marital status, and education. The recoded options provided by the NSFG developers were Hispanic, Non-Hispanic White, Non-Hispanic Black, Non-Hispanic Other, which includes Asians and people who report multiple races. Marital status was coded as: currently married, cohabitating with opposite sex partner, divorced or separated due to marital discord, and never been married at the time of interview. Educational attainment was assessed in terms of highest grade completed or highest degree received and includes: high school diploma or less, some college, college degree, graduate degree.

Environmental factors were measured by two factors that addressed the victim's family structure. The first factor was whether or not the respondent grew up with both parents in the household or if she grew up in a single-parent home. The second factor was whether or not the respondent lived on her own before 18 or lived in her parents' or caregiver's home until age 18.

Sexual Activity

There are five factors that address sexual activity: 1. age at first sex, 2. had an abortion in the last 5 years, 3. treatment for sexually transmitted infections, 4. engaged in anal sex, and 5. ever exchanged sex for drugs or money. Age at first vaginal sex was captured by asking, "The first time vaginal sex occurred, how old were you?" Responses were entered into the analysis as a continuous factor. Respondents were asked, "how many pregnancies did you have that ended in abortion?" Responses to pregnancy termination questions were collapsed and coded as yes (1) or no (0). In order to measure treatment for STI,

participants were asked, “In the past 12 months, have you been treated or received medication from a doctor or other medical care provide for a sexually transmitted disease like gonorrhea, herpes, or syphilis?” Responses are coded as yes (1) or no (0). This variable is included to assess prior exposure to STD and can be an indicator of unprotected sexual intercourse. Lastly, in order to capture sex work, respondents were asked, “In the last 12 months, has a man given you money or drugs to have sex with him?” The responses were coded as yes (1) or no (0).

Mediating Variable

Alcohol use was assessed with the question, “During the last 12 months, how often did you have 5 or more drinks within a couple of hours?” Due to small cell sizes, I collapsed the response options into a dichotomous response (never and ever). This question resembles the alcohol use question asked on the behavioral Risk Factor Surveillance System (BRFSS) from the Centers for Disease Control [44]. Drug use was measured with the question, ”During the last 12 months, how often did you use (state specific drug)?” This question was asked separately for each drug (e.g. marijuana, cocaine, crack, crystal meth, and injection drug use). Responses were coded as never (0) or ever (1).

Missing Values

The National Center for Health Statistics (NCHS) accounted for missing data in the NSFG using imputation analysis. The NCHS statisticians created 600 recode variables for the items anticipated to be utilized the most in the public-data file. The frequency of missing values was quite low; no more than 2% of all NSFG files required imputation. Additional information about missing and NSFG data collection has been published by the NCHS and can be found elsewhere [57]. For the purposes of this study, where indicated, I utilized recoded variables with imputed values.

Statistical Methods

Univariate and Bivariate Analysis

Sampling weights provided by the NCHS were used to address the complex sampling design. Stata 12 [58] was used to conduct univariate analysis on all variables to describe the characteristics of the sample and determine the distribution of each variable. Pearson chi-square tests for categorical variables and Student's t-test for continuous variables were used to examine differences by sexual violence among selected variables. The significance level was set at 0.05 to test the differences between women who report forced sex and those who do not report forced sex. I ran analysis of variance to further test for difference between forced sex variables and the background variables.

Multivariate Analysis

Weighted multivariable logistic regression and multivariate linear regression analyses were conducted to analyze the factors expected to be independently associated with a history of forced sex and self-reported HIV-risk behaviors. The two main outcome factors were: forced sex, condom use and number of sexual partners. The four predictor factors were: demographic characteristics, growing up in a 2-parent home, living on own before age 18, and sexual activity variables. The mediating variable was substance use. The Sobel-Goodman test of mediation was use to assess the impact of substance use on the relationship between victimization history and HIV-risk behaviors (condom use and number of sexual partners). The predictor factors were socio-demographic characteristics and sexual activity.

RESULTS

Descriptive Analysis

Table 1 presents the socio-demographic characteristics of the women that met inclusion criteria for the current study. Among 10,046 women in the sample, the majority of sexually victimized women in this sample were forced to have sex after they had already initiated sexual activity. Specifically, 78.2%

reported never experiencing forced sex, 5.2% reported experiencing forced sex *at first sex*, 13.8% reported experiencing forced sex *after first sex* and 2.8% of women reported experiencing forced sex at first sex and a separate time following first sex (*re-victimized*). The mean age of the total sample was 32 years, the majority of women (55%) had either completed high school or had some college schooling, and 52% were married. The racial make-up of the sample is similar to that of the US population: 61% White, 17% Latino, and 14% Black and 8% reported some other race/ethnicity (Not included in Table 1).

Given the mixed findings in previous studies regarding race and forced sex, this study yielded interesting findings of forced sex occurrence by race. Latina (82%) and White (79%) women represented a higher proportion of women who never experience forced sex compared to 75% of Black women and 73% Other (Asian and/or multi-racial) women who never experienced forced sex. Being forced *at first sex* was nearly twice as high in Other women, approximately 10%, compared to White (4%), Black (5%), and Latina (6%) women. Forced sex *after first sex* occurred in Black women at a higher rate than any other racial group (17%). *Re-victimization* was similar in White, Black, and Latina women but was twice as high in Other women (5%).

The reported mean age at first sex was 16.5 years old for women forced at first sex, 16 years old for women forced after first sex and approximately 14 years old for women who were re-victimized, all of which are younger than mean age of first sex among women who reported no forced sex (18 years). The proportion of reported anal sex was dramatically higher among women who experienced forced sex after first sex (55%) and re-victimized women (59%) and was slightly higher among women forced at first sex compared to women with no forced sex history (33%). There was a statistically significant increase in both report of abortion X^2 (1, N=10,023) = 126.07, $p<0.001$ and number of sexual partners (Coef. = 2.66, $p<0.001$) between women who reported forced sex and those who do not report forced sex. Overall, the proportion of women who reported treatment for STIs in the last year was higher among women who reported forced sex compared to women who did not report forced sex.

While there was a general trend of higher substance use in victimized women, there was variation between the victimized categories. For example, marijuana use was proportionally higher in women who report forced sex after first sex (27%) and re-victimization (20%) compared to women with no forced sex, yet women who report forced sex at first sex reported a lower percentage of marijuana use (12%) compared to women with no forced sex (14%).

Table 1: Demographic Characteristics of Women by Victimization History using the NSFG 2006-2010

Variables	Overall N	No Victimization (N= 7674)[b] Percent	Forced at 1st Sex (N=559)[b] Percent	Forced after 1st Sex (N=1526)[b] Percent	Revictimized[a] (N=287)[b] Percent	P-Value
Proportion Forced by Time	10046	78.2	5.2	13.8	2.8	
Age-- Mean (SE)	10046	31.5 (.158)	32.5 (.565)	31.4 (.272)	32.8 (.671)	
Race:						<0.001
White	6158	78.7	4.4	14.3	2.6	
Black	1379	74.9	5.3	17.3	2.5	
Hispanic	1681	81.8	5.9	9.5	2.9	
Other	828	72.6	9.6	13.2	4.6	
Marital Status:	10046					<0.001
Married		52.4	47.4	35.7	36.1	
Divorced/Separated		9.5	12.9	17.0	18.8	
Cohabitate		12.1	16.9	18.3	15.3	
Never married		26.0	22.8	29.0	29.7	
Education:	10046					<0.001
Less than HS		15.0	19.9	20.0	26.2	
High School		25.6	28.4	29.5	25.4	
Some College		29.4	29.6	31.9	34.2	
College degree		22.1	14.1	13.3	9.0	
Grad/Professional		7.9	8.0	5.3	2.4	
Receive Public Assistance- 12 mo.	10046	27.3	37.6	39.0	44.9	<0.001
Family Structure:						
Grew up in 2-parent home	10046	62.7	58.1	45.3	51.2	<0.001
Lived on own before age 18	10044	20.2	34.3	13.1	46.0	<0.001
Sexual Activity:						
Age at 1st vaginal sex-- Mean (SE)	10046	17.7 (.086)	16.5 (.256)	16.0 (.082)	13.8 (.280)	<0.001
Condom use-last vaginal sex	10040	27.2	26.0	23.9	24.6	0.317
No. of partners-lifetime--Mean (SE)	10046	5.3 (.140)	6.8 (.547)	11.0 (.455)	12.5 (1.02)	<0.001
Non-monogamous partner	9093	8.2	10.9	19.0	21.7	<0.001
STI treatment-12 mo.	10029	3.7	4.7	7.0	10.4	<0.001
Abortion in last 5 years	10023	4.5	9.7	7.9	9.7	<0.001
Anal sex	9987	32.7	38.2	55.2	59.2	<0.001
Received money for sex	9183	0.4	0.6	2.8	3.6	<0.001
Drug Use- 12 mo.:						
More than 5 drinks	10044	13.5	10.7	16.2	18.3	0.057
Marijuana	10034	14.3	12.1	26.7	19.7	<0.001
Cocaine	10044	2.2	1.5	5.5	3.6	<0.001
Crack	10044	0.4	0.3	2.5	2.3	<0.001
Crystal Meth	10045	0.5	0.3	2.3	0.9	<0.001
Injection drugs	10045	0.03	0.1	1.1	1.0	<0.001

Note. Weighted sample; STI= Sexually Transmitted Infection

[a] = Forced at 1st sex and another time thereafter

[b] Number may not add up to total due to missing values for a specific variable

Condom Use, Victimization History, and Substance Use

Table 2 presents weighted logistic regression results for victimization history, condom use, and substance use. Model 1 was the unadjusted model between condom use and victimization history (forced sex at first sex, after first sex, and re-victimized). Condom use was only statistically significant with forced sex after first sex. Model 2 included the forced sex variables and added the socio-demographic variables to the model. Socio-demographic characteristics accounted for the variance in condom use among women forced after first sex. The association became not significant when the control factors were added to the model.

Model 3 addresses research question one, the association between condom use and victimization history accounting for socio-demographic characteristics and sexual activity factors. Taking into account race/ethnicity, educational attainment, marital status and sexual activity, there was no statistically significant difference in condom use by victimization history among women. Women who initiated sex at an older age (e.g. see age at first sex) had 8% higher odds of using condoms at last sex ($p<.001$). As expected, condom use was lower among women who reported STI treatment ($p<0.05$) compared to women who did not report treatment for an STI. Also, women who reported ever having anal sex had 75% higher odds of condom use compared to women who did not report anal sex ($p<0.001$).

Model 4 in Table 2 presents the weighted logistic regression results of condom use and victimization history with substance use added to the model and refers to research question two. The association between condom use and forced sex remains not significant. Age at first sex, STI treatment, and anal sex all remain statistically significant. Only injection drug use was associated with condom use at last sex. The odds of condom use were 4.18 times higher among women who injected drugs in the last year compared to women who did not, accounting for age, race/ethnicity, educational attainment, marital status and sexual activity ($p=0.01$).

Test of Mediation

The criteria for mediation are: 1) a significant relationship between the independent variable (victimization history) and the dependent variable (condom use); 2) a significant relationship between the independent variable (forced sex) and the mediating variable (substance use); and 3) the mediator (substance use) must be a significant predictor of the dependent variable (condom use) in the equation that includes both the mediator (substance use) and the independent variable (victimization history). The associations between victimization history, condom use and substance use did not meet the above criteria; therefore mediation analysis was not conducted.

Table 2: Condom Use by Victimization History, Sexual Behaviors and Substance Use, NSFG 2006-2010

	Model 1 (N= 10040)		Model 2 (N= 10040)		Model 3 (N= 9125)		Model 4 (N= 9115)	
Variables	**UOR**	**C.I.**	**AOR**	**C.I.**	**AOR**	**C.I.**	**AOR**	**C.I.**
Forced at 1st sex	0.94	(.688, 1.28)	0.98	(.699, 1.37)	1.12	(.785, 1.59)	1.12	(.784, 1.59)
Forced after 1st sex	0.84*	(.716, .996)	0.75	(.639, 892)	0.92	(.753, 1.13)	0.92	(.758, 1.13)
Re-victimized[a]	0.87	(.583, 1.31)	0.83	(.540, 1.27)	1.12	(.676, 1.87)	1.13	(.681, 1.88)
Sexual Activity:								
Age at 1st vaginal sex					1.08***	(1.04, 1.11)	1.08***	(1.04, 1.11)
No. of partners-lifetime					1.00	(.988, 1.01)	1.00	(.987, 1.01)
STI treatment-12 mo.					0.72*	(.525, .993)	0.70*	(.512, .967)
Anal sex					0.75***	(.656, .867)	0.75***	(.655, .867)
Received money for sex					1.32	(.623, 2.82)	1.47	(.705, 3.06)
Substance Use:								
5+ drinks in one sitting							1.07	(.868, 1.32)
Marijuana							0.90	(.737, 1.10)
Cocaine							1.37	(.843, 2.22)
Crack							0.35	(.108, 1.65)
Crystal-Meth							0.94	(.332, 2.64)
Injection drugs							4.18**	(1.42, 12.3)

Outcome variable: condom use

Controlled for Race/ethnicity, age, education level, and marital status

Note. Weighted sample; UOR= Unadjusted Odds Ratio; AOR= Adjusted Odd Ratio; STI= Sexually Transmitted Infection

* p=<0.05

**p=<.01

***p=<.001

1= Referent

[a] Forced at 1st sex and another time there after

Number of Sexual Partners, Victimization History, and Substance Use

Weighted linear regression results for number of partners by victimization history, sexual behaviors and substance use are presented in Table 3. Model 1 was the unadjusted model between number of partners and victimization history (forced sex at first sex, after first sex, and re-victimized). The

association between number of partners was statistically significant for victimization history category compared to no victimization. Model 2 included the forced sex variables and added the socio-demographic variables: race/ethnicity, age, educational attainment, marital status, and family structure to the model. The association between number of partners and victimization history remained statistically significant but the demographic characteristics did account for some of the variance.

Model 3 refers to research question three that assessed the association between number of sexual partners and victimization history accounting for socio-demographic characteristics and sexual activity. Women who reported forced sex after first sex and women who reported re-victimization had on average three more sexual partners than did non-victimized women. There was no statistically significant difference in report of number of partner between women who forced sex at first sex and those with no forced sex history. Accounting for forced sex, age, race, marital status, education, and family structure, women who initiated sex at younger ages, had a non-monogamous partner, had an abortion, and who received money for sex reported higher numbers of male partners compared to the reference group.

Model 4 in Table 3 addresses research question four that assessed whether or not substance use mediated the relationship between number of partners and victimization history. The coefficient for forced sex after first sex drops a bit from 3.08 to 3.03 ($p<0.001$) and remains statistically significant when substance use factors were added to the model. For re-victimized women, the coefficient increased from 3.27 to 3.51 ($p<0.001$). Marijuana and cocaine were the only two drugs positively associated with number of partners at a statistically significant level. Accounting for victimization history, socio-demographic characteristics, and sexual activity, women who reported using marijuana in the last year reported two more partners on average ($p<.001$), while women who reported cocaine use had nearly six more male partners over the lifetime ($p<0.001$) compared to women who report no marijuana or cocaine use respectively.

Table 3: Number of Partners by Victimization History, Sexual Behaviors and Substance Use, NSFG 2006-2010

	Model 1 (N= 10046)		Model 2 (N= 10044)		Model 3 (N= 9012)		Model 4 (N= 9002)	
Variables	**U Coef.**	**C.I.**	**A Coef.**	**C.I.**	**A Coef.**	**C.I.**	**A Coef.**	**C.I.**
Forced at 1st sex	1.52**	(.437, 2.61)	1.09*	(.038, 2.15)	0.41	(-.589, 1.41)	0.56	(-.400, 1.51)
Forced after 1st sex	5.75***	(4.87, 6.63)	4.65***	(3.80, 5.50)	3.08***	(2.21, 3.95)	3.03***	(2.15, 3.90)
Re-victimized[a]	7.18***	(5.11, 9.25)	6.00***	(4.08, 7.91)	3.27**	(1.22, 5.32)	3.51***	(1.43, 5.59)
Sexual Activity:								
Age at 1st vaginal sex					-0.56***	(-.627, -.450)	-0.53***	(-.593, -.469)
Condom use- last vaginal sex					-0.05	(-.579, .473)	-0.09	(-.601, .423)
Non-monogamous partner					3.14***	(2.23, 4.05)	2.57***	(1.66, 3.48)
STI treatment-12 mo.					0.92	(-.412, 2.25)	0.78	(-.542, 2.09)
Abortion in last 5 years					1.99***	(.863, 3.12)	1.72**	(.533, 2.91)
Anal sex					2.48***	(2.04, 2.93)	2.25***	(1.79, 2.71)
Received money for sex					11.09***	(4.54, 17.64)	9.22**	(3.60, 14.83)
Substance Use:								
5+ drinks in one sitting							0.42	(-.269, 1.12)
Marijuana							1.54***	(.734, 2.35)
Cocaine							5.89***	(3.45, 8.34)
Crack							-2.90	(-10.03, 4.23)
Crystal-Meth							-1.87	(-6.19, 2.45)
Injection drugs							1.84	(-6.02, 9.70)

Outcome Variable: Number of partners

Controlled for Race/ethnicity, age, education level, marital status, and family structure

Note. Weighted sample; STI= Sexually Transmitted Infection

* p=<0.05

**p=<.01

***p=<.001

1= Referent

[a] Forced at 1st sex and another time there after

Test of Mediation

Table 4 illustrates the associations between number of partners, sexual victimization and each substance in separate analysis. This table was used to inform about data included in the Sobel-Goodman analysis. Substance use consisted of: binge drinking, cocaine, pot, crack, crystal meth, and injecting drugs. Each substance was included in the Sobel-Goodman analysis separately and each was independently associated with both forced sex and number of partners. Furthermore, the association between forced sex and number of partners remained statistically significant when each substance was included in the model. The mediating effect of each substance was tested separately with forced sex and number of partners. Table 5 provides the results of the Sobel-Goodman test of mediation analysis. Marijuana, crack, and injection drug use all partially mediated the association between forced sex and number of partners. Binge drinking, cocaine and crystal meth did not mediate the association between forced sex and number of partners.

Table 4: Victimization History among Women: Number of Partners by Each Substance Reported Separately NSFG 2006-2010

	Binge Drink (N= 9012)		Marijuana (N= 9003)		Cocaine (N= 9011)		Crack (N= 9011)		Crystal Meth (N= 9012)		Injection (N= 9012)	
Variables	**A Coef.**	**C.I.**	**A Coef.**	**C.I.**	**A Coef.**	**C.I.**	**A Coef.**	**C.I.**	**A Coef.**	**C.I.**	**A Coef.**	**C.I.**
Victimization History	1.36***	(1.17, 1.54)	1.32***	(1.13, .257)	1.32***	(1.13, 1.51)	1.33***	(1.14, 1.52)	1.34***	(1.41, 5.04)	1.34***	(1.15, 1.52)
Sexual Activity:												
Age at 1st vaginal sex	-0.62***	(-.669, -.566)	-0.60***	(-.656, -554)	-0.62***	(-.670, -.569)	-0.63***	(-.681, -5.78)	-0.63***	(-.682, -.580)	-0.63***	(-682, -.579)
Condom use- last sex	-0.13	(-.477, .216)	-0.12	(-.464, .225)	-0.15	(-.492, .197)	-0.14	(-.485, .210)	-0.14	(-.487, .208)	-0.15	(-.495, .200)
Non-monogamous partner	3.14***	(2.66, 3.62)	2.94***	(2.46, 3.42)	2.96***	(2.48, 3.44)	3.29***	(2.81, 3.77)	3.30***	(2.82, 3.78)	3.30***	(2.82, 3.78)
STI Treatment- 12 mo	1.01***	(4.36, 1.76)	0.99**	(.331, 1.65)	1.05**	(.394, 1.71)	1.10***	(.441, 1.77)	1.05**	(.387, 1.72)	1.08***	(4.16, 1.74)
Abortion in last 5 years	1.02***	(.430, 1.61)	0.87**	(.286, 1.46)	0.86**	(.272, 1.45)	1.37***	(.446, 1.63)	1.04***	(.448, 1.63)	1.05***	(.460, 1.64)
Anal Sex	2.93***	(2.61, 3.25)	2.79***	(2.47, 3.11)	2.82***	(2.50, 3.15)	2.99***	(2.67, 3.31)	2.98***	(2.66, 3.30)	2.99***	(2.67, 3.31)
Received money for sex	9.03**	(7.53, 10.5)	8.62***	(7.13, 10.1)	7.77***	(6.28, 9.27)	8.58***	(7.04, 10.1)	8.88***	(7.37, 10.4)	8.94***	(7.43, 10.5)
Substance Use:	1.65***	(1.21, 2.09)	2.66***	(2.25, 3.07)	6.39***	(5.47, 7.31)	3.47***	(1.55, 5.39)	3.23***	(1.41, 5.04)	3.77**	(.941, 6.60)

Outcome Variable: Number of female lifetime partners

Controlled for age, race/ethnicity, marital status, education level, jail time, and 2-parent household

Note. Linear regression; Weighted sample

U Coef= Unadjusted Coefficient; A Coef= Adjusted Coefficient

* p=<0.05, **p=<.01, ***p=<.001

Table 5: Indirect Effect of Substance use as a Mediator of Victimization History and Number of Partners among Women

Substance	N	Coef.	SE	Z	P-value
Binge Drinking	9,012	-0.011	0.008	-1.51	0.131
Marijuana	9,003	0.031	0.013	2.39	0.017
Cocaine	9,011	0.026	0.014	1.86	0.062
Crack	9,011	0.013	0.005	2.56	0.01
Crystal-Meth	9,012	0.007	0.004	1.76	0.079
Injection drugs	9,012	0.011	0.005	2.2	0.028

DISCUSSION

Of the prior studies that have assessed sexual victimization in women, many rely upon small convenience samples and do not investigate the association of forced sex occurring at different points in a woman's sexual life with avoidant coping behaviors. The hypothesis that victimized women would report more HIV risk behaviors was partially supported. Research question one assessed whether condom use varied by victimization history. Compared to women with not victimization history, there was no difference in condom use at last sex among victimized women (forced at first sex, after first sex, or re-victimized) after accounting for race/ethnicity, age, educational attainment, marital status, and sexual activity. Previous studies have suggested that women who experienced childhood sexual abuse (forced at first sex) and who had been re-victimized are less likely to use condoms than women who did not experience forced sex [11, 15, 40]. This hypothesis was rejected in the current study. The current study's findings indicate that other factors may impact condom use. According to the Transactional model, a negative self-appraisal resulting from a history of sexual victimization can lead to lower self-esteem [59] which affects a woman's ability to assert herself. Women who have experienced forced sex may already feel powerless as suggested by Finkelhor and Brown [59] which would further disadvantage them to enforcing condom use with their partner. For example, Wingood and DiClemente purport that gender and an imbalance in power within a sexual relationship negatively impacts condom use in women [60].

The hypothesis for research question three that tested whether or not substance use mediated the relationship between forced sex and condom use was rejected because condom use was not independently associated with victimization history, a necessary criteria to test mediation. A rather interesting finding is that women who injected drugs had higher odds of reported condom use at last sex even after accounting for victimization history. This result may be due to the availability of condoms through needle exchange programs (NEP) where people who inject drugs can obtain sterile needles. NEPs have expanded since the early years of HIV and there are currently 221 programs in 33 states [61]. Given the dual risk of HIV infection through sharing needles and unprotected sex, many NEPs distribute both condoms and sterile syringes [62]. For women who utilize this service the availability of condoms and awareness that injecting drugs is a high-risk behavior in and of itself may have a positive effect on condom use behaviors among women who inject drugs. Women who inject drugs may also be receiving regular HIV prevention messages that better equip them to use condoms. Future studies should be conducted specifically among women who inject drugs and who have a history of forced sex in order to better understand condom use behaviors among this population.

The hypothesis for research question two not rejected. Number of partners was positively associated with forced sex after first sex and being re-victimized but was not associated with forced at first sex. The generalizability of this study provides strong evidence to support similar findings from previous sexual violence studies that collected data from small and/or targeted populations [20, 26, 63].

There have been inconsistent findings in the literature regarding trauma resulting from experiencing sexual abuse at earlier or later developmental periods and the impact on coping. Some researchers have argued that sexual abuse very early in the developmental process may result in a more traumatic experience [64]. Others argue that being older and cognitively more mature will result in more severe trauma following sexual abuse that may increase avoidant coping behaviors [7, 59]. While the current study did not assess childhood sexual abuse specifically, it was expected that forced sex at first sex would occur at younger ages. Results from the current study support the latter position that women

who experience forced sex later in the developmental process (in this case after initiating consensual sex) would exhibit more avoidant coping (e.g. higher number of sexual partners). Furthermore, number of sexual partners was related to several sexual risk behaviors including: having a non-monogamous partner, early sexual debut, having had an abortion, ever having anal sex and exchanging sex for money. The findings in the current study endorse previous studies examining sexual behaviors among sexually abused women and girls.

Research question four tested the mediating effects of substance use on the association between forced sex and number of partners. Findings illustrate that marijuana, crack and injection drug use partially mediated forced sex and number of partners. The findings here support research by Ullman that employed structural equation model to assess the severity of child sexual abuse, substance use, and coping behaviors. Interestingly, when substance use is added to the model in Table 3 the association between number of male partners is no longer statistically significant in Black women compared to White. Although Black women report fewer male partners compared to White women, the inclusion of substance use in the model highlights that substance use may be closely linked to sexual activity among Black women, especially those with a history of sexual violence (See Appendix A).

In a 3-wave longitudinal study, Kilpatrick and colleagues investigated whether substance use resulted from sexual violence or if previous substance use increased vulnerability to sexual violence. They report in the second wave that substance use (excluding alcohol) was associated with reporting a new physical or sexual assault [65]. The odds of alcohol or substance use increased with a report of a new assault, even among women who had not reported previous victimization [65]. The authors found that for drug use, a continuous cycle occurred in which substance use increased risk of future violence and violence increased risk of substance use [65]. The study by Kilpatrick et al did not asses coping behaviors which in and of itself can be independently associated with substance use or sexual risk behaviors that may occur in conjunction with substance use. Additional longitudinal studies that employ

path analysis are needed to better understand the complex relationship between substance use, race, power imbalance, sexual victimization and sexual risk behaviors in women.

While this study did not specifically inquire about childhood sexual abuse, frequency analysis revealed that nine percent of women in the sample reported first sex at age 14 or below; the youngest reported age was two years old. This meets the criteria for CSA as defined by Frontier (2009) and Joiner (2007) [66, 67] which uses age 14 as a cut-off for CSA. Previous CSA studies in women report a link between CSA and risk of early sexual debut [40, 68, 69]. Early sexual debut may put women at risk of forced sex later in life. The fact that among women who reported forced sex at first sex and forced after first sex both report being 16 years old at first consensual sex may indicate a relationship between risk of sexual abuse and early sexual debut. An association between early sexual debut and victimization history can especially be the case if she has an older partner. For example, large age differentials between young women and male partners have been associated with power imbalance within the relationships [60, 63, 70]. Additionally, research indicates that women in power imbalanced relationship are at greater risk for intimate partner violence (including sexual violence) compared to women who share relationship power [63, 70, 71].

Limitations

Despite the aforementioned strengths of this study, there are some limitations. Because this is a cross-sectional analysis, I am not able to determine causality. I cannot confidently state that experiencing forced sex causes women to have more sexual partners or to refrain from using condoms. Future research will need to study respondents' sexual life experiences longitudinally, preferably at specific designated time points, to gain a better understanding of the overall sexual life experiences, including exposure to sexual violence. This will allow researchers to make more confident inferences as to the relationship between HIV risk behaviors (e.g. number of sexual partners and condom use) and substance use. Furthermore, longitudinal data would provide insight into subsequent contextual factors that victimized

women sex may encounter, such as impaired ability to control individual level risk behaviors (i.e. negotiating condom use) that place them at greater risk for a variety of outcomes including HIV infection and re-victimization.

While the importance of having a nationally representative dataset cannot be overstated, a limitation inherent in the NSFG is that it did not allow for detailed follow-up questions. This problem is evident in that the survey did not include information about the perpetrator. The relationship between the victim and perpetrator has serious implications for the level of trauma experienced by the victim [72]. For example, research has revealed that people victimized by a family member have more severe post-traumatic stress than people victimized by a stranger [72]. It is necessary to understand the victim-perpetrator relationship in order to contextualize the sexual violence experience. Furthermore, the study focused on male perpetrators of forced sex and does not inquire about female perpetrated forced sex against women.

Relatedly, victims who experience intimate partner violence may experience a longer duration of sexual victimization. Women who are sexually assaulted repeatedly may have different psychological outcomes than women who are victimized once. Due to the survey design, these factors could not be elucidated.

Another limitation of the dataset is that questions about forced sex were only posed to women who were 18 years and older. Although the age range for the overall sample was 15-44, only people above 18 were surveyed about forced sex. This data excludes a population that may be especially vulnerable to sexual violence. Due to the study design, re-victimization could only be captured if the respondent was forced at first sex and a separate time after first sex. The survey could not detect if a woman was forced multiples times after consensual first sex as may be the case with abuse by an intimate partner. Additionally, forced sex was defined in this study as forced vaginal sex. The wording of the survey may have excluded women who have been forced to engage in oral and/or anal sex. The Federal

Bureau of Investigation, realizing the definition for rape was antiquated and restrictive, updated the definition to include forced oral, vaginal, and/or anal sex in 2012 [73]. It is necessary that survey designers include all forms of sex in questions related to forced sex and inquire about multiple sexually violent experiences across the lifespan.

Conclusion

The current study addressed this gap in the sexual violence literature by employing a nationally represented dataset with minimal sampling bias to understand: a) socio-demographic characteristics associated with forced sex in women b) the association of victimization history (forced sex occurring at first sex, after first sex, or multiple times) on a woman's condom use behaviors and number of partners and c) the mediating effects of substance use on the relationship between victimization history and HIV risk behaviors (condom use and number of partners).

The primary goal of this study was to understand the association of HIV related sexual risk behaviors sexual victimization history among women using a nationally US represented dataset. The current study supports findings from previous sexual violence studies that utilized small, convenience samples. Compared to women with no previous sexual violent experience, sexually victimized women are at risk for higher numbers of partners and substance use. The second goal of this study was to understand how the time in which forced sex occurs in a woman's life may affect her sexual behaviors. This study found that younger age at first consensual sex is strongly associated with report of forced sex, regardless of the point in a woman's life that forced sex occurs.

This study contributes to the overall public health literature by assessing the point at which forced sex occurs and providing needed context to understanding if there are differences in HIV-risk behaviors based on the point in a woman's sexual life that sexual violence occurs. The findings in this study can inform the development of appropriate interventions for victimized women and women at risk for HIV.

The results of this study also highlight the importance of assessing data on all types of sexual behavior, and forced sex. Prevention messages and treatment options for sexual violence should be racially and ethnically relevant. Wyatt and colleagues call for intersectional approaches to understanding how gender, race, ethnicity, and cultural background converge to put minority women at risk for HIV. Wyatt et al. suggest that interventions should include components that focus on educating people at risk for HIV on how to cope adaptively to sexual violence that is inclusive of and relevant for all genders and sexual orientations [74]. While a number of abuse shelters and women's health centers screen for sexual abuse, researchers have called for sexual health clinics that offer STI treatment and pregnancy termination to also include routine sexual abuse screening and counseling to clients in an effort to mediate risky behaviors and offer treatment for women who may not have received treatment previously [32, 75, 76].

Appendix A

Table 5: Number of Male Partners by Forced Sex, Sexual Behaviors and Substance Use, NSFG 2006-2010

	Model 1 (N= 10046)		Model 2 (N= 10044)		Model 3 (N= 9012)		Model 4 (N= 9002)	
Variables	**U Coef.**	**C.I.**	**A Coef.**	**C.I.**	**A Coef.**	**C.I.**	**A Coef.**	**C.I.**
Forced at 1st sex	1.52**	(.437, 2.61)	1.09*	(.038, 2.15)	0.41	(-.589, 1.41)	0.56	(-.400, 1.51)
Forced after 1st sex	5.75***	(4.87, 6.63)	4.65***	(3.80, 5.50)	3.08***	(2.21, 3.95)	3.03***	(2.15, 3.90)
Re-victimized[a]	7.18***	(5.11, 9.25)	6.00***	(4.08, 7.91)	3.27**	(1.22, 5.32)	3.51***	(1.43, 5.59)
Age			0.12***	(.090, .147)	0.18***	(.145, .207)	0.18***	(.148, .211)
Race:								
White			1		1		1	
Black			-0.89**	(-1.54, -.234)	-0.81***	(-1.44, -.173)	-.049	(-1.15, .167)
Hispanic			-3.13***	(-3.63, -2.63)	-2.23**	(-2.66, -1.81)	-2.00***	(-2.42, -1.58)
Other			-1.37***	(-2.09, -.646)	-0.41	(-1.10, .267)	-0.35	(-1.04, .328)
Marital Status:								
Married			1		1		1	
Divorced/Separated			3.55***	(2.61, 4.49)	3.25***	(2.07, 4.42)	3.20***	(1.99, 4.40)
Cohabitate			2.98***	(2.18, 3.79)	2.37***	(1.59, 3.14)	1.97***	(1.27, 2.67)
Never married			2.66***	(2.09, 3.23)	2.37***	(1.75, 2.99)	1.91***	(1.27, 2.56)
Education:								
College degree			1		1		1	
Less than HS			0.16	(-.619, .932)	-1.26**	(-2.08, -.442)	-1.20**	(-1.97, -.423)
High School diploma			0.27	(-.319, .858)	-0.88**	(-1.45, -.312)	-0.83**	(-1.36, -.301)
Some College			0.63*	(.090, 1.16)	-0.39	(-.869, .091)	-0.33	(-.792, .133)
Grad/Professional			0.20	(-.613, 1.01)	0.14	(-.640, .928)	0.26	(-.482, .994)
Family Structure:								
Grew up in 2-parent home			-1.40***	(-1.85, -.946)	-0.72***	(-1.16, -.284)	-0.72***	(-1.15, -.294)
Lived on own before age 18			1.47***	(.847, 2.08)	0.66*	(.055, 1.26)	0.66*	(.043, 1.27)
Sexual Activity:								
Abortion in last 5 years					1.99***	(.863, 3.12)	1.72**	(.533, 2.91)
Condom use- last vaginal sex					-0.05	(-.579, .473)	-0.09	(-.601, .423)
STI treatment-12 mo.					0.92	(-.412, 2.25)	0.78	(-.542, 2.09)
Non-monogamous partner					3.14***	(2.23, 4.05)	2.57***	(1.66, 3.48)
Age at 1st vaginal sex					-0.56***	(-.627, -.450)	-0.53***	(-.593, -.469)
Had anal sex					2.48***	(2.04, 2.93)	2.25***	(1.79, 2.71)
Received money for sex					11.09***	(4.54, 17.64)	9.22**	(3.60, 14.83)
Substance Use:								
5+ drinks in one sitting							0.42	(-.269, 1.12)
Marijuana							1.54***	(.734, 2.35)
Cocaine							5.89***	(3.45, 8.34)
Crack							-2.90	(-10.03, 4.23)
Crystal-Meth							-1.87	(-6.19, 2.45)
Injection drugs							1.84	(-6.02, 9.70)

Note. Weighted sample; STI= Sexually Transmitted Infection

* p=<0.05

**p=<.01

***p=<.001

1= Referent

[a] Forced at 1st sex and another time there after

Bibliography

1. Loeb, T.B., Gaines, T., Wyatt, G.E., Zhang, M., and Liu, H., *Associations between child sexual abuse and negative sexual experiences and revictimization among women: Does measuring severity matter?* Child Abuse & Neglect, 2011. **35**(11): p. 946-955.

2. Garcia-Moreno, C., Guedes, A., and Knerr, W., *Sexual Violence*, in *Understanding and addressing violence against women* 2012, World Health Organization: Geneva.

3. Tjaden, P. and Thoennes, N., *Full Report of the Prevalence, Incidence, and Consequences of Violence Against Women: Findings from the National Violence Against Women Survey*, U.D.o. Justice, et al., Editors. 2000: Rockville, MD. p. 71.

4. Tjaden, P. and Thoennes, N., *Extent, nature, and consequence of rape vicitimization: Findings from teh National Violence Against Women Survey*, U.D.o. Justice, Editor. 2006, National Institute of Justice.

5. Black, M.C., Basile, K.C., Breiding, M.J., Smith, S.G., Walters, M.L., Merrick, M.T., Chen, J., and Stevents, M.R., *The National Intimate Partner and Sexual Violence Survey (NISVS): 2010 Summary Report*, C.f.D.C.a.P. National Center for Injury Prevention and Control, Editor. 2011, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention Atlanta, GA

6. Young, M.-E.D., Deardorff, J., Ozer, E., and Lahiff, M., *Sexual Abuse in Childhood and Adolescence and the Risk of Early Pregnancy Among Women Ages 18–22.* Journal of Adolescent Health, 2011. **49**(3): p. 287-293.

7. Spaccarelli, S., *Stress, appraisal, and coping in child sexual abuse: A theoretical and empirical review.* Psychological Bulletin, 1994. **116**(2): p. 340-362.

8. Schoedl, A.F., Costa, M.C.P., Mari, J.J., Mello, M.F., Tyrka, A.R., Carpenter, L.L., and Price, L.H., *The Clinical Correlates of Reported Childhood Sexual Abuse: An Association Between Age at Trauma Onset and Severity of Depression and PTSD in Adults.* Journal of Child Sexual Abuse, 2010. **19**(2): p. 156-170.

9. Lalor, K. and McElvaney, R., *Child Sexual Abuse, Links to Later Sexual Exploitation/High-Risk Sexual Behavior, and Prevention/Treatment Programs.* Trauma, Violence, & Abuse, 2010. **11**(4): p. 159-177.

10. Okami, P., *Self-reports of "positive" childhood and adolescent sexual contacts with older persons: An exploratory study.* Archives of Sexual Behavior, 1991. **20**(5): p. 437-457.

11. Wyatt, G.E., Guthrie, D., and Notgrass, C.M., *Differential effects of women's child sexual abuse and subsequent sexual revictimization.* Journal of Consulting and Clinical Psychology, 1992. **60**(2): p. 167-173.

12. Wyatt, G.E., Guthrie, D., and Notgrass, C.M., *DIFFERENTIAL-EFFECTS OF WOMENS CHILD SEXUAL ABUSE AND SUBSEQUENT SEXUAL REVICTIMIZATION.* Journal of Consulting and Clinical Psychology, 1992. **60**(2): p. 167-173.

13. Acierno, R., Resnick, H.S., and Kilpatrick, D.G., *Health Impact of Interpersonal Violence 1: Prevalence Rates, Case Identification, and Risk Factors for Sexual Assault, Physical Assault, and Domestic Violence in Men and Women.* Behavioral Medicine, 1997. **23**(2): p. 53-64.

14. Urquiza, A.J. and Goodlin-Jones, B.L., *Child sexual abuse and adult revictimization with women of color.* Violence Vict, 1994. **9**(3): p. 223-32.

15. Classen, C.C., Palesh, O.G., and Aggarwal, R., *Sexual Revictimization.* Trauma, Violence, & Abuse, 2005. **6**(2): p. 103-129.

16. Chin, D., Wyatt, G.E., Carmona, J.V., Loeb, T., and Myers, H.F., *Child sexual abuse and HIV: An intergrative risk-reduciton approach*, in *From Child Sexual Abuse to Adult Sexual Risk: Trauma, Revictimizaiton, and Intervention*, L.J. Koenig, et al., Editors. 2004, American Psychological Association Washington, DC. p. 21.

17. Arata, C.M., *From Child Victim to Adult Victim: A Model for Predicting Sexual Revictimization.* Child Maltreatment, 2000. **5**(1): p. 28-38.

18. *HIV Among Women*, C.f.D. Control, Editor. 2013, Centers for Disease Control

19. *Prevalence of Child and Adult Sexual Abuse and Risk Taking Practices Among HIV Serodiscordant African-American Couples.* AIDS and Behavior, 2010. **14**(5): p. 1032-1044.

20. Wyatt, G.E., Myers, H.F., Williams, J.K., Kitchen, C.R., Loeb, T., Carmona, J.V., Wyatt, L.E., Chin, D., and Presley, N., *Does History of Trauma Contribute to HIV Risk for Women of Color? Implications for Prevention and Policy.* American Journal of Public Health, 2002. **92**(4): p. 660-665.

21. Ellickson, P.L., Collins, R.L., Bogart, L.M., Klein, D.J., and Taylor, S.L., *Scope of HIV risk and co-occurring psychosocial health problems among young adults: Violence, victimization, and substance use.* Journal of Adolescent Health, 2005. **36**(5): p. 401-409.

22. Myers, H., Sumner, L., Ullman, J., Loeb, T., Carmona, J., and Wyatt, G., *Trauma and Psychosocial Predictors of Substance Abuse in Women Impacted by HIV/AIDS.* The Journal of Behavioral Health Services and Research, 2009. **36**(2): p. 233-246.

23. Wyatt, G., Longshore, D., Chin, D., Carmona, J., Loeb, T., Myers, H., Warda, U., Liu, H., and Rivkin, I., *The Efficacy of an Integrated Risk Reduction Intervention for HIV-Positive Women With Child Sexual Abuse Histories.* AIDS and Behavior, 2004. **8**(4): p. 453-462.

24. Alleyne, B., Coleman-Cowger, V.H., Crown, L., Gibbons, M.A., and Vines, L.N., *The effects of dating violence, substance use and risky sexual behavior among a diverse sample of Illinois youth.* Journal of Adolescence, 2011. **34**(1): p. 11-18.

25. Davis, K.C., Schraufnagel, T.J., George, W.H., and Norris, J., *The Use of Alcohol and Condoms During Sexual Assault.* American Journal of Men's Health, 2008. **2**(3): p. 281-290.

26. Lang, D.L., Sales, J.M., Salazar, L.F., Hardin, J.W., DiClemente, R.J., Wingood, G.M., and Rose, E., *Rape Victimization and High Risk Sexual Behaviors: A Longitudinal Study of African-American Adolescent Females.* Western Journal of Emergency Medicine, 2011. **12**(3).

27. Dietz, P.H., Spitz, A.M., Anda, R.F., Williamson, D.F., McMahon, P.M., Santelli, J.S., Nordenberg, D.F., Felitti, V.J., and Kendrick, J.S., *Unintended pregnancy among adult women exposed to abuse or household dysfunction during their childhood.* Jama-Journal of the American Medical Association, 1999. **282**(14): p. 1359-1364.

28. Uscher-Pines, L. and Nelson, D.B., *Neighborhood and Individual-Level Violence and Unintended Pregnancy.* Journal of Urban Health-Bulletin of the New York Academy of Medicine, 2010. **87**(4): p. 677-687.

29. Steinberg, J.R. and Tschann, J.M., *Childhood adversities and subsequent risk of one or multiple abortions.* Social Science & Medicine, 2013. **81**(0): p. 53-59.

30. Boden, J.M., Fergusson, D.M., and Horwood, L.J., *Experience of sexual abuse in childhood and abortion in adolescence and early adulthood.* Child Abuse & Neglect, 2009. **33**(12): p. 870-876.

31. Wingood, G.M. and DiClemente, R.J., *Child sexual abuse, HIV sexual risk, and gender relations of African-American women.* American Journal of Preventive Medicine, 1997. **13**(5): p. 380-384.

32. Fisher, W.A., Singh, S.S., Shuper, P.A., Carey, M., Otchet, F., Maclean-Brine, D., Dal Bello, D., and Gunter, J., *Characteristics of women undergoing repeat induced abortion.* Canadian Medical Association Journal, 2005. **172**(5): p. 637-641.

33. Steel, J.L. and Herlitz, C.A., *The association between childhood and adolescent sexual abuse and proxies for sexual risk behavior: A random sample of the general population of Sweden.* Child Abuse & Neglect, 2005. **29**(10): p. 1141-1153.

34. Stoltz, J.-A.M., Shannon, K., Kerr, T., Zhang, R., Montaner, J.S., and Wood, E., *Associations between childhood maltreatment and sex work in a cohort of drug-using youth.* Social Science & Medicine, 2007. **65**(6): p. 1214-1221.

35. Hayes, S.C., Wilson, K.G., Gifford, E.V., Follette, V.M., and Strosahl, K., *Experimental avoidance and behavioral disorders: a functional dimensional approach to diagnosis and treatment.* J Consult Clin Psychol, 1996. **64**(6): p. 1152-68.

36. Ullman, S.E., Relyea, M., Peter-Hagene, L., and Vasquez, A.L., *Trauma histories, substance use coping, PTSD, and problem substance use among sexual assault victims.* Addictive Behaviors, 2013. **38**(6): p. 2219-2223.

37. Deliramich, A.N. and Gray, M.J., *Changes in Women's Sexual Behavior Following Sexual Assault.* Behavior Modification, 2008. **32**(5): p. 611-621.

38. Klancecky, A.K., Harrington, J., and McChargue, D.E., *Child Sexual Abuse, Dissociation, and Alcohol: Implications of Chemical Dissociation via Blackouts Among College Women.* The American Journal of Drug and Alcohol Abuse, 2008. **34**(3): p. 277-284.

39. Testa, M., Vanzile-Tamsen, C., and Livingston, J.A., *The role of victim and perpetrator intoxication on sexual assault outcomes.* J Stud Alcohol, 2004. **65**(3): p. 320-9.

40. Polusny, M.A. and Follette, V.M., *Long-term correlates of child sexual abuse: Theory and review of the empirical literature.* Applied and Preventive Psychology, 1995. **4**(3): p. 143-166.

41. Kilpatrick, D.G., Acierno, R., Saunders, B., Resnick, H.S., Best, C.L., and Schnurr, P.P., *Risk factors for adolescent substance abuse and dependence: Data from a national sample.* Journal of Consulting and Clinical Psychology, 2000. **68**(1): p. 19-30.

42. Logan, T.K., Walker, R., Cole, J., and Leukefeld, C., *Victimization and substance abuse among women: Contributing factors, interventions, and implications.* Review of General Psychology, 2002. **6**(4): p. 325-397.

43. *HIV and substance use in the United States*, V.H. National Center for HIV/AIDS, STD, and TB Prevention, Editor. 2013, Centers for Disease Control and Prevention: Atlanta, GA.

44. Bensley, L.S., Van Eenwyk, J., and Simmons, K.W., *Self-reported childhood sexual and physical abuse and adult HIV-risk behaviors and heavy drinking.* American Journal of Preventive Medicine, 2000. **18**(2): p. 151-158.

45. Kalina, O., Geckova, A.M., Klein, D., Jarcuska, P., Orosova, O., van Dijk, J.P., and Reijneveld, S.A., *Mother's and father's monitoring is more important than parental social support regarding sexual risk behaviour among 15-year-old adolescents.* European Journal of Contraception and Reproductive Health Care, 2013. **18**(2): p. 95-103.

46. Roche, K.M., Mekos, D., Alexander, C.S., Astone, N.M., Bandeen-Roche, K., and Ensminger, M.E., *Parenting influences on early sex initiation among adolescents: How neighborhood matters.* Journal of Family Issues, 2005. **26**(1): p. 32-54.

47. Luster, T. and Small, S.A., *Sexual abuse history and number of sex partners among female adolescents.* Fam Plann Perspect, 1997. **29**(5): p. 204-11.

48. Chandy, J.M., Blum, R.W., and Resnick, M.D., *Gender-specific outcomes for sexually abused adolescents.* Child Abuse & Neglect, 1996. **20**(12): p. 1219-1231.

49. Tremblay, C., Hébert, M., and Piché, C., *Coping strategies and social support as mediators of consequences in child sexual abuse victims.* Child Abuse & Neglect, 1999. **23**(9): p. 929-945.

50. Finkelhor, D., Hotaling, G., Lewis, I.A., and Smith, C., *Sexual abuse in a national survey of adult men and women: Prevalence, characteristics, and risk factors.* Child Abuse & Neglect, 1990. **14**(1): p. 19-28.

51. Rotheram-Borus, M.J., Mahler, K.A., Koopman, C., and Langabeer, K., *Sexual abuse history and associated multiple risk behavior in adolescent runaways.* Am J Orthopsychiatry, 1996. **66**(3): p. 390-400.

52. Tyler, K.A. and Cauce, A.M., *Perpetrators of early physical and sexual abuse among homeless and runaway adolescents.* Child Abuse & Neglect, 2002. **26**(12): p. 1261-1274.

53. Tyler, K.A., *Social and emotional outcomes of childhood sexual abuse: A review of recent research.* Aggression and Violent Behavior, 2002. **7**(6): p. 567-589.

54. Bifulco, A., Brown, G.W., and Adler, Z., *EARLY SEXUAL ABUSE AND CLINICAL DEPRESSION IN ADULT LIFE.* British Journal of Psychiatry, 1991. **159**: p. 115-122.

55. Chandra, A., Billioux, Vennea G, Copen, Casey E., Balaji, Alexandra, DiNenno, Elizabeth, *HIV testing in the US household population aged 15-44: Data from the National Survey of Family Growth, 2006-2010*, in *National Health Statistics Reports*, N.C.f.H. Statistics, Editor. 2012, National Center for Health Statistics: Rockville, MD.

56. Butler, A.C., *Child sexual assault: Risk factors for girls.* Child Abuse & Neglect, 2013. **37**(9): p. 643-652.

57. Lepkowski, J., Mosher, WD, Davis, KE, Groves, RM, Van Hoewyk, J., *The 2006–2010 National Survey of Family Growth: Sample design and analysis of a continuous survey*, N.C.f.H. Statistics, Editor. 2010, Vital Health Stat Washington, DC.

58. StataCorp., *Stata Statistical Software: Release 12*. 2011, StataCorp LP: College Station, TX.

59. Finkelhor, D. and Browne, A., *The Traumatic Impact Of Child Sexual Abuse: A Conceptualization.* American Journal of Orthopsychiatry, 1985. **55**(4): p. 530-541.

60. Wingood, G.M. and DiClemente, R.J., *Application of the Theory of Gender and Power to Examine HIV-Related Exposures, Risk Factors, and Effective Interventions for Women.* Health Education & Behavior, 2000. **27**(5): p. 539-565.

61. Barr, S. *Needle-exchange programs face new federal funding ban*. 2011 [cited 2013 November 17, 2013]; Available from: http://www.kaiserhealthnews.org/stories/2011/december/21/needle-exchange-federal-funding.aspx.

62. *North American Syringe Exchange Network*. 2013 [cited 2013 November 17, 2013]; Available from: http://nasen.org/programs/.

63. Raiford, J.L., Wingood, G.M., and Diclemente, R.J., *Prevalence, incidence, and predictors of dating violence: a longitudinal study of African American female adolescents.* J Womens Health (Larchmt), 2007. **16**(6): p. 822-32.

64. Cole, P.M. and Putnam, F.W., *Effect of incest on self and social functioning: A developmental psychopathology perspective*. Journal of Consulting and Clinical Psychology, 1992. **60**(2): p. 174.

65. Kilpatrick, D.G., Acierno, R., Resnick, H.S., Saunders, B.E., and Best, C.L., *A 2-year longitudinal analysis of the relationships between violent assault and substance use in women.* Journal of Consulting and Clinical Psychology, 1997. **65**(5): p. 834-847.

66. Fortier, M.A., DiLillo, D., Messman-Moore, T.L., Peugh, J., DeNardi, K.A., and Gaffey, K.J., *Severity Of Child Sexual Abuse And Revictimization: The Mediating Role Of Coping And Trauma Symptoms.* Psychology of Women Quarterly, 2009. **33**(3): p. 308-320.

67. Joiner Jr, T.E., Sachs-Ericsson, N.J., Wingate, L.R., Brown, J.S., Anestis, M.D., and Selby, E.A., *Childhood physical and sexual abuse and lifetime number of suicide attempts: A persistent and theoretically important relationship.* Behaviour Research and Therapy, 2007. **45**(3): p. 539-547.

68. Elizabeth Wyatt, G., *The Relationship between Child Sexual Abuse and Adolescent Sexual Functioning in Afro-American and White American Womena.* Annals of the New York Academy of Sciences, 1988. **528**(1): p. 111-122.

69. Stockman, J., Lucea, M., and Campbell, J., *Forced Sexual Initiation, Sexual Intimate Partner Violence and HIV Risk in Women: A Global Review of the Literature.* AIDS and Behavior, 2013. **17**(3): p. 832-847.

70. Volpe, E.M., Hardie, T.L., Cerulli, C., Sommers, M.S., and Morrison-Beedy, D., *What's Age Got to Do With It? Partner Age Difference, Power, Intimate Partner Violence, and Sexual Risk in Urban Adolescents.* Journal of Interpersonal Violence, 2013. **28**(10): p. 2068-2087.

71. Coker, A.L., Davis, K.E., Arias, I., Desai, S., Sanderson, M., Brandt, H.M., and Smith, P.H., *Physical and mental health effects of intimate partner violence for men and women.* American Journal of Preventive Medicine, 2002. **23**(4): p. 260-268.

72. Kallstrom-Fuqua, A.C., Weston, R., and Marshall, L.L., *Childhood and adolescent sexual abuse of community women: mediated effects on psychological distress and social relationships.* Journal of Consulting and Clinical Psychology, 2004. **72**(6): p. 980-992.

73. *Attorney General Eric Holder announces revisions to the uniform crime report's definition of rape*, F.B.o. Investigation, Editor. 2012, Federal Bureau of Investigation: Washington, DC.

74. Wyatt, G.E., Gómez, C.A., Hamilton, A.B., Valencia-Garcia, D., Gant, L.M., and Graham, C.E., *The intersection of gender and ethnicity in HIV risk, interventions, and prevention: New frontiers for psychology.* American Psychologist, 2013. **68**(4): p. 247-260.

75. Stenson, K., Heimer, G., Lundh, C., Nordstrom, M.L., Saarinen, H., and Wenker, A., *The prevalence of violence investigated in a pregnant population in Sweden.* Journal of Psychosomatic Obstetrics and Gynecology, 2001. **22**(4): p. 189-197.

76. van Roode, T., Dickson, N., Herbison, P., and Paul, C., *Child sexual abuse and persistence of risky sexual behaviors and negative sexual outcomes over adulthood: Findings from a birth cohort.* Child Abuse & Neglect, 2009. **33**(3): p. 161-172.

CHAPTER 4: Paper 3: Force Sex Tactics, HIV risk behaviors, and Substance use: Does the Type of Force Matter?

Abstract

Forced sex is an important public health concern and has been associated with later psychological and behavioral problems. Using the National Survey of Family Growth 2006-2010 dataset- stratified by sex, the current study examined the forced sex tactics reported by 944 male and female forced sex victims. Multivariate analysis was used to assess whether force sex tactic reported was associated with avoidant coping behaviors as manifested in inconsistent condom use, number of sexual partners and substance use. An adapted version of the Transactional Model and the Experiential Avoidance Model framework was employed to guide the study. The hypotheses in this study were partially supported. There was a positive trend in stronger force sex tactic reported and number of partners among men and women; although at marginally significant levels. There was also a significant relationship between current substance use and the force sex tactic given drugs or alcohol in both men and women. Findings from this study indicate that victims of incapacitated forced sex (e.g. given drugs or alcohol) may experience more deleterious consequences and rely upon avoidant coping behaviors such as sexual activity and substance use. The relationship between casual sex and substance use is discussed in terms of forced sex tactics.

Word Count: 192

INTRODUCTION

Research on forced sex has been conducted to examine the relationship between abuse severity and psychological outcomes [1-5]. Previous research indicates that forced sex severity impacts overall sexual health and is associated with risk behaviors such as substance use, multiple sexual partners, sex work and suicide ideation [6-10]. Additionally, some studies report that men and women who experienced severe force during sexual abuse are more likely to report a range of sexual dysfunctions such as pain during sexual activity in women (e.g. vaginismus) [11] and impotence in men [12]. Research suggests that factors surrounding the forced sex experience such as severity of force can exacerbate negative behavioral and psychological outcomes, as mentioned above. The literature specifies that the more severe the abuse, the more likely the victim will perceive the experience as traumatic, which is related to how the victim is able to cope with the abuse [13, 14]. An under-developed portion of the literature has investigated the impact severity of force used has on avoidant coping behaviors.

Despite the range of research published on sexual abuse severity, fewer studies specifically assess the force characteristics used to obtain the victims cooperation. Many studies rely upon a composite severity score to indicate abuse severity and force used [15, 16]. Other studies categorize respondents based on type of abuse reported (i.e. verbal coercion vs. physical force) [4, 17, 18]. Instead of measuring severity, in terms of a numerical value or category, the strategy employed in the current study examined specific force characteristics. This approach treated each force sex characteristic (e.g., tactic) as a covariate in a regression model. This is an appealing strategy because the specific aspects of forced sex that might account for variations in later behavioral and psychological outcomes can be measured [19, 20]. "Unpacking" the characteristics of force used may contextualize the abuse experience and inform as to the behavioral outcomes observed among sexually victimized men and women.

The current exploratory study was designed to understand how the type of force used during the sexually violent event impacts avoidance coping behaviors as manifested through sexual risk behaviors

and substance use. Forced sex is defined as the penetration of the vagina through means of force-whether verbal, physical, or through coercion, without the full consent of the victim by the opposite sex. Victimization in this study included forced penetrative sex in childhood as well as adulthood. The reason for including both child and adult forced sex experiences was because forced sex is associated with risky sexual behaviors and substance use regardless of the age at which forced sex occurred [21].

LITERATURE REVIEW

Defining Severity

Assessing the type of exposure to sexual abuse varies considerably in the literature. For instance, some studies assess non-contact versus contact exposure [22]. This distinction progresses from non-contact (i.e. force to watch sexually explicit or pornographic images, forced to take pictures, exposure of genitals) to contact (i.e. unwanted kissing, touching over the clothes, fondling) [22] to attempted and completed penetration (oral, vagina, anal). Recently, researchers have begun to distinguish between unwanted sexual attention and sexual abuse [23]. Unwanted sexual attention is defined as unsolicited verbal comments, gestures, stares-non-physical attention towards one's sexuality and physical appearance [23]. This distinction is necessary because while unwanted sexual attention may cause discomfort and anger, a singular event of unwanted sexual attention generally does not translate to fear as can be the case with a singular forced sex experience [22]. These various forms of sexual abuse are typically ranked by invasiveness and become an indicator of severity [24]. While experiencing any form of abuse can be distressing, most researchers purport that, under most conditions, forced kissing or exposure of genitals is not as traumatic as forced sexual penetration [22].

Given the range of what constitutes sexual abuse, it is necessary to identify indicators of abuse severity in order to contextualize the abuse experience. Severity of force generally encompasses the following indicators: duration and frequency of the abuse, relationship between the victim and perpetrator, number of perpetrators and physical force used [22]. The length of time that a victim is

exposed to sexual abuse is highly correlated with the amount of trauma the victim experiences. A study of 117 childhood sexual abuse survivors seeking health services were surveyed about the abuse experience, level of post-traumatic stress (PTSD), and help-seeking behaviors. The authors reported that duration of the sexual abuse, mean of 7 years, accounted for a larger proportion of the variance in PTSD symptomology than did age of abuse onset, number of perpetrators and force used after accounting for the effects of CSA severity [25]. In this study longer duration of abuse translated to severe PTSD symptomology and overall higher abuse severity.

It has been well established in the sexual violence literature that the relationship between the victim and the perpetrator can influence the severity of trauma experienced [19]. Kallstrom-Fugua et al purport that people who experienced sexual abuse by a family member or authority figure living in the home (e.g. parent, step-parent) experience more traumatic results from the sexual victimization versus sexual abuse by a friend, acquaintance or stranger [22]. It is postulated that the betrayal of trust by a caregiver further compounds the trauma of the abuse [26, 27].

Having multiple perpetrators is considered more severe than having one perpetrator [24]. This can come in the form of having multiple perpetrators during one abuse event (i.e. gang rape). Abuse severity in terms of multiple perpetrators can also occur at different time points, as in the case of people who have been victimized in childhood and victimized again in adolescence or adulthood [28]. One such study by Ullman and colleagues investigated sexual abuse among 627 multi-ethnic US women. Women who reported abuse were grouped by whether the abuse occurred during childhood, adulthood or both. The authors reported that women who were abused in childhood and who were abused again in adulthood reported higher odds of alcohol dependence and PTSD symptomology compared to women who experienced abuse only in childhood or only in adulthood [29]. This finding is also supported by a review article by Classen et al. Eleven of the 12 articles reviewed suggested that affective disorders, PTSD and other anxiety disorders were more prevalent among re-victimized persons compared to people who had

experienced sexual victimization in adulthood only [7]. Furthermore, the authors projected that based on their review findings, two of three survivors of sexual abuse will be re-victimized [7].

Threats of force and actual force used in an attack are also indicators of severity. The force used can impact the level of trauma or stress experienced during the violent attack. People who experienced threats of force or force during the sexual abuse event tend to have more negative health outcomes such as avoidant coping [30], suicide ideation [6], suicide attempts [31], post-traumatic stress disorder [32], and psychosocial impairment such as borderline personality disorder [33]. A study conducted by Senn and colleagues found that men and women who were physically forced and experienced penetration reported more episodes of exchanging sex for drugs or money than those who were not abused or those who were abused but with no force and no penetration [34]. It has been suggested that the use of force during the sexually violent attack is the strongest indicator of abuse severity and has the most impact on the victim [22].

Other studies suggest that generally less force is needed to subdue the victim when the victim and perpetrator know each other, such as in intra-familial forced sex compared to acquaintance forced sex. Although less force may be needed in abuse by a family member it does not necessarily result in a less traumatic effect on the victim. For example, Kallstrom-Fugua and colleagues investigated the association between level of force used by the relationship with the perpetrator and later psychological distress among women in adulthood. The findings of the study were non-significant which was likely due to confounding between level of force used and relationship to the perpetrator (e.g. father) [22]. The authors explained that if the abuser was the victim's father, then it was likely that less force would be necessary to gain cooperation of the victim thus resulting in less force but still contributing to the high level of severity experienced as a result of rape by a close relative [22].

Coercive Sex and Severity

Much of the research previously conducted on abuse severity has focused on the indicators of severity as noted in the aforementioned studies. Fewer studies have addressed the tactics employed during the forced sex event, however recently more empirical studies have been published that investigate perpetrator tactics [17, 18]. The force sex tactics in these studies are generally categorized on three types of force: verbal coercion, incapacitation due to alcohol or drug consumption and physical forced [17, 18].

Verbal coercion consists of verbally pressuring the victim to consent to sexual intercourse however; descriptions of coercion vary by study. Coercion often includes cajolery, promises of gifts, affection, or attention [17, 35]. Coercion can also include threats to disclose the sexual abuse and blame the victim or threats to ruin the victim's reputation if they do not comply with the perpetrators demands [36]. Another form of coercion comes in threats to end the relationship or to harm family members or friends [15, 37].

Incapacitated forced sex occurs when the perpetrator uses alcohol or drugs as a tactic to incapacitate the victim and engages in any un-consented sex act. Incapacitated forced sex also includes a perpetrator sexually taking advantage of someone who willingly consumed alcohol or drugs but did not consent to sexual intercourse [38]. According to the Federal Bureau of Investigation (FBI), approximately two dozen drugs are suspected in drug-facilitated sexual assault [38] or incapacitated forced sex. While alcohol consumption either prior to or during the forced sex event is well-researched in the literature, conceptualizing the use of alcohol or drugs as a tactic employed by the perpetrator is gaining traction in the sexual violence literature [17].

Numerous empirical studies on sexual abuse have illustrated a link between physical force used and negative health and behavioral outcomes, indicating that physical force used during a sexual attack is more severe than when physical force is not used during the sexually violent event [17, 18, 31, 39, 40]. For instance, a study of 272 women recruited via random digit dialing in Michigan were surveyed about

forced sex due to verbal coercion, physical force or intoxication and their reaction to the experience. Of the 139 women who experienced forced sex, those who were physically forced during the sexually violent event incurred more injuries and experienced more disruptions in their lives specifically resulting from the violent experience compared to women who were not physically forced [17].

Severity and Sexual Risk Behaviors

A number of studies assessing abuse severity typically focus on psychological outcomes following the abuse. There have been fewer studies that investigate whether abuse severity impacts subsequent sexual behaviors. A notable study by Merrill and colleagues investigated the relationship between CSA, number of sexual partners, abuse severity, coping style and sexual functioning among 547 female Navy recruits. The authors conducted a path analysis and reported that number of sexual partners was positively associated with abuse severity, dysfunctional sexual behavior and self-destructive coping behaviors (i.e. running away from home, using alcohol and drugs, contemplating suicide) [8]. Given the under-researched area of force sex tactics used and the dearth of literature that focus on avoidant coping behaviors that increase risk for HIV, the purpose of the current study was to examine whether stronger force sex tactic used during the sexually violence event was associated with avoidant coping behaviors.

Theoretical Framework

The Transactional Model [27] provides a comprehensive view of how sexual abuse stress influences psychological symptomology through coping strategies, cognitive appraisals, and environmental factors/support resources. Abuse stress is related to the perception of the stressor as a threat to personal harm or loss, whether the loss is considered emotional, physical or both. Abuse stress consists of three event types, a. the abuse event itself, b. abuse-related events, and c. abuse disclosure event. The current study focused on the abuse event which is the experience of sexual abuse. Assuming that unwanted sexual contact is stressful, repeated and continuous sexual abuse over time would likely result in higher levels of stress [27]. Abuse event is captured by the force sex tactic used during the

sexually violence event. Cognitive appraisal refers to how the victim understands and perceives who they are in the context of having experienced sexual abuse as well as how they perceive others [27]. While an important factor to consider, this construct was not tested in the current study due to data limitations. Support resources refer to current relationships a person has to help cope with stressors as well as the environmental factors that affect support [27]. Because the aim of this study was to examine force sex tactic and avoidant behaviors, this construct was not measured in the current study.

The Transactional Model outlines 4 coping styles: active coping, emotional release, cognitive restructuring, and avoidance coping. Data collected on the National Survey of Family Growth 2006-2010 (NSFG) yielded information that allowed for analysis on avoidance coping behavior, which will be the focus of coping for this study. Because the Transactional model emphasizes psychological symptomology, I adapted the model to include the Experiential Avoidance Model [41]. Experiential Avoidance Model, as described by Hayes et al is "the phenomenon that occurs when a person is unwilling to remain in contact with particular private experiences (e.g., bodily sensations, emotions, thoughts, memories, behavioral predispositions) and takes steps to alter the form or frequency of these thoughts and the contexts that occasion them" [41]. In other words, experiential avoidance is at work when a person employs (whether consciously or unconsciously) any method, strategy, or behavior to avoid or escape the form or frequency of facing or remembering a traumatic experience [41], such as memories of forced sex. According to Experiential Avoidance Model, people may enact behaviors and strategies to avoid feeling, thinking about the event they have defined as negative, damaging, or traumatic.

Avoidant Coping strategy

The Experiential Avoidance Model highlights behavioral responses to trauma that have been identified as avoidant. Some behavioral forms of coping reported in the sexual violence literature considered to be maladaptive are dissociation, binge-purge eating, substance use, self-mutilation, suicide attempt and risky sexual behavior [13, 42-45]. While tension reducing behaviors such as sexual activity

and substance use can have immediate stress-diminishing benefits, risky sexual practices with multiple partners and inconsistent condom use can have negative long-term effects such as increased risk of HIV infection. This model used in the current study purported that these behaviors are more likely to occur in cases where abuse-related stress is high (e.g. stronger force sex tactic used) and that this stress has an indirect effect on HIV risk behaviors by increasing the likelihood that victims will employ unhealthy avoidance coping behaviors.

Current Study

Previous empirical studies on sexual abuse generally include men or women in the sample while fewer studies include both sexes. The vast majority of sexual abuse studies restrict analysis to childhood sexual abuse. Several studies measure severity in terms of non-penetration versus penetration, while few studies have investigated severity in terms of multiple types of force used.

The purpose of this study was to investigate whether the tactics used during the forced sex experience were associated with avoidant coping behaviors as manifested through high risk sexual behaviors and substance use in US men and women. For the purposes of this study, forced sex was defined as forced vaginal sex by the opposite sex. There were seven force sex tactics that were conceptualized in terms of increasing in strength: a) given drug or alcohol, b) perpetrator was bigger or older, c) threats to end the relationship, d) verbally pressured, e) threats of physical harm, f) physically held down, and g) physically injured. The current study sought to investigates each force sex tactic independently as it relates to consequent sexual behavior and substance use. This procedure was necessary because respondents tend to endorse multiple force sex tactics [4]. Grouping respondents based on the most extreme tactic reported can result in a loss of valuable data. For instance in Brown's study the respondents endorsed varying numbers of force characteristics on the Sexual Experience Scale based on whether they experienced verbal coercion (mean = 3.39), incapacitated rape (mean= 5.43), or forcible

rape (8.03). The difference in number of Sexual Experience Scale items endorsed by assigned coercion group varied at a statistically significant level F (2, 256) = 55.32, $p < .001$.

Research question 1: How does the strength of the force sex tactic used impact subsequent condom use behaviors? **Hypothesis**: The stronger the force sex tactic used during the event will be negatively associated with condom use.

Research question 2: How does the strength of the force sex tactic used impact subsequent number of sexual partners? **Hypothesis**: The stronger the force sex tactic used during the event will be positively associated with number of sexual partners.

Research question 3: How does the strength of the force sex tactic used impact substance use? **Hypothesis**: Stronger force sex tactic will be positively associated with substance use.

METHODS

Participants

Respondents in this study were men and women who responded to the National Survey for Family Growth (NSFG), Cycle 2006-10. The NSFG is a cross-sectional, multi-stage area probability sample conducted by the National Center for Health Statistics of the Centers for Disease Control and Prevention. The NSFG collected data on reproductive health, contraception use, and family planning among US men and women of reproductive ages.

The data were collected from the US population on a rolling basis in four phases between June 2006 and June 2010. Men and women between ages 15 and 44 were included in data collection resulting in a sample size of 10,403 men and 12,279 women. The overall response rate was 77%, (men 75%, women 78%) [46]. Teenagers and Black and Hispanic adults were targeted for recruitment and oversampled in order to produce more reliable statistics for these populations. The interviews were conducted via in-person interview and data were recorded on laptops. Sensitive data (e.g. HIV risk

behaviors, sexual violence, and substance use and pregnancy termination) were collected using audio computer-assisted self-interviewing software. Each respondent was compensated $40 for their time.

Eligibility criteria for the current study included men and women aged 18 years or older, who provided an affirmative response to the question, at any time in your life/besides the time you already reported, have you ever been forced to have vaginal intercourse against your will. Completion of the survey's main dependent variables was also necessary for inclusion in analyses. A proportion of women who reported ever being forced to have sex were eliminated from the study because they did not respond to the force sex tactic questions. Approximately 75% (N=1,397) of the overall victimized female sample (N=1863) did not provide a response to the force sex tactic questions. Due to the nature of the questions, estimations were not conducted in order to maintain the integrity of the findings. Women who did not respond to the severity questions were excluded from further analysis. The male respondents who endorsed the forced sex question also provided responses to the force sex tactic questions and did not result in missing data. The final sample size for men was N= 501 and women, N= 466. Women who did not provide a response to the force sex tactic question differed from women who provided a response. The excluded women were older, (mean age 32, SD= .321) and a higher proportion were minority women (see Appendix A).

Procedure

Outcome Variables

The outcome factors were HIV risk behaviors and substance use. The HIV risk outcome factors were condom use and number of partners. Condom use at last vaginal sex was coded as yes (1) or no (0). The number of sexual partners was a continuous variable, but publicly available data files were top-coded as 50 or more partners. Among female respondents, 1.3% reported 50 or more male partners and 6% of male respondents reported 50+ female partners Other studies have used similar factors to capture avoidant or maladaptive coping behaviors [8, 47, 48]

Substance Use

Alcohol use was assessed with the question, "During the last 12 months, how often did you have 5 or more drinks within a couple of hours?" Due to small cell sizes, I collapsed the response options into a dichotomous response (never and ever). This question is similar to the alcohol use question asked on the behavioral Risk Factor Surveillance System (BRFSS) from the Centers for Disease Control [49]. Drug use was measured with the question, "During the last 12 months, how often did you use (state specific drug)?" This question was asked separately for each of the drugs (e.g. marijuana, cocaine, crack, crystal meth, and injection drug use). Responses were coded as never (0) or ever (1). Due to small cell sizes, data presented in the current study were limited to marijuana and cocaine use.

Main Independent Variable

Force Sex Tactics

The force sex tactic questions were asked only if the respondent reported ever experiencing forced sex. Following an affirmative response to ever forced to have sex, the force sex tactics were measured with the following questions:

1. Were you given alcohol or drugs?
2. Did you do what (s) he said because (s) he was bigger than you or a grown-up, and you were young?
3. Were you told that the relationship would end if you didn't have sex?
4. Were you pressured into it by his or her words or actions, but without threats of harm?
5. Were you threatened with physical hurt or injury?
6. Were you physically held down?
7. Were you physically hurt or injured?

The respondents reported any force tactics that occurred and could report multiple tactics. Based on previous tactic studies and developed instruments for capturing sexual abuse tactics (See Appendix B), I ranked the force sex tactics a priori by strength. See Chaffin, et. al for more a detailed description of the Abuse Dimension Inventory [15].

Sexual Activity

There were three measures of sexual activity: age at first sex, treatment for sexually transmitted infections in the last 12 months, and receiving money for sex. With exception to age at first sex, responses were coded as yes (1) or no (0). Age at first vaginal sex was assessed by asking, "The first time vaginal sex occurred, how old were you?" To assess exposure to sexually transmitted infections (STI), respondents were asked, "In the past 12 months, have you been treated or received medication from a doctor or other medical care provider for a sexually transmitted infection like gonorrhea, herpes, or syphilis?" Responses were coded as yes (1) or no (0). Lastly, in order to capture sex work, respondents were asked, "In the last 12 months, has a (fe)male given you money or drugs to have sex with him/her? The responses were coded as yes (1) or no (0).

Other Covariates

Demographic Characteristics

The socio-demographic variables used to control for differences in the sample include age, race/ethnicity, marital status, and education. Age was captured by asking how old the respondent was at the time of interview. Respondents were asked their race and if they were of Hispanic descent. Respondents were allowed to report multiple races if applicable. The recoded options provided by the NSFG developers were Hispanic, Non-Hispanic White, Non-Hispanic Black, Non-Hispanic Other, which includes Asians and people who report multiple races. Respondents were asked to describe their marital status at the time of interview. Responses for marital status were coded as: currently married, cohabitating with opposite sex partner, divorced or separated due to marital discord, and never been

married. Education was assessed in terms of highest grade completed or highest degree received and was dichotomized as high school diploma or less or some college or more.

Statistical Methods

Univariate and Bivariate Analysis

Sampling weights provided by the National Center for Health Statistics were used to address the complex sampling design. Stata 12 [50] was used to conduct univariate analysis on all variables to describe the characteristics of the sample and determine the distribution of each variable. Pearson chi-square tests for categorical variables and Student's t-test for continuous variables were used to examine differences by sexual violence among selected variables. The significance level was set at 0.05 to test the differences between the force sex tactics and the HIV risk behaviors and substance use. I ran analysis of variance to further test for difference between forced sex variables and the background variables.

Multivariate Analysis

Weighted multivariable logistic regression and multivariable linear regression analyses were conducted to analyze the factors expected to be independently associated with the force sex tactics and self-reported HIV-risk behaviors and substance use. The main outcome factors were condom use, number of sexual partners and substance use. The main predictor factors were force sex tactics (e.g. given drugs/alcohol, bigger/older, end relationship, verbal pressure, threaten physical harm, held down, physically hurt). The other covariates included socio-demographic characteristics, and sexual activity variables. Sensitivity analyses were conducted using four different strategies for conceptualizing force sex tactic. A brief description is provided in Appendix C.

The multivariate analyses were stratified by sex. This was done for conceptual reasons. Sexual abuse occurs in a "gendered" social context [48]. The cultural norm is that males have more power than females and how a victim is forced is understood differently based on the gender of the victim and that of

the perpetrator. This is especially the case among victims who are older. Furthermore, there are traditional sexual scripts and gender norms that affect victims' cognitive understanding and responses to forced sex [37]. Being that this is an exploratory study, and that sexuality (and thus sexual abuse) occurs in a gendered context, I saw fit to run stratified analyses. A similar approach was used by Bensley et al [49].

RESULTS

Descriptive Analysis

Men

Table 1 presents the socio-demographic characteristics of the men and women that met inclusion criteria for the current study (i.e. ever forced, 18 years or older). Of the total sample of men (N= 501), the average age men were forced was 17.7 years old. Interestingly, 24% of victimized men reported forced sex occurring before age 15 while 26% reported forced sex occurred between the ages of 15-17 years. The remaining 50% reported forced sex occurring at age 18 or older. Most respondents were White (42%), and 20% were Latino, 27% were Black and the remaining 11% indicated Asian or multiracial identity (e.g. Other). Of the total sample, 38% were married, 6% were divorced or separated and 22% were cohabitating with a woman and 33% had never been married.

Women

Among the overall sample of victimized women (N=466), the mean age forced sex occurred was 18 years old. Twenty-one percent of women were less than 15 years old when they were forced to have sex. Twenty-seven percent were between the ages of 15-17 years and 52% were age 18 or above when they were forced. The majority of women were White (66%), and 12% were Latino, 13% were Black and 9% identified as either Asian or multiracial (e.g. Other). Thirty-one percent of women were married, 17% were divorced, 22% were cohabitating and 30% had never been married.

Force Sex Tactics Endorsed by Victimized Men

In terms of type of force used during the sexually violent event, the use of alcohol or drugs by the female perpetrator was reported by 38% of men. Thirty-one percent of men reported they were force because she was bigger and/or older. Twenty-four percent of men reported he was forced to have sex because the female perpetrator threatened to end the relationship. Verbal pressure is a common tactic used by both male and female perpetrators; however verbal pressure was reported by 70% of men which also happened to be the highest reported force sex tactic among men. Ten percent of men were forced via threats of physical harm. Thirty-two percent affirmed that they were held down during the forced sex event and seven percent reported being physically hurt; the force sex tactic least reported by men.

Force Sex Tactics Endorsed by Victimized Women

Forty percent of women reported forced by being given drugs or alcohol. Nearly 26% of women reported that the male perpetrator was bigger and/or older. Eleven percent of women endorsed being forced to have sex because the perpetrator threatened to end the relationship. Verbal pressure was endorsed by 55% of women. Forty percent of women affirmed they were threatened with physical harm. The force sex tactic most often endorsed by women was being held down (71%), while 30% reported they were forced because they were physically hurt.

Table 1: Demographic Characteristics and Force Sex Tactic, NSFG 2006-2010

Variables	Men (N= 501)[a] Percent	Women (N= 466)[a] Percent
Given drugs/alcohol	37.7	40.0
Bigger/older	31.0	25.5
End relationship	24.0	11.4
Verbal pressure	68.8	55.2
Threaten physical harm	9.5	43.9
Held down	31.5	70.8
Physically hurt	7.1	29.6
Age--Mean (SE)	30.9 (.549)	29.4 (.578)
Race/Ethnicity:		
White	41.8	66.3
Black	26.7	13.3
Latino	20.4	11.6
Other	11.1	8.8
Marital Status		
Married	38.2	31.3
Divorce/Separated	6.3	16.5
Cohabitate	22.1	22.3
Never Married	33.5	29.8
Some College + :	46.3	54.7
Sexual Activity:		
Age at 1st vaginal sex--Mean (SE)	15.8 (.234)	16.4 (.166)
No. of partners-lifetime--Mean (SE)	15.7 (.920)	9.7 (.596)
Condom use at last sex	35.7	24.4
STI treatment-12 mo.	5.1	8.0
Received money for sex	4.6	2.7
Drug Use- 12 months:		
More than 5 drinks	37.6	18.0
Marijuana	34.4	31.6
Cocaine	8.7	6.3

Note. Weighted sample, STI=Sexually Transmitted Infection

[a] Number may not add up to total due to missing values for a specific variable

Condom use and Force Sex Tactics among Victimized Men

Table 2 presents weighted logistic regression results for force sex tactics and condom use at last sex. Model 1 was the unadjusted model and condom use was not statistically significant with any of the force sex tactics among men. Model 2 addressed research question one, the association between condom use and force sex tactics accounting for socio-demographic characteristics and sexual activity factors. Controlling for age, race/ethnicity, educational attainment, marital status and sexual behaviors in men, there was a marginally significant association between condom use at last sex and being forced because she was bigger or older than he (OR= 1.82, p=0.058). Condom use was also associated with other factors.

Condom use was related to age at the time of the survey; younger men had higher odds of condom use at last sex than did older men. Latino men had higher odds of condom use compared to White men at a marginally significant level, accounting for all other factors. Divorced/separated men as well as never before married men reported higher odds of condom use at last sex than did married men. Additionally, men who first engaged in sex at an older age reported higher odds of condom use at last sex compared to men who first engaged in sex at a younger age (see Appendix D).

Condom use and Force Sex Tactics among Victimized Women

Among women, condom use at last sex was not associated with any of the force sex tactics in the unadjusted model In model 2 that addressed research question one, there was no association between condom use at last sex and force sex tactics after accounting for age, race/ethnicity, marital status, educational attainment and sexual behavior among women. There were however, statistically significant findings between condom use and age after accounting for other factors; younger women reported higher odds of condom use. Additionally women who were divorced or separated or who had never been married had higher odds of condom use at last sex compared to married women. Women who initiated sex at an older age also had significantly higher odds of condom use at last sex (see Appendix D).

Table 2: Condom Use by Force Sex Tactic and Sexual Behaviors, Stratified by Gender

	Model 1				Model 2			
	Men (N= 493)		Women (N= 452)		Men (N= 453)		Women (N= 402)	
Variables	**UOR**	**C.I.**	**UOR**	**C.I.**	**AOR**	**C.I.**	**AOR**	**C.I.**
Given drugs/alcohol	0.78	(.442, 1.36)	0.87	(.484, 1.56)	0.64	(.324, 1.25)	0.80	(.381, 1.67)
Bigger/older	1.25	(.711, 2.21)	0.87	(.436, 1.73)	1.82^	(.980, 3.38)	0.84	(.373, 1.88)
End relationship	1.17	(.490, 2.79)	0.93	(.386, 2.25)	1.55	(.615, 3.89)	1.41	(.533, 3.75)
Verbal pressure	1.28	(.614, 2.68)	0.91	(.460, 1.79)	1.26	(.610, 2.62)	0.79	(.369, 1.71)
Threaten physical harm	1.13	(.374, 3.39)	0.55	(.237, 1.30)	1.34	(.491, 3.64)	0.67	(.278, 1.64)
Held down	0.87	(.421, 1.79)	1.53	(.710, 3.29)	0.94	(.394, 2.26)	1.76	(.718, 4.31)
Physically hurt	0.63	(.165, 2.44)	1.72	(.845, 3.51)	0.68	(.191, 2.42)	1.59	(.752, 3.35)
Sexual Activity:								
Age at 1st vaginal sex					1.15**	(1.06, 1.26)	1.28**	(1.09, 1.53)
No. of partners-lifetime					1.00	(.982, 1.02)	1.01	(.984, 1.04)
STI treatment-12 mo.					1.48	(.469, 4.69)	0.93	(.355, 2.42)
Received money for sex					0.76	(.253, 2.27)	0.79	(.190, 3.30)

Outcome Variable: Condom use

Controlled for Race/ethnicity, age, education level, and marital status

Note. Logistic Regression; Weighted sample; STI= Sexually Transmitted Infection

^p=<0.10, * p=<0.05, **p=<0.01, ***p=<0.001

1= Referent

Number of Partners and Force Sex Tactics among Victimized Men

Table 3 presents weighted linear regression results for force sex tactics and number of sexual partners stratified by gender. Model 1 was the unadjusted model between number of partners and force sex tactics among both men and women. Among men, there was a statistically significant association between number of partners and the force sex tactics: verbally pressured and threaten physically harm, while held down was marginally significant at baseline. Model 2 addresses research question two and tested the association between number of partners and force sex tactics accounting for socio-demographic characteristics and sexual activity factors. Among men, much of the variance between number of partners and force sex tactics was accounted for; however there was a statistically significant negative association between number of partners and verbal pressure (Coef. -4.00, p=0.041). Additionally, threaten to physically hurt was marginally significant with number of partners (Coef. -5.45, p=0.076) taking into account age, race/ethnicity, educational attainment, marital status and sexual activity. Men who were divorced/separated, cohabitating or never married had more female sex partners over their lifetime compared to their married counterparts (see Appendix E). There was an inverse relationship between

number of partners and age at first sex; those who initiated sex at an earlier age had more sexual partners (Coef. = -1.74, p<0.001).

Number of Partners and Force Sex Tactics among Victimized Women

Among women, number of partners was only statistically significant with the force sex tactics given drugs/alcohol and marginally significant with threatened physical harm (p<0.088) in the unadjusted model. In Model 2, after accounting for socio-demographic characteristics and sexual behaviors in women, there remained a positive and statistically significant association between number of partners and the force sex tactic given drugs/alcohol (Coef. 2.98, p=0.031). There was a statistically significant positive association between number of partners and the force sex tactic threatened physical harm (Coef. 2.79, p=0.047) among women. Interestingly, there was a statistically negative association between number of partners and physically hurt (Coef. -2.15, p=0.046). Other factors associated with number of partners among women included marital status and age at first sex. Divorced/separated and never married women had more lifetime partners than married women (see Appendix E). Women who report a younger age at first sex also reported more sexual partners (Coef. = -1.62, p<0.000).

Table 3: Number of Partners by Force Sex Tactic and Sexual Behaviors, Stratified by Gender

	Model 1				Model 2			
	Men (N= 496)		Women (N= 453)		Men (N= 453)		Women (N= 402)	
Variables	**Coef.**	**C.I.**	**Coef.**	**C.I.**	**Coef.**	**C.I.**	**Coef.**	**C.I.**
Given drugs/alcohol	1.06	(-2.58, 4.71)	2.89*	(.013, 5.77)	0.26	(-3.44, 3.96)	3.01*	(.322, 5.70)
Bigger/older	1.46	(-2.55, 5.47)	-1.08	(-3.66, 1.49)	0.37	(-3.42, 4.15)	-1.96	(-4.33, .421)
End relationship	1.21	(-2.46, 4.88)	1.48	(-2.63, 5.59)	-1.14	(-4.72, 2.44)	1.56	(-2.06, 5.18)
Verbal pressure	-5.07*	(-9.93, -.215)	1.46	(-.912, 3.83)	-4.00*	(-7.84, -.162)	1.03	(-1.34, 3.41)
Threaten physical harm	-9.47*	(-16.69, -2.24)	2.17^	(-.327, 4.67)	-5.48^	(-11.49, .529)	2.79*	(.039, 5.54)
Held down	4.43^	(-.306, 9.16)	-1.43	(-3.91, 1.06)	2.37	(-1.25, 6.00)	-0.34	(-2.74, 2.07)
Physically hurt	6.08	(-3.21, 15.37)	-0.64	(-3.37, 2.09)	1.22	(-6.94, 9.38)	-2.15*	(-4.26, -.039)
Sexual Activity:								
Age at 1st vaginal sex					-1.76***	(-2.42, -1.09)	-1.66***	(-2.24, -1.08)
Condom Use- last sex					0.42	(-2.77, 3.62)	1.25	(-1.08, 3.58)
STI treatment-12 mo.					-3.51	(-10.27, 3.26)	2.57	(-1.84, 6.97)
Received money for sex					2.70	(-5.01, 10.41)	3.26	(-7.85, 14.36)

Outcome variable: Number of partners

Controlled for Race/ethnicity, age, education level, and marital status

Note. Linear Regression; Weighted sample; STI= Sexually Transmitted Infection

^p=<0.10, * p=<0.05, **p=<0.01, ***p=<0.001

1= Referent

Substance Use and Force Sex Tactics among Victimized Men

Table 4 presents weighted logistic regression results for force sex tactics and substance use adjusted for demographic characteristics and sexual activity. There were statistically significant findings among victimized men for binge drinking, marijuana and cocaine use. There was a statistically significant positive association between being given drugs or alcohols and substance use: binge drinking (OR= 1.76, p=0.049) and cocaine use (OR= 3.04, p=0.010). There was a positive trend in strength of force sex tactic used and substance use. Men who endorsed being held down were more than twice as likely to report marijuana use (OR=2.04, p=0.032) and cocaine use (OR= 2.89, p=0.025), accounting for race/ethnicity, age, marital status, educational attainment and sexual activity. Men who reported being physically hurt reported lower odds of marijuana use.

Other factors were also associated with substance use; Black men reported lower odds of binge drinking and cocaine use compared to White men. For binge drinking, marijuana and cocaine, men who had never been married had statistically significantly higher odds of use compared to married men. In the case of binge drinking specifically, being married seems to be protective. In terms of sexual activity, men

who used cocaine had higher odds of having more partners and higher odds of receiving treatment for a sexually transmitted infection compared to men who did not report cocaine use (see Appendix F). Lastly, exchanging sex for drugs or money was positively associated with each substance: binge drinking (OR= 3.87, p=0.027), marijuana (OR=3.20, p=0.043), and cocaine (OR= 10.47, p= 0.002).

Table 4- Substance use by Force Sex Tactic in Men, NSFG 2006-2010

	Binge Drink (N= 455)		Marijuana (N= 494)		Cocaine (N= 496)	
Variables	**UOR**	**C.I.**	**UOR**	**C.I.**	**UOR**	**C.I.**
Given drugs/alcohol	2.64***	(1.61, 4.33)	1.99*	(1.08, 3.67)	3.33**	(1.49, 7.45)
Bigger/older	1.18	(.641, 2.16)	1.10	(.571, 2.12)	2.18^	(.885, 5.37)
End relationship	0.97	(.498, 1.91)	1.30	(.585, 2.89)	1.35	(.451, 4.06)
Verbal pressure	0.51*	(.267, .968)	1.31	(.734, 2.34)	0.29*	(.113, .744)
Threaten physical harm	0.48	(.083, 2.73)	1.75	(.445, 6.87)	0.64	(.072, 5.73)
Held down	1.41	(.764, 2.60)	2.15*	(1.19, 3.86)	3.49*	(1.35, 9.03)
Physically hurt	1.09	(.220, 5.42)	0.15*	(.030, .750)	0.22	(.021, 2.35)
Variables	**AOR**	**C.I.**	**AOR**	**C.I.**	**AOR**	**C.I.**
Given drugs/alcohol	1.76*	(1.00, 3.09)	1.56	(.756, 3.21)	3.04**	(1.31, 7.04)
Bigger/older	1.25	(.604, 2.58)	1.16	(.493, 2.73)	1.68	(.604, 4.67)
End relationship	0.91	(.390, 2.12)	1.36	(.492, 3.78)	1.06	(.336, 3.31)
Verbal pressure	0.50^	(.236, 1.07)	1.47	(.763, 2.85)	0.37^	(.127, 1.06)
Threaten physical harm	0.56	(.084, 3.75)	1.33	(.385, 4.60)	0.11	(.006, 1.77)
Held down	1.19	(.585, 2.42)	2.04*	(1.06, 3.90)	2.89*	(1.15, 7.29)
Physically hurt	0.73	(.132, 4.00)	0.16*	(.030, .907)	0.41	(.034, 4.90)
Sexual Activity:						
Age at 1st vaginal sex	0.96	(.869, 1.05)	0.98	(.346, 1.83)	0.86	(.683, 1.09)
No. of partners-lifetime	1.01	(.983, 1.04)	1.00	(.979, 1.02)	1.03*	(1.01, 1.05)
STI treatment-12 mo.	0.56	(.189, 1.68)	1.11	(.401, 3.06)	3.09*	(1.05, 9.09)
Received money for sex	3.87*	(1.17, 12.77)	3.20*	(1.04, 9.89)	10.47**	(2.43, 45.16)

Outcome variable: Substance use

Note. Logistic Regression; Weighted sample; UOR= Unadjusted Odds Ratio; AOR= Adjusted Odds Ratio; STI=Sexually Transmitted Infection

^p=<0.10, * p=<0.05, **p=<0.01, ***p=<0.001

1= Referent

Substance Use and Force Sex Tactics among Victimized Women

Table 5 presents weighted logistic regression results for force sex tactics and substance use among women adjusting for socio-demographic characteristics and sexual activity. Similar to the men, women who endorsed being given drugs or alcohol among women was positively associated with all substances: binge drinking- nearly six times higher odds, marijuana use - approximately three times higher odds and cocaine use - nearly four times higher odds compared to women who did not report being

given drugs or alcohol. Additionally, women who reported being held down had 1.6 times higher odds of using cocaine in the last year, holding race/ethnicity, age, marital status, educational attainment and sexual activity constant.

Other factors were also associated with substance use; being older at the time of the survey was negatively associated with substance use. Black women reported lower odds of cocaine use while Latina women (33.82, p=0.002) and Other women (4.94, p=0.80) both had higher odds of cocaine use compared to White women. Never before married women had nearly three times higher odds of binge drinking, while women with some college education or more had six time higher odds of cocaine use, controlling for force sex tactic, age race/ethnicity, marital status and sexual activity. In terms of sexual activity, women who used cocaine reported higher odds of having multiple partners (OR=1.17, p<0.001) and sex work was positively associated with both marijuana and cocaine use (see Appendix G).

Table 5- Substance use by Force Sex Tactic in Women, NSFG 2006-2010

	Binge Drink (N= 402)		Marijuana (N= 402)		Cocaine (N= 402)	
Variables	**UOR**	**C.I.**	**UOR**	**C.I.**	**UOR**	**C.I.**
Given drugs/alcohol	1.52*	(.798, 2.25)	2.16*	(1.13, 4.14)	1.57**	(.507, 2.63)
Bigger/older	-0.28	(-1.20, .633)	0.68	(.374, 1.23)	-0.90	(-2.06, .266)
End relationship	-0.51	(-1.63, .600)	0.51	(.202, 1.30)	0.51	(-1.21, 2.23)
Verbal pressure	0.00	(-.772, .771)	1.67^	(.921, 3.02)	0.53	(-.518, 1.58)
Threaten physical harm	-0.19	(-1.23, .851)	1.02	(.473, 2.20)	-0.06	(-.940, .818)
Held down	-0.54	(-1.38, .293)	0.97	(.443, 2.11)	1.64*	(.312, 2.97)
Physically hurt	0.12	(-.727, .963)	1.19	(.617, 2.31)	-0.85	(-2.20, .513)
Variables	**AOR**	**C.I.**	**AOR**	**C.I.**	**AOR**	**C.I.**
Given drugs/alcohol	5.55***	(2.30, 13.41)	2.74*	(1.24, 6.05)	4.26**	(1.49, 12.15)
Bigger/older	0.62	(.222, 1.76)	0.68	(.329, 1.43)	1.54	(.382, 6.25)
End relationship	0.50	(.145, 1.69)	0.38^	(.125, 1.15)	1.93	(.239, 15.55)
Verbal pressure	0.95	(.447, 2.03)	1.67	(.867, 3.22)	1.29	(.289, 5.71)
Threaten physical harm	1.00	(.330, 3.04)	1.01	(.409, 2.49)	0.55	(.163, 1.86)
Held down	0.46^	(.183, 1.16)	0.91	(.396, 2.07)	9.69^	(.698, 134.62)
Physically hurt	1.04	(.406, 2.68)	1.28	(.587, 2.80)	0.73	(.159, 3.33)
Sexual Activity:						
Age at 1st vaginal sex	0.72*	(.554, .929)	0.88^	(.769, 1.01)	0.91	(.626, 1.32)
No. of partners-lifetime	1.01	(.974, 1.04)	1.02	(.989, 1.05)	1.17***	(1.08, 1.26)
STI treatment-12 mo.	0.37	(.108, 1.24)	2.75^	(.882, 8.57)	2.79	(.524, 14.89)
Received money for sex	1.97	(.296, 13.12)	5.42*	(1.54, 20.19)	333.32**	(10.36,10724.5)

Outcome variable: Substance use

Note. Logistic Regression; Weighted sample; UOR= Unadjusted Odds Ratio; AOR= Adjusted Odds Ratio; STI=Sexually Transmitted Infection

^p=<0.10, * p=<0.05, **p=<0.01, ***p=<0.001

1= Referent

DISCUSSION

This study sought to employ various strategies for understanding the ways in which severity of abuse impacts subsequent sexual behaviors, namely if the experience of stronger force sex tactics result in risky sexual practices and substance use. This study focused on force sex tactics and related them to avoidant coping behaviors assessed as inconsistent condom use, increased number of partners and substance use. Overall the hypotheses in this study were partially supported. There was a trend in greater severity in force sex tactic and number of partners among men and women; although at marginally significant levels. There was also a significant relationship between current substance use and the force sex tactic given drugs or alcohol among both men and women. This study used sensitivity analysis to confirm the findings presented (See Appendix B). The results of the sensitivity analysis were similar across each strategy for both men and women.

Research question one investigated the association between force sex tactics and condom use behaviors. The hypothesis that strong force sex tactic would result in lower odds of condom use was rejected. Among men, those who were forced because the female perpetrator was bigger/older, reported marginally higher odds of condom use at last sex after accounting for race/ethnicity, educational attainment, marital status, and sexual activity. Assessing force sex tactics separately provided contextualized information about potential relationship dynamics among sexually victimized men. The finding that condom use is higher among men forced because she was bigger/older suggests that victimized men may be inclined to have female partners who may dictate contraceptive methods (i.e., condom use). One potential explanation for this result is that men who experience forced sex may also experience less relationship power. Consistent with the Transactional model, the victim's cognitive appraisal of himself may be negative, thereby resulting in low self-esteem. This can lead to less power and control in intimate relationships. The lack of power in a relationship could result in selecting controlling female partners. Chin et al suggest that older, more experienced perpetrators often determine what type of sexual experience will take place, rendering the victim unable to assert what sexual acts s/he does not want to engage in [51]. Over time, abuse that occurs in this way results in the victims' inability to develop their own sexual identity and sexual needs apart from their partner. Subsequently, the victim gravitates to future partners who exercise more control in relationships and the victim develops a pattern of relinquishing control over their sexuality [51]. Similar findings of relationship power imbalance have been identified among sexually abused men who have sex with men [52]. Other studies indicate that lower relationship power, inability to negotiate condom use and reliance on the partner to make contraceptive decision usually result in less condom use [53-55]. However, findings from the current study suggest the opposite in men victimized by a female perpetrator who used her size or age to force vaginal sex. In this specific sub-group, having less relationship power may increase condom use. Further research investigating other factors that mediate and moderate the association between this force sex tactic and condom use is necessary.

Research question two examined the association between the strength of the force sex tactic used and the association between number of lifetime partners. There was a trend in stronger force sex tactic and number of partners among men and women; albeit in varying directions. While the current study suggests that stronger force sex tactic would result in an increased number of partners, the opposite was true among men. Men who reported being forced because he was threatened with physical harm resulted in fewer female partners at a marginally significant level. While these results do not support recent findings in other empirical studies such as Merrill (2003) and Brier (2010), the results in the current study do align with Finkelhor's assertion that severe sexual abuse (especially in childhood) may result in sexual aversion [56]. It will be necessary for future studies to include psychological assessments and directly inquire about coping mechanisms following forced sex among men.

The hypothesis that strength of force sex tactic used and avoidant coping via increased number of partners was partially supported among women. Women who were forced by being given drugs or alcohol reported more sexual partners compared to women who did not endorse this force sex tactic. This finding aligns with previous studies that assert forced sex is associated with an increase in number of partners due to avoidant coping [8, 47]. However, the finding that forced because she was given drugs/alcohol does not support the hypothesis that the *strength* of the force sex tactic is associated with an increase in number of partners since given drugs/alcohol represented the least force exerted in this study. In the current study, incapacitated forced sex was treated as the "weakest" force sex tactic since relatively little coercion or physical force is needed to gain cooperation from the victim. However, the findings from this study indicate that victims of incapacitated forced sex may experience more deleterious consequences and rely upon avoidant coping behaviors (multiple sex partners and substance use). How incapacitated forced sex (given drugs/alcohol) was ranked should be reevaluated based on the fact that women who experienced incapacitated forced sex had increased number of partners and reported more substance use (men and women).

Another interesting finding is the statistically significant association between two force sex tactics: threaten physical harm and physically hurt with number of partners among women. Despite threaten physical harm and physically hurt being conceptualized as the strongest force sex tactics and thus hypothesized to be associated with higher number of partners, the results for these force sex tactics are in opposite directions among women. There was a negative association between threatened physical harm and number of partners while there was a positive association between physically hurt and number of partners. Women who were forced by being threatened with physical harm had more male partners. Interestingly, women who were physically hurt had fewer male partners. These findings provide important information about conceptualizing force sex characteristics. A number of empirical studies conceptualize threat of force and use of force as the same and combine the factors into one variable such as is the case with Aoseved et al (2011), French et al (2013), and Risser et al (2006) [18, 57, 58]. However, as the current study illustrates, there is valuable, contextualized information gleamed from teasing apart threat of physical harm and actual physical harm. These findings exhibit the importance of assessing threat of physical harm and physical harm as separate constructs.

Research question three examined the relationship between strength of force sex tactic and substance use. I hypothesized stronger force sex tactic would result in avoidance coping, as manifested through substance use. This hypothesis was partially supported in the current study. Among men, there was a positive association between being held down and report of marijuana and cocaine use. It appears that men who use marijuana or cocaine experience more violence during the forced sex event compared to abused men who did not report marijuana or cocaine use. Additionally, men who used marijuana reported being held down and physically hurt at a statistically significant level. These findings support that of the Transactional + Experiential Avoidance framework in that men who experienced not only forced sex but more severe attacks use alcohol and/or drugs at higher rates than men who did not experience stronger force sex tactics. This supports the hypothesis that substance use may be a coping behavior among sexually victimized men.

The fact that the level of force used varies by substance use is an interesting finding. Marijuana and cocaine use are illegal substances and often associated with violence during the sale and distribution of the product. Research indicates an association between physical and social proximity to illegal activity and victimization [21]. The lifestyle or routine activity theory offered by Cohen and Felson proposed that when an individual associates with others who are engaged in illegal activity, they may be more likely to themselves experience victimization [59]. Applying this theory to the findings in this study, men who use marijuana or cocaine may be at higher risk of experiencing any form of violence compared to those who do not use these substances; including more extreme force sex tactics during the attack. An early study conducted among crack-abusing women, found a link between illegal drug use and victimization. Of the women who reported crack cocaine use, 62% reported being physically attacked since they began using crack. Thirty-two percent of crack-using women reported being raped since initiating crack and of these women, 83% were raped while high on crack [60].

Another main finding in this study was that forced because s/he was given drugs or alcohol was highly associated with substance use among both men and women. There are several potential explanations for this finding. First, people who experience forced sex, regardless of the tactic employed, have higher odds of using substances to cope, which supports the Transactional + Experiential Avoidance framework employed in the current study. Other studies have asserted that substance use as a coping mechanism is quite common among sexual abuse survivors [13, 45, 47, 49, 61]. For example, Ullman and colleagues used structural equation modeling to examine the relationship between child sexual abuse severity, substance use to cope, post-traumatic stress disorder and problem drinking/drug use in the past year. They found that childhood sexual abuse severity was associated with substance use coping [13]. A separate longitudinal study that followed 3,006 women for a 2-year period reported the odds of alcohol and drug use increased significantly following exposure to physical or sexual assault, regardless of previous assault history [61].

A second plausible explanation is that substance use and sexual activity co-occur. A recent study of sexual behaviors among US men and women indicate that alcohol consumption is common prior to and/or during sexual activity [62]. Of the 308 night club goers surveyed, 62% reported recently having sex while under the influence [62]. Alcohol/drug consumption preceding a forced sex event may be an unintended effect given the regularity in which alcohol/drug use occurs with sexual activity. For example, recent research has been conducted to understand the cultural shift in sexual behaviors among US young adults. Young adults are becoming more accepting of causal sexual encounters, having been coined "hooking up" [63]. The general concept is that after recently meeting someone new, typically at a social event, the couple will engage in sex outside the confines of a relationship (i.e. no strings attached). A study of 507 male and female college students found that 64% reported hooking up with someone at least once [64].

Alcohol use and drunkenness are key components of the hook-up culture [63]. In a study of binge drinking prior to hooking up, women reportedly consumed, on average, four drinks while men reported a median of six drinks prior to sexual activity [65]. Consumption of alcohol and/or drugs in conjunction with casual sex encounters can make people more susceptible to sexual victimization and studies have linked hooking up with sexual assault. Among 178 undergraduates who reported ever hooking up, seven percent of men and 23% of women reported experiencing forced sex [66]. Seventy-eight percent of the victimized students reported that unwanted oral, anal, and/or vaginal sex occurred in the context of hooking up [66]. Flack and colleagues reported in this study that the most frequently endorsed reason for unwanted sex was impaired judgment due to alcohol consumption [66].

Another important point to consider is that people who are intoxicated may become targets for forced sex. In fact, a study purports men view women who are drinking as more sexually available [67]. Women who are intoxicated are ideal targets for victimization because they may be less likely to call the authorities [21]. People who experienced forced sex while intoxicated (especially women) were likely to attribute more self-blame for the forced sex event compared to those who were not intoxicated [68].

Findings from the current study call for more research on perpetrator motives and the tactics they employ. Understanding the motives of the perpetrator is an important component to understanding the relationship between substance use and incapacitated forced sex. Take for instance the current investigation of an email circulated by a fraternity at Georgia Tech University. The email entitled, "Luring Your Rapebait [sic]" lays out descriptive step-by-step instructions on how to hook-up with a girl [69]. The common theme throughout the email is to drink and encourage "the bait" to drink, captured in the statement, "IF ANYTHING EVER FAILS, GO GET MORE ALCOHOL [sic]" [69]. The email closes with the "7 Es of hooking up," which are as follows: "1. Encounter…2. Engage…3. Escalate…4. Erection…5. Excavate…6. Ejaculate…7. Expunge" [69].

Public health research needs to stay abreast of socio-cultural shifts that place people at greater risk for adverse health outcomes, including sexual behavior. Findings from this study call for longitudinal research of sexual practices, including sexual victimization. For example, in a 3-wave longitudinal study, Kilpatrick and colleagues investigated whether substance use resulted from sexual violence or if previous substance use increased vulnerability to sexual violence. They report in the second wave that substance use (excluding alcohol) was associated with reporting a new physical or sexual assault [61]. The odds of alcohol or substance use increased with a report of a new assault, even among women who had not reported previous victimization [61]. The authors found that for drug use, a continuous cycle occurred in which substance use increased risk of future violence and violence increased risk of substance use [61]. Future studies should consider a similar study design that draws from a nationally represented sample and includes men.

Limitations

Despite the contributions of this study to the literature, it was not without limitations. One limitation was that 1,397 female respondents did not complete the force sex tactic portion of the survey, resulting in 75% of missing cases. This missing data were not missing at random which presented

significant methodological concerns that cannot be overlooked. The results for women in this study should be interpreted with caution. From a theoretical perspective, it is not surprising that a number of respondents did not provide information on this portion of the survey. Consistent with the Transactional + Experiential Avoidance Model, people will enact behaviors that will prevent them from reliving traumatic experiences, including skipping questions on a survey. While this subset of women were able to acknowledge that they experienced forced sex by responding to a yes or no question, providing details of the forced sex event may have proved to be too overwhelming at the time of the assessment. Rather than re-experience painful memories, they elected to bypass these questions. Given the sensitive nature of the questions, the NCHS developers likely designed this portion of the survey to permit respondents to complete the assessment without providing responses to this portion of the survey.

A limitation of this study is that the survey did not inquire about multiple experiences of forced sex or the tactics employed at each event nor did the survey prime the respondent to report on the most severe forced sex experience (if they had multiple experiences). As it is, the tactics reported only apply to one forced sex experience. Collecting information about multiple experiences will allow researchers to make a determination about severity not only of the abuse event itself but of the overall forced sex experience which would provide a more comprehensive understanding of the psychological and behavioral outcomes that may result from the abuse.

Another limitation of this study was the evaluation of forced sex in terms of heterosexual activity. The current study did not include information for men who were forced by men or women who were forced by women. This is an important omission to note since it has been reported that the majority of men who reported rape or a non-contact unwanted sexual experience had male perpetrators [70]. Context is important. Recent research suggests that members of the Lesbian Gay Bisexual Transgendered (LGBT) are at increased risk for re-victimization if they experienced childhood sexual abuse [71]. Survivors of sexual abuse who are also members of the LGBT community experience compound stigmatization (in addition to minority racial/ethnicity identity and low socio-economic status). A history

of sexual abuse can exacerbate risk for re-victimization and avoidant coping through inconsistent condom use, multiple partners, and substance use [71]. While increasingly more publications are investigating the association between sexual abuse severity and psychological/behavioral consequences among LGBT, the fact that the current study did not account for this population is a limitation.

Conclusion

There are factors such as, threat of physical harm and actual physical harm that are being masked by grouping severity characteristics into a single factor. Sub-group analysis of the severity characteristics is necessary in order to elucidate the hidden factors. Some researchers utilize composite abuse severity scores and others group respondents based on force sex tactic categories. The current explorative study unpacked the force sex tactic characteristics in an effort to provide context to the victim's experience. This strategy allowed the findings to reveal that both men and women were forced in multiple and different ways. The study also revealed that the consequent behaviors reported by men and women varied by the type of force used, of which to date, had not been discussed in the sexual violence literature. For example, men who were forced because the perpetrator was bigger/older may later gravitate towards controlling female partners. This attraction could in turn lead to condom use which has not been previously addressed in the literature. Results from this study also highlight the importance of conceptually disaggregating force sex tactic characteristics. For example, threat of physical harm should be assessed separately from being physically hurt given that opposite consequent behaviors were exhibited among women. Finally, findings from this study illustrate the complex and circuitous relationship between incapacitated forced sex (being given drugs/alcohol) and substance use behaviors. The current study ultimately contributes to the public health discourse on sexual violence and risk behaviors by illuminating gaps in the current literature and providing suggestions for future research.

Appendix A

Abuse Dimensions Inventory

Severity Ratings for Use of Force or Coercion to Gain Compliance or Submission in Sexual Abuse					
Item	**Mean Rank**	**SE**	**Smallest Value**	**Largest Value**	**Final Rank**
Seduction	2.50	0.16	1	7	1[a]
Use of reward, affection, privilege, or other similar inducements	2.20	0.15	1	8	1[a]
Status or role differential (e.g. authority figure)	2.90	0.17	1	9	2
Threat that affection, privilege or other positives would be taken away	3.30	0.14	1	8	3
Threat of physical punishment	4.80	0.11	1	7	4
Use of force (holding down, prying legs apart etc.)	6.50	0.12	3	9	5
Threats of death (victim or others)	7.10	0.14	4	9	6
Use of assaultive force (hitting, beating, etc.)	7.40	0.15	2	9	7
Use of deadly weapon	8.00	0.13	3	9	8

a. Final ratings for these items were collapsed because of close scores and conceptual relatedness.

Chaffin, M., Wherry, J.N., Newlin, C., Crutchfield, A., and Dykman, R., *The Abuse Dimensions Inventory*. Journal of Interpersonal Violence, 1997. **12**(4): p. 569-589.

Appendix B

The current study conducted sensitivity analysis based on four strategies for conceptualizing force sex tactics: 1) a severity index, 2) a severity scale, 3) categorizing force, and 4) individual analysis of each force sex tactic. Briefly, the severity index summed the number of yes responses provided on the force sex tactic questions. A score of 7 would mean the respondent experienced each type of force during the forced sex event. A similar strategy was used in Merrill et al.'s study that generated a severity index based on various aspects of childhood sexual abuse [8]. The second strategy, the severity scale, was designed to capture the severity of the abuse experience. Each item was ranked from least severe force sex tactic to highest severe force sex tactic based on the Abuse Dimensions Inventory. The items were weighted based on the raking order and a composite number was generated based on the responses. This technique for measuring severity of force has been used by Chaffin et al, the developers of the Abuse Dimensions Inventory [15]. A similar scale often used in the sexual violence literature is the Trauma Symptom Inventory developed by Brier and colleagues [16]. The third strategy was to categorize the force sex tactic items by 1) force through verbal coercion, 2) force through incapacitation (inability to consent due to alcohol or drug consumption), and 3) force through physical force. This technique has been used by Abbey and others in recent publications [4, 17, 18]. The final strategy consisted of including each force sex tactic item measured in the regression model. Instead of measuring severity, in terms of a numerical value or category, this strategy examines abuse-specific characteristics. This approach treated each abuse characteristic as covariates in a regression model. This is an appealing strategy because the specific aspects of forced sex that might account for variations in later behavioral and psychological outcomes can be measured [19, 20]. Therefore, "unpacking" the characteristics of force used may contextualize the abuse experience and inform as to the variations currently observed in behavioral outcomes among sexually victimized men and women. Findings from the individual analysis of each force sex tactic were presented in this study.

Appendix C

Table 6: Missing Data on Force Tactics among Women

Variables	Complete (N= 466)[a]	Incomplete (N= 1346)[a]
	Percent	Percent
Given drugs/alcohol	40.0	n/a
Bigger/older	25.5	n/a
End relationship	11.4	n/a
Verbal pressure	55.2	n/a
Threaten physical harm	43.9	n/a
Held down	70.8	n/a
Phsycially hurt	29.6	n/a
Age--Mean (SE)	29.4 (.578)	32.3 (.321)
Race/Ethnicty:		
White	66.3	61.1
Black	13.3	17.2
Latino	11.6	12.7
Other	8.8	9.0
Marital Status		
Married	31.3	37.4
Divorce/Separated	16.5	17.4
Cohabitate	22.3	16.3
Never Married	29.8	29.0
Some College + :	54.7	48.0
Sexual Activity:		
Age at 1st vaginal sex--Mean (SE)	16.4 (.166)	15.4 (.103)
No. of partners-lifetime--Mean (SE)	9.7 (.596)	11.9(.506)
Condom use at last sex	24.4	23.6
STI treatment-12 mo.	8.0	7.4
Received money for sex	2.7	3.0
Drug Use- 12 months:		
More than 5 drinks	18.0	16.1
Marijuana	31.6	23.5
Cocaine	6.3	4.9

Note. Weighted sample

[a] Number may not add up to total due to missing values for a specific variable

Appendix D

Table 7: Condom Use by Force Sex Tactic and Sexual Behaviors, Stratified by Gender

	Model 1				Model 2			
	Men (N= 493)		Women (N= 452)		Men (N= 453)		Women (N= 402)	
Variables	**UOR**	**C.I.**	**UOR**	**C.I.**	**AOR**	**C.I.**	**AOR**	**C.I.**
Given drugs/alcohol	0.78	(.442, 1.36)	0.87	(.484, 1.56)	0.64	(.324, 1.25)	0.80	(.381, 1.67)
Bigger/older	1.25	(.711, 2.21)	0.87	(.436, 1.73)	1.82^	(.980, 3.38)	0.84	(.373, 1.88)
End relationship	1.17	(.490, 2.79)	0.93	(.386, 2.25)	1.55	(.615, 3.89)	1.41	(.533, 3.75)
Verbal pressure	1.28	(.614, 2.68)	0.91	(.460, 1.79)	1.26	(.610, 2.62)	0.79	(.369, 1.71)
Threaten physical harm	1.13	(.374, 3.39)	0.55	(.237, 1.30)	1.34	(.491, 3.64)	0.67	(.278, 1.64)
Held down	0.87	(.421, 1.79)	1.53	(.710, 3.29)	0.94	(.394, 2.26)	1.76	(.718, 4.31)
Physically hurt	0.63	(.165, 2.44)	1.72	(.845, 3.51)	0.68	(.191, 2.42)	1.59	(.752, 3.35)
Age					0.94**	(.893, .979)	0.93*	(.876, .991)
Race:								
White					1		1	
Black					1.51	(.592, 3.84)	0.72	(.200, 2.45)
Hispanic					2.27^	(.885, 5.84)	0.68	(.234, 2.00)
Other					2.39	(.633, 9.05)	0.86	(.302, 2.42)
Marital Status:								
Married					1		1	
Divorced/Separated					3.15*	(1.12, 8.85)	5.00***	(1.89, 13.23)
Cohabitate					1.64	(.599, 4.51)	1.47	(.542, 4.00)
Never married					4.96***	(2.22, 11.06)	15.74***	(5.87, 42.20)
Some College + :					0.73	(.375, 1.44)	0.70	(.355, 1.37)
Sexual Activity:								
Age at 1st vaginal sex					1.15**	(1.06, 1.26)	1.28**	(1.09, 1.53)
No. of partners-lifetime					1.00	(.982, 1.02)	1.01	(.984, 1.04)
STI treatment-12 mo.					1.48	(.469, 4.69)	0.93	(.355, 2.42)
Received money for sex					0.76	(.253, 2.27)	0.79	(.190, 3.30)

Outcome Variable: Condom use

Controlled for Race/ethnicity, age, education level, and marital status

Note. Logistic Regression; Weighted sample; STI= Sexually Transmitted Infection

^p=<0.10, * p=<0.05, **p=<0.01, ***p=<0.001

1= Referent

Appendix E

Table 8: Number of Partners by Force Sex Tactic and Sexual Behaviors, Stratified by Gender

	Model 1				Model 2			
	Men (N= 496)		Women (N= 453)		Men (N= 453)		Women (N= 402)	
Variables	**Coef.**	**C.I.**	**Coef.**	**C.I.**	**Coef.**	**C.I.**	**Coef.**	**C.I.**
Given drugs/alcohol	1.06	(-2.58, 4.71)	2.89*	(.013, 5.77)	0.26	(-3.44, 3.96)	3.01*	(.322, 5.70)
Bigger/older	1.46	(-2.55, 5.47)	-1.08	(-3.66, 1.49)	0.37	(-3.42, 4.15)	-1.96	(-4.33, .421)
End relationship	1.21	(-2.46, 4.88)	1.48	(-2.63, 5.59)	-1.14	(-4.72, 2.44)	1.56	(-2.06, 5.18)
Verbal pressure	-5.07*	(-9.93, -.215)	1.46	(-.912, 3.83)	-4.00*	(-7.84, -.162)	1.03	(-1.34, 3.41)
Threaten physical harm	-9.47*	(-16.69, -2.24)	2.17^	(-.327, 4.67)	-5.48^	(-11.49, .529)	2.79*	(.039, 5.54)
Held down	4.43^	(-.306, 9.16)	-1.43	(-3.91, 1.06)	2.37	(-1.25, 6.00)	-0.34	(-2.74, 2.07)
Physically hurt	6.08	(-3.21, 15.37)	-0.64	(-3.37, 2.09)	1.22	(-6.94, 9.38)	-2.15*	(-4.26, -.039)
Age					0.54***	(.255, .819)	0.35***	(.188, .517)
Race:								
White					1		1	
Black					2.76	(-1.26, 6.79)	0.10	(-3.06, 3.26)
Hispanic					1.73	(-4.25, 7.71)	-4.16**	(-6.89, -1.43)
Other					4.70^	(-.443, 9.84)	-2.87^	(-6.14, .398)
Marital Status:								
Married					1		1	
Divorced/Separated					8.67*	(1.35, 15.95)	4.16*	(.694, 7.62)
Cohabitate					7.55**	(2.28, 12.82)	2.81	(-.661, 6.29)
Never married					4.90*	(.322, 9.48)	4.61**	(1.61, 7.61)
Some College + :					3.56^	(-.627, 7.74)	-0.12	(-3.05, 2.82)
Sexual Activity:								
Age at 1st vaginal sex					-1.76***	(-2.42, -1.09)	-1.66***	(-2.24, -1.08)
Condom Use- last sex					0.42	(-2.77, 3.62)	1.25	(-1.08, 3.58)
STI treatment-12 mo.					-3.51	(-10.27, 3.26)	2.57	(-1.84, 6.97)
Received money for sex					2.70	(-5.01, 10.41)	3.26	(-7.85, 14.36)

Outcome variable: Number of partners

Controlled for Race/ethnicity, age, education level, and marital status

Note. Linear Regression; Weighted sample; STI= Sexually Transmitted Infection

^p=<0.10, * p=<0.05, **p=<0.01, ***p=<0.001

1= Referent

Appendix F

Table 9: Substance use by Force Sex Tactic in Men, NSFG 2006-2010

	Binge Drink (N= 455)		Marijuana (N= 494)		Cocaine (N= 496)	
Variables	**UOR**	**C.I.**	**UOR**	**C.I.**	**UOR**	**C.I.**
Given drugs/alcohol	2.64***	(1.61, 4.33)	1.99*	(1.08, 3.67)	3.33**	(1.49, 7.45)
Bigger/older	1.18	(.641, 2.16)	1.10	(.571, 2.12)	2.18^	(.885, 5.37)
End relationship	0.97	(.498, 1.91)	1.30	(.585, 2.89)	1.35	(.451, 4.06)
Verbal pressure	0.51*	(.267, .968)	1.31	(.734, 2.34)	0.29*	(.113, .744)
Threaten physical harm	0.48	(.083, 2.73)	1.75	(.445, 6.87)	0.64	(.072, 5.73)
Held down	1.41	(.764, 2.60)	2.15*	(1.19, 3.86)	3.49*	(1.35, 9.03)
Physically hurt	1.09	(.220, 5.42)	0.15*	(.030, .750)	0.22	(.021, 2.35)

Variables	**AOR**	**C.I.**	**AOR**	**C.I.**	**AOR**	**C.I.**
Given drugs/alcohol	1.76*	(1.00, 3.09)	1.56	(.756, 3.21)	3.04**	(1.31, 7.04)
Bigger/older	1.25	(.604, 2.58)	1.16	(.493, 2.73)	1.68	(.604, 4.67)
End relationship	0.91	(.390, 2.12)	1.36	(.492, 3.78)	1.06	(.336, 3.31)
Verbal pressure	0.50^	(.236, 1.07)	1.47	(.763, 2.85)	0.37^	(.127, 1.06)
Threaten physical harm	0.56	(.084, 3.75)	1.33	(.385, 4.60)	0.11	(.006, 1.77)
Held down	1.19	(.585, 2.42)	2.04*	(1.06, 3.90)	2.89*	(1.15, 7.29)
Physically hurt	0.73	(.132, 4.00)	0.16*	(.030, .907)	0.41	(.034, 4.90)
Age	0.97	(.923, 1.03)	0.99	(.947, 1.05)	1.03	(.969, 1.09
Race/Ethnicity:						
White	1		1		1	
Black	0.27**	(.127, .597)	1.44	(.611, 3.41)	0.12***	(.036, .421)
Latino	0.87	(.388, 1.97)	1.13	(.403, 3.16)	1.11	(.280, 4.44)
Other	0.97	(.227, 4.16)	0.42	(.084, 2.06)	0.10*	(.013, .727)
Marital Status						
Married	1		1		1	
Divorce/Separated	3.47*	(1.10, 10.96)	3.13^	(.248, 11.58)	1.46	(.250, 8.56)
Cohabitate	4.30**	(1.52, 12.19)	3.07*	(1.04, 9.05)	1.74	(.415, 7.32)
Never Married	4.19**	(1.45, 12.10)	6.00***	(2.25, 15.99)	3.87^	(.879, 16.99)
Some College + :	1.95^	(.902, 4.21)	0.80	(.346, 1.83)	1.06	(.386, 2.90)
Sexual Activity:						
Age at 1st vaginal sex	0.96	(.869, 1.05)	0.98	(.346, 1.83)	0.86	(.683, 1.09)
No. of partners-lifetime	1.01	(.983, 1.04)	1.00	(.979, 1.02)	1.03*	(1.01, 1.05)
STI treatment-12 mo.	0.56	(.189, 1.68)	1.11	(.401, 3.06)	3.09*	(1.05, 9.09)
Received money for sex	3.87*	(1.17, 12.77)	3.20*	(1.04, 9.89)	10.47**	(2.43, 45.16)

Outcome variable: Substance use

Note. Logistic Regression; Weighted sample; UOR= Unadjusted Odds Ratio; AOR= Adjusted Odds Ratio; STI=Sexually Transmitted Infection

^p=<0.10, * p=<0.05, **p=<0.01, ***p=<0.001

1= Referent

Appendix G

Table 10: Substance use by Force Sex Tactic in Women, NSFG 2006-2010

	Binge Drink (N= 402)		Marijuana (N= 402)		Cocaine (N= 402)	
Variables	**UOR**	**C.I.**	**UOR**	**C.I.**	**UOR**	**C.I.**
Given drugs/alcohol	1.52*	(.798, 2.25)	2.16*	(1.13, 4.14)	1.57**	(.507, 2.63)
Bigger/older	-0.28	(-1.20, .633)	0.68	(.374, 1.23)	-0.90	(-2.06, .266)
End relationship	-0.51	(-1.63, .600)	0.51	(.202, 1.30)	0.51	(-1.21, 2.23)
Verbal pressure	0.00	(-.772, .771)	1.67^	(.921, 3.02)	0.53	(-.518, 1.58)
Threaten physical harm	-0.19	(-1.23, .851)	1.02	(.473, 2.20)	-0.06	(-.940, .818)
Held down	-0.54	(-1.38, .293)	0.97	(.443, 2.11)	1.64*	(.312, 2.97)
Physically hurt	0.12	(-.727, .963)	1.19	(.617, 2.31)	-0.85	(-2.20, .513)
Variables	**AOR**	**C.I.**	**AOR**	**C.I.**	**AOR**	**C.I.**
Given drugs/alcohol	5.55***	(2.30, 13.41)	2.74*	(1.24, 6.05)	4.26**	(1.49, 12.15)
Bigger/older	0.62	(.222, 1.76)	0.68	(.329, 1.43)	1.54	(.382, 6.25)
End relationship	0.50	(.145, 1.69)	0.38^	(.125, 1.15)	1.93	(.239, 15.55)
Verbal pressure	0.95	(.447, 2.03)	1.67	(.867, 3.22)	1.29	(.289, 5.71)
Threaten physical harm	1.00	(.330, 3.04)	1.01	(.409, 2.49)	0.55	(.163, 1.86)
Held down	0.46^	(.183, 1.16)	0.91	(.396, 2.07)	9.69^	(.698, 134.62)
Physically hurt	1.04	(.406, 2.68)	1.28	(.587, 2.80)	0.73	(.159, 3.33)
Age	0.99	(.906, 1.07)	0.92*	(.858, .993)	0.84**	(.746, .952)
Race/Ethnicity:						
White	1		1		1	
Black	1.06	(.339, 3.30)	1.37	(.483, 3.87)	0.00***	(.000, .003)
Latino	2.50	(.710, 8.79)	1.34	(.512, 3.51)	33.82**	(3.93, 291.1)
Other	0.87	(.145, 5.25)	1.48	(.268, 8.22)	4.94^	(.823, 29.59)
Marital Status						
Married	1		1		1	
Divorce/Separated	0.67	(.186, 2.40)	0.81	(.258, 2.56)	0.24	(.009, 6.10)
Cohabitate	0.98	(.329, 2.92)	1.58	(.535, 4.68)	2.66	(.263, 26.92)
Never Married	2.65*	(1.01, 6.96)	1.59	(.494, 5.09)	3.14	(.323, 30.56)
Some College + :	1.21	(.499, 2.95)	0.75	(.369, 1.53)	5.92*	(1.42, 24.65)
Sexual Activity:						
Age at 1st vaginal sex	0.72*	(.554, .929)	0.88^	(.769, 1.01)	0.91	(.626, 1.32)
No. of partners-lifetime	1.01	(.974, 1.04)	1.02	(.989, 1.05)	1.17***	(1.08, 1.26)
STI treatment-12 mo.	0.37	(.108, 1.24)	2.75^	(.882, 8.57)	2.79	(.524, 14.89)
Received money for sex	1.97	(.296, 13.12)	5.42*	(1.54, 20.19)	333.32**	(10.36,10724.5)

Outcome variable: Substance use

Note. Logistic Regression; Weighted sample; UOR= Unadjusted Odds Ratio; AOR= Adjusted Odds Ratio; STI=Sexually Transmitted Infection

^p=<0.10, * p=<0.05, **p=<0.01, ***p=<0.001

1= Referent

Bibliography

1. Banyard, V.L., *Explaining links between sexual abuse and psychological distress: identifying mediating processes.* Child Abuse & Neglect, 2003. **27**(8): p. 869-875.

2. Schoedl, A.F., Costa, M.C.P., Mari, J.J., Mello, M.F., Tyrka, A.R., Carpenter, L.L., and Price, L.H., *The Clinical Correlates of Reported Childhood Sexual Abuse: An Association Between Age at Trauma Onset and Severity of Depression and PTSD in Adults.* Journal of Child Sexual Abuse, 2010. **19**(2): p. 156-170.

3. Abbey, A., Clinton, A.M., McAuslan, P., Zawacki, T., and Buck, P.O., *Alcohol-Involved Rapes: Are They More Violent?* Psychology of Women Quarterly, 2002. **26**(2): p. 99-109.

4. Brown, A.L., Testa, M., and Messman-Moore, T.L., *Psychological Consequences of Sexual Victimization Resulting From Force, Incapacitation, or Verbal Coercion.* Violence Against Women, 2009. **15**(8): p. 898-919.

5. Hanson, K.R., *The psychological impact of sexual assault on women and children: A review.* Annals of sex research, 1990. **3**(2): p. 187-232.

6. Bryant, S.L. and Range, L.M., *Type and severity of child abuse and college students' lifetime suicidality.* Child Abuse & Neglect, 1997. **21**(12): p. 1169-1176.

7. Classen, C.C., Palesh, O.G., and Aggarwal, R., *Sexual Revictimization.* Trauma, Violence, & Abuse, 2005. **6**(2): p. 103-129.

8. Merrill, L.L., Guimond, J.M., Thomsen, C.J., and Milner, J.S., *Child sexual abuse and number of sexual partners in young women: the role of abuse severity, coping style, and sexual functioning.* J Consult Clin Psychol, 2003. **71**(6): p. 987-96.

9. Schraufnagel, T.J., Davis, K.C., George, W.H., and Norris, J., *Childhood sexual abuse in males and subsequent risky sexual behavior: A potential alcohol-use pathway.* Child Abuse & Neglect, 2010. **34**(5): p. 369-378.

10. Mosack, K.E., Randolph, M.E., Dickson-Gomez, J., Abbott, M., Smith, E., and Weeks, M.R., *Sexual Risk-Taking among High-Risk Urban Women with and without Histories of Childhood Sexual Abuse: Mediating Effects of Contextual Factors.* Journal of Child Sexual Abuse, 2010. **19**(1): p. 43-61.

11. Loeb, T.B., Williams, J.K., Carmona, J.V., Rivkin, I., Wyatt, G.E., Chin, D., and Asuan-O'Brien, A., *Child Sexual Abuse: Associations With the Sexual Functioning of Adolescents and Adults.* Annual Review of Sex Research, 2002. **13**: p. 307.

12. Sarrel, P.M. and Masters, W.H., *Sexual molestation of men by women.* Archives of Sexual Behavior, 1982. **11**(2): p. 117-131.

13. Ullman, S.E., Relyea, M., Peter-Hagene, L., and Vasquez, A.L., *Trauma histories, substance use coping, PTSD, and problem substance use among sexual assault victims.* Addictive Behaviors, 2013. **38**(6): p. 2219-2223.

14. Fortier, M.A., DiLillo, D., Messman-Moore, T.L., Peugh, J., DeNardi, K.A., and Gaffey, K.J., *Severity Of Child Sexual Abuse And Revictimization: The Mediating Role Of Coping And Trauma Symptoms.* Psychology of Women Quarterly, 2009. **33**(3): p. 308-320.

15. Chaffin, M., Wherry, J.N., Newlin, C., Crutchfield, A., and Dykman, R., *The Abuse Dimensions Inventory.* Journal of Interpersonal Violence, 1997. **12**(4): p. 569-589.

16. Briere, J., Elliott, D.M., Harris, K., and Cotman, A., *Trauma Symptom Inventory: Psychometrics and Association With Childhood and Adult Victimization in Clinical Samples.* Journal of Interpersonal Violence, 1995. **10**(4): p. 387-401.

17. Abbey, A., BeShears, R., Clinton-Sherrod, A.M., and McAuslan, P., *Similarities and Differences in Women's Sexual Assault Experiences Based on Tactics Used by the Perpetrator.* Psychology of Women Quarterly, 2004. **28**(4): p. 323-332.

18. French, B.H., Bi, Y., Latimore, T.G., Klemp, H.R., and Butler, E.E., *Sexual Victimization Using Latent Class Analysis: Exploring Patterns and Psycho-Behavioral Correlates.* Journal of Interpersonal Violence, 2013.

19. Loeb, T.B., Gaines, T., Wyatt, G.E., Zhang, M., and Liu, H., *Associations between child sexual abuse and negative sexual experiences and revictimization among women: Does measuring severity matter?* Child Abuse & Neglect, 2011. **35**(11): p. 946-955.

20. Johnson, D.M., Pike, J.L., and Chard, K.M., *Factors predicting PTSD, depression, and dissociative severity in female treatment-seeking childhood sexual abuse survivors.* Child Abuse & Neglect, 2001. **25**(1): p. 179-198.

21. Logan, T.K., Walker, R., Cole, J., and Leukefeld, C., *Victimization and substance abuse among women: Contributing factors, interventions, and implications.* Review of General Psychology, 2002. **6**(4): p. 325-397.

22. Kallstrom-Fuqua, A.C., Weston, R., and Marshall, L.L., *Childhood and adolescent sexual abuse of community women: mediated effects on psychological distress and social relationships.* Journal of Consulting and Clinical Psychology, 2004. **72**(6): p. 980-992.

23. Whealin, J.M., *Women's Report of Unwanted Sexual Attention During Childhood.* Journal of Child Sexual Abuse, 2002. **11**(1): p. 75-93.

24. Zink, T., Klesges, L., Stevens, S., and Decker, P., *The Development of a Sexual Abuse Severity Score: Characteristics of Childhood Sexual Abuse Associated With Trauma Symptomatology, Somatization, and Alcohol Abuse.* Journal of Interpersonal Violence, 2009. **24**(3): p. 537-546.

25. Rodriguez, N., Ryan, S.W., Rowan, A.B., and Foy, D.W., *Posttraumatic stress disorder in a clinical sample of adult survivors of childhood Sexual Abuse.* Child Abuse & Neglect, 1996. **20**(10): p. 943-952.

26. Finkelhor, D. and Berliner, L., *Research on the Treatment of Sexually Abused Children: A Review and Recommendations.* Journal of the American Academy of Child & Adolescent Psychiatry, 1995. **34**(11): p. 1408-1423.

27. Spaccarelli, S., *Stress, appraisal, and coping in child sexual abuse: A theoretical and empirical review.* Psychological Bulletin, 1994. **116**(2): p. 340-362.

28. Lalor, K. and McElvaney, R., *Child Sexual Abuse, Links to Later Sexual Exploitation/High-Risk Sexual Behavior, and Prevention/Treatment Programs.* Trauma, Violence, & Abuse, 2010. **11**(4): p. 159-177.

29. Ullman, S.E. and Brecklin, L.R., *Sexual Assault History and Health-Related Outcomes in a National Sample of Women.* Psychology of Women Quarterly, 2003. **27**(1): p. 46-57.

30. Bal, S., Van Oost, P., De Bourdeaudhuij, I., and Crombez, G., *Avoidant coping as a mediator between self-reported sexual abuse and stress-related symptoms in adolescents.* Child Abuse & Neglect, 2003. **27**(8): p. 883-897.

31. Easton, S.D., Renner, L.M., and O'Leary, P., *Suicide attempts among men with histories of child sexual abuse: Examining abuse severity, mental health, and masculine norms.* Child Abuse & Neglect, 2013. **37**(6): p. 380-387.

32. Tyler, K.A., *Social and emotional outcomes of childhood sexual abuse: A review of recent research.* Aggression and Violent Behavior, 2002. **7**(6): p. 567-589.

33. Zanarini, M.C., Yong, L., Frankenburg, F.R., Hennen, J., Reich, D.B., Marino, M.F., and Vujanovic, A.A., *Severity of reported childhood sexual abuse and its relationship to severity of borderline psychopathology and psychosocial impairment among borderline inpatients.* Journal of Nervous and Mental Disease, 2002. **190**(6): p. 381-387.

34. Senn, T., Carey, M., Vanable, P., Coury-Doniger, P., and Urban, M., *Characteristics of Sexual Abuse in Childhood and Adolescence Influence Sexual Risk Behavior in Adulthood.* Archives of Sexual Behavior, 2007. **36**(5): p. 637-645.

35. Struckman-Johnson, C., *Forced Sex on Dates: It Happens to Men, Too.* The Journal of Sex Research, 1988. **24**(ArticleType: research-article / Full publication date: 1988 / Copyright © 1988 Taylor & Francis, Ltd.): p. 234-241.

36. Struckman-Johnson, C., *Male victims of acquaintance rape*, in *Acquatintance Rape: The Hidden Crime*, A. Parrot and L. Bechhofer, Editors. 1991, Wiley-Interscience: New York. p. 192-213.

37. Byers, E.S. and Glenn, S.A., *Gender Differences in Cognitive and Affective Responses to Sexual Coercion.* Journal of Interpersonal Violence, 2012. **27**(5): p. 827-845.

38. LeBeau, M.A., *Toxicological Investigations of Drug-Faciliated Sexual Assaults*, in *Forensic Science Communications*, F.B.o. Investigation, Editor. 1999, US Department of Justice: Washington, District of Columbia.

39. Beitchman, J.H., Zucker, K.J., Hood, J.E., DaCosta, G.A., Akman, D., and Cassavia, E., *A review of the long-term effects of child sexual abuse.* Child Abuse & Neglect, 1992. **16**(1): p. 101-118.

40. Crown, L. and Roberts, L.J., *Against their will: Young women's nonagentic sexual experiences.* Journal of Social and Personal Relationships, 2007. **24**(3): p. 385-405.

41. Hayes, S.C., Wilson, K.G., Gifford, E.V., Follette, V.M., and Strosahl, K., *Experimental avoidance and behavioral disorders: a functional dimensional approach to diagnosis and treatment.* J Consult Clin Psychol, 1996. **64**(6): p. 1152-68.

42. Deliramich, A.N. and Gray, M.J., *Changes in Women's Sexual Behavior Following Sexual Assault.* Behavior Modification, 2008. **32**(5): p. 611-621.

43. Klancecky, A.K., Harrington, J., and McChargue, D.E., *Child Sexual Abuse, Dissociation, and Alcohol: Implications of Chemical Dissociation via Blackouts Among College Women.* The American Journal of Drug and Alcohol Abuse, 2008. **34**(3): p. 277-284.

44. Testa, M., Vanzile-Tamsen, C., and Livingston, J.A., *The role of victim and perpetrator intoxication on sexual assault outcomes.* J Stud Alcohol, 2004. **65**(3): p. 320-9.

45. Polusny, M.A. and Follette, V.M., *Long-term correlates of child sexual abuse: Theory and review of the empirical literature.* Applied and Preventive Psychology, 1995. **4**(3): p. 143-166.

46. Chandra, A., Billioux, Vennea G, Copen, Casey E., Balaji, Alexandra, DiNenno, Elizabeth, *HIV testing in the US household population aged 15-44: Data from the National Survey of Family Growth, 2006-2010*, in *National Health Statistics Reports*, N.C.f.H. Statistics, Editor. 2012, National Center for Health Statistics: Rockville, MD.

47. Briere, J., Hodges, M., and Godbout, N., *Traumatic stress, affect dysregulation, and dysfunctional avoidance: A structural equation model.* Journal of Traumatic Stress, 2010. **23**(6): p. 767-774.

48. Ullman, S.E. and Filipas, H.H., *Gender differences in social reactions to abuse disclosures, post-abuse coping, and PTSD of child sexual abuse survivors.* Child Abuse & Neglect, 2005. **29**(7): p. 767-782.

49. Bensley, L.S., Van Eenwyk, J., and Simmons, K.W., *Self-reported childhood sexual and physical abuse and adult HIV-risk behaviors and heavy drinking.* American Journal of Preventive Medicine, 2000. **18**(2): p. 151-158.

50. StataCorp., *Stata Statistical Software: Release 12*. 2011, StataCorp LP: College Station, TX.

51. Chin, D., Wyatt, G.E., Carmona, J.V., Loeb, T., and Myers, H.F., *Child sexual abuse and HIV: An intergrative risk-reduciton approach*, in *From Child Sexual Abuse to Adult Sexual Risk: Trauma, Revictimizaiton, and Intervention*, L.J. Koenig, et al., Editors. 2004, American Psychological Association Washington, DC. p. 21.

52. Relf, M.V., Huang, B., Campbell, J., and Catania, J., *Gay Identity, Interpersonal Violence, and HIV Risk Behaviors: An Empirical Test of Theoretical Relationships among a Probability-Based Sample of Urban Men Who Have Sex with Men.* Journal of the Association of Nurses in AIDS Care, 2004. **15**(2): p. 14-26.

53. Wingood, G.M. and DiClemente, R.J., *Application of the Theory of Gender and Power to Examine HIV-Related Exposures, Risk Factors, and Effective Interventions for Women.* Health Education & Behavior, 2000. **27**(5): p. 539-565.

54. Volpe, E.M., Hardie, T.L., Cerulli, C., Sommers, M.S., and Morrison-Beedy, D., *What's Age Got to Do With It? Partner Age Difference, Power, Intimate Partner Violence, and Sexual Risk in Urban Adolescents.* Journal of Interpersonal Violence, 2013. **28**(10): p. 2068-2087.

55. Lescano, C.M., Houck, C.D., Brown, L.K., Doherty, G., DiClemente, R.J., Fernandez, M.I., Pugatch, D., Schlenger, W.E., and Silver, B.J., *Correlates of Heterosexual Anal Intercourse Among At-Risk Adolescents and Young Adults.* American Journal of Public Health, 2009. **99**(6): p. 1131-1136.

56. Finkelhor, D. and Browne, A., *The Traumatic Impact Of Child Sexual Abuse: A Conceptualization.* American Journal of Orthopsychiatry, 1985. **55**(4): p. 530-541.

57. Risser, H.J., Hetzel-Riggin, M.D., Thomsen, C.J., and McCanne, T.R., *PTSD as a mediator of sexual revictimization: The role of reexperiencing, avoidance, and arousal symptoms.* Journal of Traumatic Stress, 2006. **19**(5): p. 687-698.

58. Aosved, A.C., Long, P.J., and Voller, E.K., *Sexual revictimization and adjustment in college men.* Psychology of Men & Masculinity, 2011. **12**(3): p. 285-296.

59. Cohen, L.E. and Felson, M., *Social change and crime rate trends: A routine activity approach.* American Sociological Review, 1979. **44**(4): p. 588-608.

60. Falck, R.S., Wang, J., Carlson, R.G., and Siegal, H.A., *The Epidemiology of Physical Attack and Rape Among Crack-Using Women.* Violence and Victims, 2001. **16**(1): p. 79-89.

61. Kilpatrick, D.G., Acierno, R., Resnick, H.S., Saunders, B.E., and Best, C.L., *A 2-year longitudinal analysis of the relationships between violent assault and substance use in women.* Journal of Consulting and Clinical Psychology, 1997. **65**(5): p. 834-847.

62. Wells, B.E., Kelly, B.C., Golub, S.A., Grov, C., and Parsons, J.T., *Patterns of Alcohol Consumption and Sexual Behavior among Young Adults in Nightclubs.* The American Journal of Drug and Alcohol Abuse, 2010. **36**(1): p. 39-45.

63. Heldman, C. and Wade, L., *Hook-Up Culture: Setting a New Research Agenda.* Sexuality Research and Social Policy, 2010. **7**(4): p. 323-333.

64. Garcia, J.R. and Reiber, C., *Hook-up behavior: A biopsychosocial perspective.* Journal of Social, Evolutionary, and Cultural Psychology, 2008. **2**(4): p. 209-216.

65. England, P., Shafer, E.F., and Fogarty, A.C.K., *Hooking up and forming relationships on today's college campuses,* in *The gendered society reader*, M. Kimmel, Editor. 2008, Oxford University Press: New York. p. 531-593.

66. Flack, W.F., Daubman, K.A., Caron, M.L., Asadorian, J.A., D'Aureli, N.R., Gigliotti, S.N., Hall, A.T., Kiser, S., and Stine, E.R., *Risk Factors and Consequences of Unwanted Sex Among University Students: Hooking Up, Alcohol, and Stress Response.* Journal of Interpersonal Violence, 2007. **22**(2): p. 139-157.

67. George, W.H., Cue, K.L., Lopez, P.A., Crowe, L.C., and Norris, J., *Self-Reported Alcohol Expectancies and Postdrinking Sexual Inferences About Women1.* Journal of Applied Social Psychology, 1995. **25**(2): p. 164-186.

68. Abbey, A.T.P.O.C.A.M.P., *Alcohol and Sexual Assault.* Alcohol Research & Health, 2001. **25**(1): p. 43.

69. Dorn, R. *ΦKT Member From Georgia Tech Sends Rapiest Email Ever – "Let Them Grind Against Your Dick"*. TFM: Total Frat Move 2013 [cited 2013 December 26, 2013]; Available from: http://totalfratmove.com/%CE%A6kt-member-from-georgia-tech-sends-rapiest-email-ever/.

70. Black, M.C., Basile, K.C., Breiding, M.J., Smith, S.G., Walters, M.L., Merrick, M.T., Chen, J., and Stevents, M.R., *The National Intimate Partner and Sexual Violence Survey (NISVS): 2010 Summary Report*, C.f.D.C.a.P. National Center for Injury Prevention and Control, Editor. 2011, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention Atlanta, GA

71. Hughes, T.L., Szalacha, L.A., Johnson, T.P., Kinnison, K.E., Wilsnack, S.C., and Cho, Y., *Sexual victimization and hazardous drinking among heterosexual and sexual minority women.* Addictive Behaviors, 2010. **35**(12): p. 1152-1156.

CHAPTER 5: Dissertation Conclusion

My dissertation elaborated on the impact forced sex has on avoidant coping behaviors as manifested through inconsistent condom use, multiple sexual partners and substance use among US men and women. The introduction outlined the theoretical frameworks, Transactional + Experiential Avoidance Model, to understand the factors that influence how men and women cope with forced sex experiences. Three papers were presented based on secondary data analysis of the National Survey of Family Growth, 2006-2010. Each paper provided varying perspectives on forced sex, coping, and sexual risk behaviors among men and women.

Chapter Overview

The first paper examined the association of forced sex among men perpetrated by women and avoidant coping as measured through sexual behavior and substance use. This paper also aimed to further understand the role that alcohol and drug use has on the observed differences in HIV risk behaviors. This study determined that among heterosexual men in this sample, the rate of forced sex perpetrated by women was five percent of men, which was higher than the one to three percent of men reported in other studies. This study also provided much needed context for understanding the segments of the US male population that are most impacted by forced sex.

The second paper examined whether the point in a woman's sexual life abuse occurred (e.g., at first sex, after first sex, or at first sex and another time thereafter) was associated with a difference in HIV risk behaviors and substance use. This study found that compared to women with no forced sex history, women who were victimized after first sex and those who were re-victimized had higher numbers of partners and substance use. Secondly, paper 2 found that younger age at first consensual sex is strongly associated with report of forced sex, regardless of whether the women were forced at first sex or forced after first sex. This study contributes to the overall public health literature by furthering the discourse of sexual violence to not only focus on age at the time of forced sex but also accounting for previous

consensual sexual experiences. The study attempted to understand the mechanisms between victimization history and whether or not prior sexual experience was protective against avoidant coping behaviors such as inconsistent condom use, increased number of partners and substance use.

The third paper assessed the force sex tactics used during the attack among victimized men and women. This strategy allowed me to unpack and analyze data that provided context about the experience. The findings revealed that both men and women were forced in multiple and different ways. Men were primarily forced through verbal pressure and women were most likely held down. The study also revealed that the consequent behaviors reported by men and women varied by the type of force used, of which to date, had not been discussed in the sexual violence literature. There was a positive trend in stronger force sex tactic reported and number of partners among men and women. There was also a significant relationship between current substance use and the force sex tactic given drugs or alcohol in both men and women. Findings from this study indicate that victims of drug-facilitated forced sex may experience more deleterious consequences and rely upon avoidant coping behaviors such as sexual activity and substance use.

Lessons Learned

The process of writing this dissertation exposed my preconceived notions regarding gender roles and sexuality. Specifically, I had to confront my initial unbelief that an adult man could be forced to have sex against his will by a woman and that this was a prevalent public health issue. This process challenged me to address the intrinsic bias that I as an investigator bring into research. I had to identify ways to minimize the impact (as much as possible) that my bias has on the interpretations of the research findings. I received tremendous assistance in addressing my bias through the detailed feedback my dissertation committee provided.

In writing this paper, I learned that there is a vast disparity in the public health literature in regards to sexual behaviors among heterosexual-identifying men. The NSFG is one of the few surveys

that capture overall sexuality among men. A substantial amount of research has been published regarding women's health and sexuality and gender-related studies have proliferated with publications related to sexuality and sexual behaviors especially among men who have sex with men; yet few studies exist that assess sexuality among heterosexual men.

Having previously noted the dearth of literature on male victims of sexual violence perpetrated by women, the issue of assessing masculinity became an important factor that I was not able to address in this paper. In conjunction with collecting data on sexual history and sexuality among all men, contextualizing sexuality in terms of masculinity is an important principle I am taking away from this study.

Lastly, this research brought revelation of the close association of alcohol and drugs to forced sex. That sex and alcohol/drug use often co-occur was not as surprising as the rate at which men and women attribute their forced sex experience to being given alcohol or drug. Being that men reported drug-facilitated forced sex tactic second to verbal pressure may provide clues as to tactics women employ to coerce male victims.

Future Research

My dissertation has prompted ideas for future papers. Many of the population-based surveys that assess forced sex forces primarily on the forced sex experience alone. I would like to develop a population-based survey that gathers information about respondent's full sexual history, couching sexual violence as a part of the overall sexual life experience. That the NSFG is a reproductive health study and not strictly a sexual violence study may have reduced the level of stigma often associated with sexual violence, thereby resulting in much higher reports of forced sex compared to other population-based surveys, for example the National Violence against Women Survey or the National Intimate Partner and Sexual Violence Survey. Where the NSFG fell short was in detailed questions about the overall sexually

violent experience(s). The NSFG lacked questions to elucidate duration of abuse, relationship with the perpetrator, and number of different forced sex events that provide context about the event(s).

Another area the NSFG lacked was in the psychological measures relating to the forced sex experience. The NSFG did not survey depression, anxiety, and post-traumatic stress, all of which are associated with a history of forced sex. In the future, I would like to create a longitudinal study that collects a comprehensive sexual history (including being a victim, perpetrator, or both), mental health, substance use/abuse, as well as coping mechanisms.

Furthermore, findings from my dissertation have galvanized my interest in investigating the area of alcohol/drug facilitated forced sex, a growing area in the interpersonal violence and criminology fields. In light of recent media attention on sexual activity and alcohol consumption among college students, I believe investigating alcohol/drug facilitated forced sex, sexual activity and substance use/abuse (especially among college students) is warranted.

To that end, I am interested in investigating the long-term impact of sexual violence on substance use and mental health, particularly among survivors of alcohol/drug facilitated forced sex. One area of the literature that remains unclear is whether or not victims of sexual violence are targeted because of their current alcohol/drug use or whether substance abuse develops following a sexually violent experience. Being that substance abuse may be antecedent to experiencing forced sex, a history of substance abuse may place people at greater risk for being victimized. Conducting longitudinal analysis could provide clarity and possibly directionality on when substance abuse developed - before or after experiencing sexual violence. This type of information could inform best practices for substance abuse prevention efforts as well as provide contextual information for substance abuse treatment facilities (i.e. comorbidity of trauma and substance use)