SEXUAL REPEAT VICTIMIZATION AND TRAUMA: AN ECOLOGICAL PERSPECTIVE

by

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ABSTRACT
Sexual repeat victimization, or more than one sexual assault perpetrated by distinct
offenders, is a well-documented social problem. Repeat victimizations disproportionately
comprise a large number of total incidents, and survivors of sexual victimization are 2 to
3 times more likely to be revictimized than those never sexually assaulted (Merrill,
Newell, Gold, & Milner, 1999; Russell, 1986). Survivors of sexual repeat victimization
are more likely to develop depression, anxiety, posttraumatic stress disorder (PTSD), and
substance addictions than those sexually assaulted by one perpetrator only and the
general population. Development of an evidence-based policy response to sexual repeat
victimization and post-victimization psychological trauma is critical. However, the
origins of sexual repeat victimization and its long-term impact on mental health are
unclear. To date, research has not established a reliable theory of sexual repeat
victimization that distinguishes between those who are victimized by one perpetrator and
those repeat victimized by multiple perpetrators. The absence of an explanatory sexual
repeat victimization theory may be due to studies’ stratified emphases on psychological,
behavioral, and situational risk and protective factors. With respect to post-victimization
mental health, although sexual repeat victimization is a documented risk factor for
depression, few studies have modeled mental health outcomes for those victimized by
one perpetrator and repeat sexual victims separately. The current research contributes to
the sexual repeat victimization literature through employing a model of repeat rape
victimization that integrates individual, situational, and sociocultural variables in a national probability sample. In addition, unique risk and protective factors for long-term depression among those sexually victimized by one perpetrator and repeat rape victims are identified. Research questions addressed are: 1) Which ecological factors predict respondents victimized by one perpetrator only versus repeat victims of sexual violence? 2) Which ecological factors predict depression among respondents victimized by one perpetrator only versus repeat victims of sexual violence? Data are drawn from Tjaden and Thoennes’ (1998) National Violence Against Women Survey (NVAWS). Binary logistic regression identifies predictors of sexual repeat victimization and OLS regression distinguishes indicators of depression for respondents surviving rape by one perpetrator versus repeat victimizations by separate perpetrators. Findings are discussed with consideration of victimization theory and policy implications.

The form and content of this abstract are approved. I recommend its publication.

Approved: Angela R. Gover
DEDICATION

To my parents, Katherine and Peter Tomsich, who inspired me to pursue higher education and whose enduring support and encouragement made this all possible.
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CHAPTER I
INTRODUCTION

The phenomenon of repeat victimization, or multiple criminal victimizations experienced by one person, has been documented both across and within crime types (Farrell & Pease, 2001; Finkelhor, Ormrod, & Turner, 2007). Repeat sexual assault receives particular academic focus (Fisher, Daigle, & Cullen, 2009; 2008; Daigle, Fisher, & Cullen, 2008), and is found among male and female samples (Desai, Arias, Thompson, & Basile, 2002). In a recent study of college students, twenty-three percent of rape victims reported more than one rape during one school year (Daigle et al., 2008). Women reporting three or more sexual victimizations of any kind, 3.3% of the sample, experienced almost half (45.2%) of all sexual assaults (Daigle et al., 2008). Another study indicates that female university students sexually abused in childhood are more than twice as likely (63.6%) to experience a subsequent sexual assault or rape in college than those never victimized in childhood (26.6%) (Gidycz, Hanson, & Layman, 1995).

Experiencing sexual repeat victimization escalates risk for depression, anxiety, Post-Traumatic Stress Disorder (PTSD), addiction, and violent offending among survivors (Daigle et al., 2008; Hosser, Raddatz, & Windzio, 2007; Kimerling, Alvarez, Pavao, Kaminski, & Baumrind, 2006). Presently interpersonal violence policies targeting domestic and sexual violence often focus on particular incidents of violent victimization (Kilpatrick, 2004), preventing the initial incident, or the immediate post-incident response (Daigle et al., 2008). Many rape crisis centers and battered women's shelters gather intake data about individual victimizations, but may not collect comprehensive information on a broad-spectrum violence history (Kilpatrick, 2004). Likewise, college
sexual assault interventions commonly emphasize reporting and providing medical and psychological support for the most recent incident (Daigle et al., 2008). Such policies provide critical assistance to victims in the aftermath of victimization, but are unresponsive to the risk of future victimizations by different perpetrators, and overlook the role of cumulative trauma in psychological distress. The threat of repeat victimization interfering with post-sexual assault recovery is disquieting from both a normative and public policy perspective. Equally, the need to support sexual violence victim recovery programs that address lifetime trauma is apparent. However, to date, research has not consistently verified the variables and processes predicting sexual repeat victimization and long-term recovery, hindering the development of an evidence-based policy response (Macy, 2008).

As a result, the present research examines multiple indicators that may act as risk or protective factors for sexual repeat victimization and long-term post-victimization distress. Although sexual repeat victimization theories examining victim characteristics and lifestyles are prevalent in literature, the current study takes an ecological approach to assess individual, situational, and sociocultural factors’ influence on sexual repeat victimization and post-victimization mental health. Multivariate analyses answer the following research questions: 1) Which ecologically based factors predict respondents victimized by one perpetrator only versus repeat victims of sexual violence? 2) Which ecologically based factors predict depression among respondents victimized by one perpetrator only versus repeat victims of sexual violence?
Contribution of Research

The current research contributes to the literature on sexual repeat victimization and post-victimization trauma in several respects. Extant research on sexual repeat victimization risk and protective factors largely examines repeat victimization among college and clinical populations who first experienced sexual abuse in childhood (Arata, 2002) and separately assesses psychological, behavioral, and situational variables (Fargo, 2009). Prior research has contributed prospective examinations of sexual repeat victimization risk and protective factors through continued access to special clinical and university student populations (Fargo, 2009; Himelein, 1995; Katz, May, Sörensen, & DelTosta, 2010). The present research complements longitudinal research findings among special populations through examining rape victimization at any point in development in a large, national random-digit-dialing cross-sectional sample. In addition, the current research employs a model of repeat sexual victimization that integrates ecologically based individual, behavioral, situational, and sociocultural variables in one study.

In contrast to sexual repeat victimization likelihood research, several scholars have proposed and assessed ecological models of post-sexual assault recovery and distress (Charuvastra & Cloitre, 2008, Neville, Heppner, Oh, Spanierman, & Clark, 2004; Samuels-Dennis, Ford-Gilboe, Wilk, Avison, & Ray, 2010). Previous research has investigated short-term post-victimization distress of survivors in clinical and college samples (Resnick, Walsh, Schumacher, Kilpatrick, & Acierno, 2013) and psychological functioning longer-term in community and national samples (Classen, Field, Koopman, Nevill-Manning, & Spiegel, 2001; Najdowski & Ullman, 2011; Ullman & Brecklin
However, the majority of research considers post-assault recovery with respect to the most recent or traumatic sexual assault, with repeat victimization as a risk factor. The present research contributes to the body of literature on long-term post-sexual assault recovery through examining differentiated models of risk and protective factors for depression symptoms among respondents in a large national probability sample reporting rape victimization by one perpetrator versus repeat rape victimization by multiple offenders.

**Scope of the Problem**

Rates on the prevalence of experiencing sexual assault, or sexual touching or intercourse by any form of coercion, over one’s lifetime vary from 7.3% (Norris, 1992) to 16.7% (Burnam et al., 1988) among college and general population samples. Estimates fluctuate depending on measures used and rates may almost double if attempted sexual assaults are included (Koss, Gidycz, & Wisniewski, 1987). In one landmark study on sexual assault incidents, researchers conducting face-to-face interviews found that 44% of the sample reported a completed (24%) or attempted sexual assault (20%) (Russell, 1986). Sexual assault is primarily committed against the young by perpetrators known to the victims, and it remains a rarely reported crime (Tjaden & Thoennes, 1998). In addition, survivors share a common threat: a heightened likelihood of future, repeat sexual victimization by another perpetrator.

Research on rates of repeat victimization across crime types finds the scope to be considerable. Around 13.5% of respondents in a national Canadian survey reported more
than one violent or property crime victimization, and repeat victimizations comprised 54% of all incidents (Gabor & Mata, 2004). Early British Crime Survey data analysis found that 14% of respondents reported 70% of the victimizations (Gottfredson, 1984). Assessments of repeat violent crime victimization document up to two-thirds of victims experience more than one sexual or physical assault throughout their lifetime (Kilpatrick, Resnick, Saunders, & Best, 1998). Women in Kilpatrick et al.’s (1998) sample who reported previous physical or sexual assault were five times more likely to experience a new assault, even after controlling for age, race, education, and substance use risk factors. Over the two years following initial reporting, 10.8% of the women with a history of two sexual or physical assaults experienced a new victimization, and 23% of women who had experienced three or more victimizations experienced a new sexual or physical assault (Kilpatrick et al., 1998). College students were especially vulnerable to new victimizations compared with non-students (10.2% vs. 4.0%) (Kilpatrick et al., 1998). Likewise, women in violent intimate relationships experience high rates of ongoing poly-victimization, with one-third to one-half of all women in physically violent relationships also sexually assaulted by their partners (Frieze & Browne, 1989). With consideration of relative risk, women sexually abused in childhood are two to five times more likely to experience later sexual or physical victimization, commonly before high school ends, compared with women who do not experience childhood sexual abuse (Coid, Petruckevitch, Feder, Chung, Richardson, & Moorey, 2001; Messman-Moore & Long, 2000; Noll, Horowitz, Bonanno, Trickett, & Putnam, 2003; West, Williams, & Siegel, 2000; White & Widom, 2003). The risk of repeat physical or sexual assault is even greater among samples reporting childhood sexual abuse and/or childhood maltreatment.
Kimerling et al. (2007) found that those victimized in childhood by physical or sexual abuse had a 5.8 times greater likelihood of adult physical or sexual victimization than those never victimized in childhood.

In terms of sexual repeat victimization specifically, Burnam et al. (1988) documented in a community sample that two-thirds of respondents with a history of sexual assault, or pressured or forced sexual contact, reported two sexual assaults throughout their lifetime. The majority of first-time assaults (80%) were perpetrated against the young, when respondents were between 6 and 25 years old (Burnam et al., 1988). Relative risk is substantial, with survivors of childhood sexual assault 2 to 3 times more likely to be sexually assaulted or raped in adulthood than women who do not experience childhood sexual abuse (Maker et al. 2001; Merrill et al., 1999; Russell, 1986; West et al., 2000). A meta-analysis of sexual repeat victimization literature documents an effect size of .59 between childhood sexual abuse and sexual repeat assault or rape in adulthood (Roodman & Clum, 2001). Variations in reports of the respective risk of future sexual victimization for non-victims and victims often relate to differences in sampling and definitions of sexual victimization (Roodman & Clum, 2001). Consequently, the subsequent review of repeat victimization risk research is discussed with consideration of sampling and operationalization of sexual victimization.

Van Bruggen, Runtz, and Kadlec (2006) examined a Canadian university sample for experiences with childhood sexual assault, or sexual contact before the age of 14 by force or by someone five or more years older. Women with a history of childhood sexual assault had twice the odds of experiencing sexual assault, attempted rape, or rape after the age of 14, in contrast to those who had not been sexually victimized in childhood (Van
Bruggen et al., 2006). Another study examining childhood or adolescent sexual assault and repeat adult sexual assault in a college sample found that 29.4% of survivors reported a later sexual victimization during a one semester period, versus only 11.9% of the women who were not sexually abused in childhood (Reese-Weber & Smith, 2011).

Research conducted in community samples finds similar rates of sexual repeat victimization. Wyatt et al. (1992) studied a Los Angeles County random-digit-dialing sample regarding women's experiences with nonconsensual exposure to masturbation or someone’s genitals, or attempted or completed rape. Incidents occurring prior to the age of 18 were categorized as childhood sexual abuse, and those after the age of 18 were considered adult sexual assault. Women reporting sexual abuse in childhood were 2.4 times more likely to be sexually assaulted in adulthood (Wyatt et al., 1992). Among women who experienced contact sexual abuse, 55.7% were sexual assaulted in adulthood, versus only 21% of those who did not experience contact childhood sexual abuse (Wyatt et al., 1992).

In another community sample, Najdowski and Ullman (2011) recruited Chicago residents through newspaper announcements and flyers, inviting women ages 18 and older with unwanted sexual experiences to participate in a paid research study over a one-year period. The researchers assessed sexual assault, or unwanted sexual contact, sexual coercion, or attempted or completed rape, since the age of 14 or older, at Time 1 and one year later at Time 2. Forty-five percent of the women reported a sexual assault at the second wave of measurement (Najdowski & Ullman, 2011). Casey and Nurius (2005) used random-digit-dialing to collect information on forced sexual contact and attempted or completed rape among women in Washington State (Casey & Nurius, 2005). Thirty-
eight percent of the sample reported at least one experience of sexual assault over their lifetime (Casey & Nurius, 2005). Of that 38%, almost half experienced a single incident, one-third experienced multiple victimizations by the same perpetrator over time, and one-fifth experienced repeat victimization, or multiple sexual assaults by different perpetrators over time (Casey & Nurius, 2005).

Research conducted in both college and community samples indicate a significant proportion of sexual assault victims experience repeat sexual victimization, and that victimization is strongly associated with the likelihood of future victimizations. The incidence of sexual repeat victimization not only provides researchers with an estimate of population repeat victimization rates, but it also informs mental health providers on the extent of cumulative post-victimization trauma in communities. Just as any sexual victimization is associated with greater mental health distress than the general population; repeat sexual victimization predicts more severe mental health issues than victimization by one perpetrator alone.

**Consequences**

Individuals sexually victimized multiple times face profound psychological trauma. Respondents in Banyard, Williams, and Siegel’s (2001) sample with a history sexual or physical assault in both childhood and adulthood indicated greater problems on a range of mental health subscales, including anxiety, depression, dissociation, sexual concerns, dysfunctional sexual behavior, intrusions, defensive avoidance, and impaired self-reference, than those victimized only in childhood or never victimized. Kimerling et al. (2007) observed that repeat victims of physical or sexual assault had a higher risk of anxiety, depression, and PTSD than respondents who were victimized only in childhood.
Other research in a community recruited sample documented that women who survived repeat sexual contact, sexual coercion, attempted rape, or completed rape described greater interpersonal problems than those not revictimized and non-victims (Classen et al., 2001). Likewise, college women reporting contact childhood sexual abuse and later attempted or completed rape presented more depression, anxiety, hostility, and PTSD symptoms than survivors of childhood sexual abuse only in Messman-Moore, Long, and Siegfried’s (2000) research.

However, higher rates of trauma among repeat victims may originate in factors other than victimization history alone. Some research suggests post-sexual victimization recovery accounts for a portion of the variance in the relationship between victimization by one perpetrator and repeat victimization. Arata (2000) assessed post-childhood sexual abuse functioning through measuring PTSD symptoms, number of consensual sexual partners, and the degree to which respondents felt responsible for the childhood sexual abuse in a sample of female undergraduates. Victim self-blame, posttraumatic symptoms, and sexual activity were found to mediate the association between childhood sexual abuse and repeat victimization. Mental health problems that emerge as a result of sexual victimization are compounded by the experience of repeat victimization. Consequently, a considerable portion of victims are not only at risk of being targeted by distinct perpetrators for repeat sexual victimization, but are additionally at risk to suffer serious psychological problems and disorders as a result of cumulative trauma.

Organization

Chapter 1 introduced the current research’s contribution to the literature and the scope and consequences of sexual repeat victimization. Expanding upon the literature
presented in Chapter 1, Chapter 2 reviews models of sexual repeat victimization in three sections. The first section discusses psychological and trauma models of sexual repeat victimization. The second and third sections review the more finite literature on behavioral and situational models of sexual repeat victimization. Chapter 3 addresses post-sexual victimization distress theories and risk and protective factors with respect to three conceptual categories: 1) victim characteristics, 2) context of the assault, and 3) post-assault experience. Chapter 4 introduces the framework of the current research, the ecological model. After reviewing the components and assumptions of the ecological model, this framework is applied to sexual repeat victimization risk and post-sexual victimization distress among respondents victimized by one perpetrator only versus repeat victims of rape by separate perpetrators. With the literature reviewed and theoretical groundwork positioned, Chapter 5 introduces the current study’s research questions, sample, measures, and analytic approach. Results of the analytic examinations of both research questions are then considered. The present research concludes in Chapter 6, with a discussion of the analytic findings with respect to previous research, methodological limitations, future research, and policy implications.
CHAPTER II
SEXUAL REPEAT VICTIMIZATION

History of Victimology

In order to contextualize repeat victimization research within the broader victimization literature, a brief history of victimology will be reviewed. Victimology emerged in the 1940s as a sub-discipline of criminology, where research on victimization, most broadly defined as injury or adversity by any man-made cause, was argued to be an important empirical complement to the study of criminality. Although the roots of victimology were arguably tainted by prejudicial notions of victim guilt and true innocence, scholarship has progressed to include macro-level theories alongside enduring micro-level and interactionist models of victimization.

Early History of Victimology

Whereas criminologists investigate why certain people are motivated to engage in criminal behavior, victimologists research why particular individuals are identified by offenders as ideal targets to victimize (Karmen, 2012). Until the 1940s and 1950s criminology focused on offenders, the justice system's response to offenders, and the balance between societal safety and offender rehabilitation (Karmen, 2012). Although the term victimology is “inelegant” (Sparkes, 1982, pp. 22) at best and evocative of victim stigma at worst, this field may be alternately titled “survivorology” (Karmen, 2012). Victimologists are viewed as researching vulnerability to victimization. However, victimology may be reinterpreted as the study of resiliency in survivors of crime, particularly among those who experience multiple or ongoing victimizations (Karmen, 2012).
The genesis of victimology as a field is commonly accredited to Mendelsohn (1940), von Hentig (1940, 1948), Nagel (1963), Ellenberger (1955), and Wertham (1949). Other scholars have referred to works by Beccaria in the 18th century and Garafalo (1914) as earlier forefathers of victimology (O’Connell, 2008; Kirchhoff, 2003). Kirchhoff (2003) calls attention to Beccaria’s writings on the notion of unreasonable laws, where power is granted to a privileged few and divested from the majority. Another early contributor is Garafalo (1914), who discussed the concept of victim provocation in his works (O’Connell, 2008).

The first reference to the word "victimology" has been alternately attributed to Benjamin Mendelsohn in 1947, or to Werthem’s (1949) book The Show of Violence proposing scientific inquiry on victims (Dussich, 2003; Fattah, 2000; Kirchhoff; 2006; O’Connell, 2008). Works by Mendelsohn (1940) and Von Hentig (1940) are considered to be emblematic of early victimology. Mendelsohn, a defense lawyer, interviewed rape victims to develop a 6-category victim typology, with only one, the "innocent," considered truly devoid of responsibility for her victimization. Mendelsohn later established General Victimology which assessed not only assault, but also car accidents, disasters, and genocide (Dussich, 2003). In addition, Mendelsohn advocated for victims’ rights, criticizing the criminal justice system’s treatment of victims, and recommending the development of victim assistance centers and research institutes (Karmen, 2012).

Von Hentig (1940) similarly constructed a typology of victims based on victim proneness, of which three were most common: depressive, acquisitive, and wanton. The depressive type is naïve and careless, the acquisitive victim is manipulated due to their own motivations weakening threat perception, and the wanton type is vulnerable to
developmental stage stressors. Mendelsohn (1940) and von Hentig (1940) suggested that many victims deliberately or unintentionally influence their victimization through provoking the criminal or placing themselves in unsafe situations, engaging as a ‘penal couple’ (Mendelsohn, 1963) or in a ‘duet’ with the offender (von Hentig, 1948). However, both scholars acknowledged that numerous crimes are committed where the victim did not reciprocally contribute to the perpetration of the crime (Fattah, 2000). Von Hentig (1948) later published *The Criminal and His Victim*, challenging criminology's circumscribed focus on the criminal (Fattah, 2000). Several scholars extended Mendelsohn (1940) and von Hentig’s (1940) perspectives through studying homicide victim precipitation (Wolfgang, 1957), victims’ experiences with the criminal justice system (Nagel, 1963), and rape victim precipitation (Amirs, 1967).

Backlash to early victimology began in the late 1960s and 1970s, particularly regarding rape victim precipitation (O’Connell, 2008). Many scholars additionally critiqued early victimology for lacking legitimacy as an empirical and theoretical field (Rock, 2002). Critics stressed the 20th century gender norms evident in victim precipitation approaches, and the lack of the scientific method in both Mendelsohn (1940) and Von Hentig’s (1940) works (O’Connell, 2008). In spite of these legitimate concerns, early victimologists’ writings laid the groundwork for contemporary victimology, instigating a paradigm shift in criminology to consider both the offender and the victim (O’Connell, 2008).

**Definitions of “Victim”**

The World Society of Victimology and Karmen (2012) consider victimology to be the scientific examination of crime victims, scope and origins of victimization,
aftermath for those involved, and societal and individual responses to victims of crime. Although Fattah (1991) acknowledges sources of victimization beyond crime, such as natural disasters, he suggests victimology should focus on victims of crime (O’Connell, 2008). Alternately, Kirchhoff (2003) exercises a broader definition similar to Mendelsohn (1963), including any man-made victims or victims of human rights violations. Knudten (1992) suggests crime, disasters, accidents, and abuse of power victimizations are separate but overlapping categories (O’Connell, 2008).

Victimology: Scientific Inquiry and Political Response

Although key figures in the early 20th century contributed to criminology’s expanded focus on both offenders and victims, scientific inquiry on victimization did not emerge until after the Second World War (Fattah, 2000). During the 1960s, the post-war baby boom contributed to an increase in street crime, increasing pressure on the government to serve the needs and rights of victims (Karmen, 2012). In addition, the feminist movement of the 1960s and 1970s raised awareness on the epidemic of interpersonal violence, and the degree to which society failed to protect women and children. The enactment of California's Victim Compensation program in 1965 set the precedent for state-by-state diffusion of victim restitution policies (Dussich, 2003). Subsequently in 1985, the United Nations adopted the Declaration of Basic Principles of Justice for Victims, and many American states followed suit (Fattah, 2000). State statutes commonly mandated the rights of victims to be notified and participate in judicial prosecution, to receive recovered stolen property, to be shielded against harassment and coercion, and to obtain restitution for the crime (Fattah, 2000).
Concurrent to political changes, self-report victimization surveys were initiated and institutionalized in North America in 1966, such as the National Crime Survey. Mass data-gathering spurred theoretical formulation and political efforts to enhance victim support and rights (Fattah, 2000). Victimization surveys transitioned victimology from small studies of individual crimes to a more macro approach to explaining victimization (Fattah, 2000). The macro perspective successfully informed researchers on the incidence and scope of victimization, but provided little concrete psychosocial information on victim selection and victim-offender exchanges (Fattah, 2000). However, researchers Wesley Skogan, Jim Garofalo, Michael Hindelang, and Michael Gottfredson published prolifically on victimization surveys and spoke around the nation on their findings, providing further legitimacy to the victim’s rights movement (Dussich, 2003). Other contributors to the empirical development of victimology and to research on family and interpersonal violence include Marvin Wolfgang (1958), Walter Reckless (1967), and Steven Schafer (1968), Vincent Fontana (1973), Susan Brownmiller (1975), and Del Martin (1978) (Dussich, 2003).

**Victimology: Philosophies of Science**

A variety of perspectives comprise philosophies of science in victimology. Mawby and Walklate (1994) divide victimology into three areas: Positive Victimology, Radical Victimology, and Critical Victimology. Positive Victimology emphasizes the use of the scientific method to identify typologies of victims and characteristics that precipitate interpersonal criminal victimization (Ben-David, 2000). Radical Victimology considers a broader definition of victimization that includes criminal, man-made, human rights, and abuse of power victimization (Ben-David, 2000). Victims may be considered
as entire groups of people, such as workers laboring in a hazardous workplace (Karmen, 2012). Criminal law is viewed as supporting the status quo and rights of the privileged at the expense of addressing poverty, unemployment, and health disparities (Karmen, 2012). According to radical victimologists, laws define and target criminal behavior perpetrated by low-power groups (Ben-David, 2000). As a result, although Positive Victimology focuses on identifying victim proneness, Radical Victimology emphasizes the perpetration of victimization through exploiting structures of power (Ben-David, 2000). Critical Victimology primarily examines victim support policies and is informed by Critical Criminology (Ben-David, 2000).

Karmen (2012) contributes two more philosophies of science: conservative and liberal. Conservative victimologists study street crimes and explore both victim and offender accountability. Personal responsibility is prioritized over government intervention as a crime prevention strategy. Conservative victimology recommends the criminal justice system penalize offenders to seek retribution for victims and deter others committing crimes (Karmen, 2012). Liberal victimologists look beyond street crimes to investigate corporate crime and government corruption, advocating governmental intervention to prevent crime (Karmen, 2012). An expanded welfare state, including victim compensation, crisis centers, and support programs, is suggested to minimize the consequences of victimization trauma (Karmen, 2012). Restorative justice is one element of liberal victimology, concentrating on victim restitution rather than offender punishment (Karmen, 2012). Critics of radical or liberal streams of victimology protest the pain that individual survivors of victimization face is overlooked (Rock, 2007).
Models on the Origins of Victimization

Models explaining victimization likelihood may be divided into 10 categories: opportunities, risk factors, motivated offenders, exposure, associations, dangerous times and dangerous places, dangerous behaviors, high risk activities, defensive/avoidance behaviors, and structural/cultural proneness (Fattah, 2000). The majority of these models consider victim characteristics, activities, and behaviors that increase victim attractiveness or proximity to offenders, such as opportunity, exposure, association, dangerous times and dangerous places, dangerous activities, and high risk activities models. Although motivated offender models focus on the offender's perspective, these models emphasize the selection rules offenders employ to target victims, similar to models examining victim characteristics, activities, and behaviors (Fattah, 2000). Likewise, although defensive/avoidance behaviors models consider the converse of dangerous behaviors, these models are still considering victim characteristics, activities, and behaviors that influence victim attractiveness or proximity to offenders (Fattah, 2000). One exception is structural/cultural proneness models, which examine the role of power, stigma, and marginalization in victimization likelihood and assignment of criminal responsibility (Fattah, 2000). With broad similarities among the majority of victimization models, the subsequent review of victimization models considers two types: situation-oriented and social-structural/cultural victimization theories.

Situation-Oriented Victimization Theories

Situation-oriented theories include early victim precipitation models, and view victimization as dynamic and rooted in problematic offender victim interaction (Schneider, 2001). Critics of situation-oriented theories view them as victim blaming,
although Fattah (1994) argues situation-oriented theories do not assign judgments or intimate that behaviors associated with victimization should result in assignment of responsibility (Schneider, 2001). Fattah (1991) distinguishes precipitation from provocation, where the former may be used to prevent future victimization, and the latter is used to attribute responsibility to victims (O’Connell, 2008). Schneider (2001) likewise proposes that situation-oriented theories, based off symbolic interaction theory, do not dispute the offender's sole responsibility for the crime, but propose that particular victim behaviors are more or less likely to result in an offender choosing to perpetrate a crime.

Victim precipitation theories are later echoed in the body of literature through lifestyle theory (Hindelang, Gottredson, & Garofalo, 1978) and routine activity theory (Cohen & Felson, 1979). Lifestyle and routine activity theories examine crimes that involve physical contact between one or more offenders and a victim of violent crime or theft (Fattah, 2000). The lifestyle theory of victimization proposes that differences in lifestyle explain much of the variation in victimization likelihood. Victimization surveys indicate that victims are likely to be male, young, and from a lower socioeconomic status, among other characteristics (Fattah, 2000). Offenders share similar characteristics, as Hindelang et al. (1978) observed a significant overlap between victim and offender demographics. Patterns of overlapping demographic characteristics of criminals and victims are referred to as “propinquity,” and patterns of nearness between criminal and victim households is called "proximity." Victims of crime are also more likely to report perpetrating crime than non-victims (Sparks, Genn, & Dodd, 1977). Lifestyle theory transitioned into lifestyle-routine-activities theory, which evaluates not only victim demographics, but also high-risk behaviors, such as socializing at night, in situations with
alcohol, or with individuals likely to perpetrate crimes (Schneider, 2001). Finally, lifestyle-routine-activities theory transitioned into routine-activity theory (Schneider, 2001). Routine-activities theory studies the impact of daily activities and social context on an individual’s vulnerability to victimization. Offenders view a target as appealing based on proximity (i.e. close to motivated offenders), exposure (i.e. in a risky environment), attractiveness (i.e. possessing valuable property or appearing vulnerable), or level of guardianship (i.e. accompanied by other people or defensive weapons) (Cohen & Felson, 1979). Routine-activities theory emphasizes situational over demographic risk factors.

**Social-Structural and Cultural Victimization Theories**

In social-structural victimization theory, economic and power structures result in the least powerful members of society experiencing disproportionate victimization (Schneider, 2001). Schneider (1992) references Australian aborigines as an example of a group of people whose population has been devastated as a result of cultural and institutional discrimination. Feminist criminology is one prominent form of social-structural victimization theory. Carol Smart critiqued criminology in *Women, Crime and Criminology* (1977), arguing that women offenders have been marginalized due to criminologists overlooking historical, economic, and political factors influencing crime. From Smart’s (1977) perspective, positivist analysis of crime frequency ignores a cultural context where inequality influences involvement in crime. Similarly Susan Brownmiller (1975) and other feminist criminologists considered the role of power in male violence against women, where violence is used as a tactic to coerce women into intimate, economic, and political submission. When Menachem Amir applied the victim
precipitation approach to rape in 1967, backlash by feminist criminologists significantly undercut the predominance of victim precipitation models in criminology. In the 1980s and 1990s feminist criminology reframed victims as survivors to disentangle the concept of victimization from passivity and submission (Rock, 2007). In addition, feminist criminologists expanded their perspective to consider power in general, where women's experiences were proposed to vary based on class and race, rather than gender alone (Bograd, 1999; Crenshaw, 1991; Heise, 1998; Sokoloff & Dupont, 2005). Feminist criminology influenced radical criminology through prompting recognition of the political and social importance of acknowledging interpersonal crime, rather than emphasizing class conflicts alone (Rock, 2007).

Lastly, cultural victimization theories examine how societal norms and ideologies result in particular groups being targeted for victimization (Schneider, 2001). Hate crimes are an example of cultural victimization, where members of a group marginalized by societal norms are targeted, such as individuals identifying as or perceived to be lesbian, gay, bisexual, transgender, or intersex (LGBTI).

**Conclusion**

Victimology is now an influential sub-discipline of criminology, although the nature of its focus on a stigmatized group and its legitimacy as an academic discipline is continually challenged (Fattah, 2000). From victimology's controversial origins in victim-precipitation theories, evolution to focusing on structural class victimization, to its ultimate refocus on both interpersonal and structural crime, philosophies of science and theories of victimization in victimology are diverse and inclusive of many perspectives.
Theoretical Background: Models of Sexual Repeat Victimization

Presently, the majority of research on repeat sexual victimization studies victim psychology and trauma that act as risk or protective factors against future victimization (Breitenbecher, 2001; Marx, Heidt, & Gold, 2005). In addition, a more limited body of research on repeat victimization likelihood assesses victim behavioral patterns and situational variables specific to sexual victimization by the initial perpetrator.

Psychological and Trauma Factors

Psychological/trauma research is the most expansive in the literature on sexual repeat victimization risk. Marx et al. (2005) conducted a review of major sexual repeat victimization theories and identified a focus on factors such as attributional style, learned helplessness, chronic physiological hyperarousal, PTSD, negative self-image, avoidant coping behaviors, poor relational skills, and feelings of powerlessness and stigmatization. Similarly, Breitenbecher’s (2001) empirical investigation of sexual repeat victimization research categorized the most prominent theories into general types: disturbed interpersonal relationships, cognitive attributions, self-blame and self-esteem, coping skills, trauma/disassociation, and general psychological adjustment.

Disturbed interpersonal relationships, cognitive attributions, and self-esteem theories relate intrinsic individual differences to variable repeat victimization risk. Of six studies reviewed on dependency, insecurity, or submissiveness and sexual repeat victimization, Breitenbecher, (2001) noted that three documented a significant relationship, and three did not (Copeland, 1996; Greene & Navarro, 1998; Knowles, 1993; Leonard, 1992; Mandoki & Burkhart, 1989; Marhoefer-Dvorak, Resick, Hutter, & Girelli, 1988). However, the sole prospectively designed study did relate lower
assertiveness and insecurity about cross-gender relationships with increased sexual repeat victimization risk (Greene & Navarro, 1998). Another theory considering problematic intimacy patterns with respect to repeat victimization is dysfunctional interpersonal schema models. Cloitre, Cohen, and Scarvalone (2002) documented a relationship between flexibility and interpersonal expectations and repeat victimization. The authors surmised that women who learn inflexible relationship schemas through childhood sexual abuse are vulnerable to forming violent, yet familiar relationships with new abusers in adulthood (Cloitre, Cohen, & Scarvalone, 2002). In contrast to dysfunctional interpersonal schema models, cognitive attribution theories hypothesize that an internal, stable, and global attributional style relate to sexual repeat victimization risk. Internal, stable, and global attribution styles are evident when survivors attribute responsibility for the victimization to themselves and believe that the cause of the victimization will inevitably emerge in future situations. These theories suggest that the experience of an uncontrollable traumatic event spur the survivor to view self-protective actions against future threats as fruitless. However, research in female college samples has failed to connect attributional style to the relationship between childhood and adult sexual assault (Mayall & Gold, 1995; Reese-Weber & Smith, 2011). Two studies have documented a significant relationship between self-esteem and repeated experiences of unwanted sexual contact in clinical and college samples (Kellogg & Leonard, 1992; Van Bruggen et al., 2006) with the second study examining sexual self-esteem specifically. Alternately another three observed inconclusive findings regarding low self-esteem and repeat contact or noncontact sexual victimization among college and community samples in
California and Hong Kong (Chan, 2011; Reese-Weber & Smith, 2011; Wyatt et al., 1992).

In contrast to psychological theories of repeat victimization that propose a static psychological individual difference increases repeat victimization risk, trauma based theories predict that negative psychological outcomes due to sexual victimization result in increased vulnerability for future victimization. Traumatic bonding theories propose that emotional bonding with an abuser results in continued exposure to the offender and sexual repeat victimization. However, traumatic bonding does not explain sexual repeat victimization by different perpetrators (Breitenbecher, 2001). Alternately, self-blame models explaining repeat victimization by multiple perpetrators propose self-blame for an initial by one perpetrator diminishes aggressive responses to threats by a new perpetrator. One prospective study found both self-blame and decreased sexual assertiveness were associated with repeat sexual assault in a female university sample (Katz et al., 2010). In Filipas and Ullman’s (2006) research, college women who experienced noncontact or contact childhood sexual abuse and subsequent attempted or completed rape reported greater self-blame for the initial sexual abuse at the time of the study than those not revictimized in adulthood.

Research on coping strategies proposes that poor coping strategies in response to an initial sexual assault, such as avoidance, substance use, and isolation, compound vulnerability to repeat victimization. However, case studies have not documented different coping strategies between repeat victims of contact or noncontact childhood sexual abuse and adult sexual assault and victims of childhood sexual abuse only (Mayall & Gold, 1995; Proulx, Koverola, Fedorowicz, & Kral, 1995), or identified maladaptive
coping strategies as predictive of experiencing both childhood sexual abuse and repeat attempted or completed rape (Najdowski & Ullman, 2011; Filipas & Ullman, 2006). Notably, the two studies observing a relationship operationalized adult sexual victimization as rape only, rather than sexual assault. Considering more closely the sole study examining a non-college sample, Najdowski and Ullman (2011) found differences in coping styles after the initial victimization between women who were revictimized and those that were not. Specifically, maladaptive coping, or disengagement, denial, humor, self-blame, self-distraction, and substance use at Time 1 was significantly associated with repeat sexual assault one year later (Najdowski & Ullman, 2011).

Social withdrawal is characteristic of maladaptive coping. In a model that included severity of first victimization, PTSD, and coping strategies, only maladaptive coping strategies (substance use, social isolation, and “acting out” sexually or aggressively) predicted sexual repeat victimization (Filipas & Ullman, 2006). Another recent study documented avoidant coping as predictive of increased trauma after contact childhood sexual abuse, and greater trauma symptoms as predictive of higher rates of later sexual assault among a female college sample (Fortier, DiLillo, Messman-Moore, Peugh, DeNardi, & Gaffey, 2009). However, research finds that simply talking with others about a sexual victimization does not differentiate repeat victims of noncontact or contact childhood sexual abuse and rape in adulthood from those who experienced childhood sexual abuse only (Filipas & Ullman, 2006).

Poor threat perception is a frequently studied trauma symptom with respect to sexual repeat victimization, where threat perception is presumed to be compromised as a result of initial victimization. Threat perception has been operationalized in several
studies as accuracy in perceiving sexual interest and response latency when indicating that a man has “gone too far” in a hypothetical aggressive heterosexual encounter. Research in female college samples finds mixed results in the relationship between perception of threat and repeat sexual assault or rape experiences (Kearns & Calhoun, 2010; Marx, Calhoun, Wilson, & Meyerson, 2001; Messman-Moore & Brown, 2006). Inconclusive findings may be due to threat perception indirectly influencing sexual repeat victimization. Kearns and Calhoun (2010) find behavioral aggression in response to threat more consistently relates to repeat rape victimization than threat perception. Furthermore, research documents college women's self-blame for an experience of unwanted sexual contact or sexual advances as a mediator between threat appraisal and diminished aggression (Katz et al. 2010; Nurius, Norris, Young, Graham, & Gaylord, 2000).

Among studies assessing PTSD as a risk factor for repeat sexual victimization in college samples, some research finds symptoms to be a risk factor for repeat contact sexual victimization (Messman-Moore, Ward, & Brown, 2009; Walsh, DiLillo, Klanecky, & McChargue, in press; Sandberg, Matorin, & Lynn, 1999), whereas other research does not link PTSD to adult sexual assault among respondents reporting experiencing "something sexual" in childhood (Arata, 1999), or suggests arousal PTSD symptoms may enhance recognition of sexual threats (Wilson, Calhoun, & Bernat 1999). Mixed findings on PTSD as a risk factor for sexual repeat victimization may be due to mediators, as Messman-Moore et al. (2009) observed that substance use mediated the relationship between PTSD symptomology, contact childhood sexual abuse, and rape victimization in college. In a similar study, Ullman, Najdowski, and Filipas (2009)
assessed the relationships among childhood sexual abuse, adult sexual assault, PTSD symptoms, and substance use in a sample of women 18 or older. Participants responded to advertisements to join a research study on experiences of sexual assault since the age of 14, or unwanted sexual contact, sexual coercion, completed or attempted rape. PTSD was measured through four symptom clusters: re-experiencing, avoidance, arousal, and numbing. Re-experiencing symptoms comprise upsetting thoughts and nightmares or the emotional or physiological feeling that the trauma is re-occurring. Avoidance symptoms involve deflecting thoughts about the experience, and arousal includes feeling overly alert or irritable. Lastly, numbing symptoms manifest as an inability to remember the victimization, diminished interest in activities or socializing, and lack of emotion.

Numbing symptoms were found to mediate directly the relationship between childhood sexual assault and sexual repeat victimization at Time 2. However, reexperiencing, avoidance, and arousal symptoms were not directly related to repeat victimization, although these three PTSD symptoms did predict problem drinking, which then predicted sexual assault at Time 2 (Ullman et al., 2009).

Lastly, research on general psychological adjustment theories studies have connected poor psychological adjustment, depression, or anxiety with experiences of contact or noncontact childhood sexual abuse and repeat adult sexual assault in two prospective university-sampled studies (Gidycz, Coble, Latham, & Layman, 1993; Greene & Navarro, 1998). Yet, Gidycz et al. (1995) failed in a replication to find an effect of psychological adjustment on the relationship between experiencing contact or noncontact childhood sexual abuse and sexual assault in college. A more recent longitudinal study on risk factors for repeat peer-to-peer physical violence, childhood
maltreatment, and sexual violence additionally documented a relationship between psychological distress and repeat victimization (Cuevas, Finkelhor, Clifford, Ormrod, & Turner, 2010). Findings in a community sample indicated that that general well-being did not relate to women's repeat experiences with nonconsensual contact or noncontact sexual experiences (Wyatt, et al., 1992).

Behavioral Factors

Interpersonal behaviors that are framed as "unhealthy" or "risky" are commonly examined in repeat victimization research. Alcohol use is one example, and two prospective examinations following cohorts over time find alcohol use predicting repeat contact sexual victimization (Greene & Navarro, 1998; Testa, Hoffman, & Livingston, 2010). Another frequently examined risk factor with respect to repeat victimization is sexual behavior. Several studies using college, clinical, and European community samples have associated frequent consensual sexual activity with repeat contact sexual victimization (Fargo, 2009; Himelein, 1995; Krahé, Scheinberger-Olwig, Waizenhöeffer, & Kolpin, 1999). Other research in college, military, and African-American clinical samples have found a minimal or non-significant relationship between sexual behavior and sexual repeat victimization (Collins, 1998; Gidycz et al., 1995; Mayall & Gold, 1995; Merrill et al., 1999; West et al., 2000). It should be noted that Mayall and Gold (1995) and West et al.’s (2000) research used a broader definition of sexual victimization, encompassing both contact and noncontact sexual assault and "unwanted sexual experiences" respectively. Alternately, Fargo (2009) assessed nonconsensual genital contact with someone five or more years older than the respondent when they were 17 years old or younger and nonconsensual sexual contact when the respondents were 18
years or older. More specifically, Fargo's (2009) research assessed longitudinal data collected over 24 years on a range of risky behaviors, including ages at first alcohol use, drug use, and consensual sex. In addition, Fargo (2009) measured whether the respondent had run away from home as a child or adolescent, total number of consensual sex partners, whether the respondent had been involved in prostitution, and frequency of alcohol consumption. Fargo (2009) found that any risky behavior in adolescence mediated a relationship between child and adolescent sexual assault, and risky sexual behavior mediated the relationship between adolescent and adult sexual victimization. Likewise, risky sexual behavior mediated the relationship between adolescent risky behavior and repeat adult sexual victimization. Lastly, frequent alcohol use before sex and in general indirectly related to adolescent risk-taking behavior and risky sexual behavior (Fargo, 2009).

Situational Factors

Although some sexual repeat victimization studies consider situational or environmental factors, Breitenbecher (2001) considers this research to be the exception to the rule in a field where victim psychology perspectives prevail. Since Breitenbecher (2001) conducted his review, researchers have begun exploring risk factors emerging from the context of victimization. Griffin and Read (2012) document that experiencing physical force as a coercion tactic during childhood or adolescent sexual assault results in higher adult sexual assault risk compared with those who experienced incapacitation by drugs or alcohol as a method of coercion. A recent sexual assault general population survey contrasting singly victimized women, women victimized multiple times by one
perpetrator, and women victimized multiple times by distinct perpetrators found that more severe initial sexual assaults and younger age at the time of first assault were associated with both ongoing and repeat victimization (Casey & Nurius, 2005). Women repeat sexually assaulted by different offenders additionally had greater non-sexual trauma in childhood (Casey & Nurius, 2005).

West et al. (2000) examined a sample of Black women with histories of childhood sexual abuse, or sexual contact by force, threat of force, coercion, authority, or someone who was five or more years older, documented in emergency room records. An average of 17 years after initial participation in the research, 136 women were located and agreed to participate in re-interviews. Sexual repeat victimization was considered to be unwanted sexual experiences, sexual assault, or rape after the age of 18. Respondents were asked whether the perpetrator of childhood sexual abuse hit, pushed, beat, slapped, choked, gagged, or used a weapon to force them into sexual contact. In addition, the participants were asked whether oral, anal, or vaginal penetration was involved, or whether the abuser was intra-familial or extra-familial. Repeat victimization was associated with physical violence as a coercion tactic, but penetration and abuse by a family member did not predict sexual repeat victimization (West et al., 2000).

When assessing sexual offender coercion tactics as a risk factor for future sexual victimization, it is important to consider a relevant covariate: victim-offender relationship. Research finds curvilinear relationships between victim-offender relationship and use of violence, where either stranger and intimate offenders use greater violence than acquaintances (Möller, Bäckström, Söngergaard, & Helström, in press; Stermac, Del Bove, & Addison, 2001; Ullman & Siegel, 1993), or intimates cause greater
injury compared with strangers and acquaintances (Murphy, Potter, Pierce-Weeks, Stapleton & Wiesen-Martin, 2011). Although less research has been done on police involvement and repeat sexual victimization, Jordan (2004) found arrests and protective orders to be moderately effective in lowering repeat victimization rates among victims of partner violence.

**Summary**

Breitenbecher (2001) concludes that although individual level psychological theories “…have intuitive appeal, they have received little empirical support (pp. 428),” with the exception of alcohol use and threat perception research. An empirical emphasis on victim psychology and behavior is a natural byproduct of information access – survivors of sexual victimization are naturally more forthcoming sources of information than perpetrators. As Miller, Handley, Markman, and Miller (2010) note, victimization information often frames perpetrator behavior in a manner that suggests they are the “background” of the story. As a result, counterfactuals emphasize changes in victim behavior to avoid the victimization, with the assumption that perpetrator behaviors are a constant. Accordingly, scholarly suggestions to expand the sexual repeat victimization focus beyond individual factors may not be a critique of victim self-report data, so much as a recommendation to frame victim focused risk factors such as alcohol use or frequent sexual encounters within a larger social context. Sociocultural environments assign or withhold perpetrator responsibility for particular types of sexual assault, such as assaults where victims willingly imbibe alcohol or have a sexual history with the perpetrator. Reframing victim risk factors within a theoretically cohesive framework that considers
social and cultural contexts requires a comprehensive consideration of psychological, situational, and sociocultural factors.
CHAPTER III

POST-SEXUAL VICTIMIZATION MENTAL HEALTH

Theoretical Background: Models of Post-Sexual Victimization Mental Health

The application of PTSD to the range of symptoms survivors of sexual assault experience granted academic and medical legitimacy to post-sexual victimization trauma (Goodman, Koss, & Russo 1993; Herman, 1992). However, critics of a post-sexual assault PTSD perspective argue the model overlooks the sociocultural context that sexual assaults occur within (Campbell, Dworkin, & Cabral, 2009). Proponents of expanding sexual assault recovery theories suggest that post-rape trauma originates not only in the assault itself, but in cultural responses to this crime, its victims, and its perpetrators. Alternative perspectives include socio-ecological frameworks, or those that assess individual and extra-individual origins of psychological distress and recovery post-sexual assault (Campbell et al., 2009; Harvey, 1996). Ecological frameworks, also known as human ecology models, consider relationships among groups of people within particular physical and social environments, reminiscent of biologists’ study of organisms’ relationships to their surrounding environment. Several scholars have proposed ecological models of post-sexual assault distress that situate post-assault trauma within sociocultural responses to sexual victimization (Charuvastra & Cloitre, 2008, Neville et al. 2004, & Samuels-Dennis et al., 2010).

Suggestions to include socio-cultural factors in models of post-sexual assault recovery have been heeded. A wide range of risk factors are proposed to explain the relationship between sexual victimization and psychological trauma, including variables pertaining to victim characteristics, the context of the sexual assault itself, and the post-
assault experience. The majority of research on risk factors for post-sexual victimization trauma does not conduct differential analyses based on victimization status (victimization by one perpetrator versus multiple victimizations by separate perpetrators). However, post-victimization distress may heighten vulnerability to future victimization (Gidycz et al., 1993; Greene & Navarro, 1998), and differential experiences in the victimization and post-victimization context may trigger unique mental health trajectories, influencing whether one may experience future sexual assaults by new perpetrators. Although few studies on post-victimization distress differentiate individuals victimized by one perpetrator from repeat victims, the literature on risk and protective factors for post-victimization recovery still contributes a breadth of information on victim, sexual assault, and post-assault variables relating to post-assault recovery. The current study will contribute to the literature on post-sexual assault distress through extending the search for risk factors by specifying separate multivariate models for those sexually victimized by one perpetrator only and repeat victims.

**Victim Characteristics**

Victim characteristics such as race/ethnicity, age, education, employment, pre-assault mental health diagnoses, and victimization history are assessed across multiple studies on post-sexual assault distress. Examinations of responses to sexual assault or rape with respect to race or ethnicity have largely found no differences in PTSD symptoms in community samples (Campbell et al., 1999; Elliott, Mok, & Briere, 2004; Masho & Ahmed, 2007; Ullman et al., 2006), depression symptoms in community and clinical samples (Ahrens, Abeling, Ahmad, & Hinman, 2010; Elliott et al., 2004; Frank &
Stewart, 1984; Sorensen & Siegel, 1992), and suicidal ideation/attempts among college and community sampled respondents (Brener, McMahon, Warren, & Douglas, 1999; Ullman & Brecklin, 2002b). However, some research finds Hispanic/Latina women reporting greater PTSD or anxiety after a rape than White non-Hispanic/Latina or African American women (Littleton, Grills-Taquechel, Buck, Rosman, & Dodd, in press; McFarlane et al., 2005), and White survivors of rape more likely to report recent substance use than women and girls of color (Littleton et al., in press; Resnick et al., 2013). In Sciolla, Glover, Loeb, Zhang, Myers, and Wyatt’s (2011) sample, attempted or completed childhood rape predicted symptoms of depression for Latina, but not African American women. The influence of race and ethnicity on post-assault recovery may be mediated through self-blame, with research suggesting that women of color experience greater cultural attributions of blame for their sexual assaults than White women (Neville et al., 2004; George & Martínez, 2002).

Generally research on income and employment status has not found a relationship to post-sexual assault distress in community and national samples (Ullman & Brecklin, 2002a; Ullman & Filipas, 2001b). However, a recent study on diverse traumas, including assaultive traumas, determined personal resources mediated the relationship between a traumatic experience and PTSD (Samuels-Dennis et al., 2010). Bryant-Davis, Ullman, Tsong, Tillman, and Smith (2010) corroborated Samuels-Dennis et al.’s (2010) findings in their examination of PTSD, depression, and illicit drug use among African American women who experienced unwanted sexual contact, attempted rape, or completed rape. Sexual victimization prior the age of 14 was considered child sexual abuse, and sexual victimization after the age of 14 was referred to as sexual assault. PTSD symptoms were
identified through reports of re-experiencing, avoidance, arousal, and numbing, and remaining measures assessed suicidal ideation, levels of depression, and illicit drug use in the prior year. When controlling for a history of sexual abuse in childhood, women experiencing repeat sexual assault in adulthood with lower incomes reported more depression and PTSD symptoms than those with higher incomes. The odds of lower income repeat sexual assault victims reporting illicit drug use were 18% higher than those of repeat sexual victims with higher incomes (Bryant et al., 2010).

A related construct to income, education level, is found in an equivalent number of studies to have no influence (Campbell et al., 1999; Ullman et al., 2006; Ullman, Townsend, Filipas, & Starzynski, 2007), or an ameliorating effect on the psychological aftermath of a sexual assault or rape for certain subgroups in community samples (Ullman & Brecklin, 2002a; Ullman & Filipas, 2001b). More recent research on a random-digit-dialing sample in Virginia connected income below $49,000 with greater odds of PTSD symptoms than the comparison group of $75,000 (Masho & Ahmed, 2007). An education level of less than high school in comparison to postgraduate education additionally related to greater odds of PTSD among contact child sexual abuse and adult rape survivors (Masho & Ahmed, 2007).

Lastly, the experience of repeat sexual victimization is associated with more severe psychological and interpersonal outcomes than sexual victimization by one perpetrator only (Arata, 1999, 2000; Banyard et al., 2001; Classen et al., 2001; Kimerling et al., 2007; Messman-Moore, Long & Siegfried, 2000). In a national probability sample of 15 to 55-year-old girls and women in the continental United States, respondents sexually molested or raped in both childhood and adulthood were around three times
more likely to attempt suicide than those who were not repeat victimized (Ullman & Brecklin, 2002b). Resnick et al. (2013) investigated the influence of repeat violent victimization history on substance use among girls and women receiving sexual assault medical care at a medical center. Violent victimization history comprised experiences with rape, physical assault committed with the intent to injure or kill the respondent, or assaults with a weapon or that caused an injury. Findings revealed recent or previous marijuana or illicit drug use was associated with repeat assault victimization (Resnick et al., 2013). For women with a history of repeat victimizations and substance misuse, the first assault generally preceded the initiation of substance use (Resnick et al., 2013). Other predictors were not separately modeled based on repeat victimization history.

Context of the Sexual Assault

Variables relating to the context of the sexual assault to post-assault distress include victim-perpetrator relationship, degree of perpetrator violence and victim injury, and substance use in predicting post-sexual assault trauma. Studies on convenience community samples indicate no differential level of trauma based on victim-perpetrator relationship (Ullman & Filipas, 2001b), a marginal relationship between stranger sexual assault and greater post-assault distress (Ullman et al., 2006), or a significant relationship between sexual assault by partners or known offenders and greater PTSD or depressive symptomology (Demaris & Kaukinen, 2005; Masho & Ahmed, 2007). In Temple, Weston, Rodriguez and Marshall’s (2007) sample of low-income women, sexual assault perpetration by a current intimate partner predicted PTSD more strongly than assault by a former partner or non-partner. Similarly, Culbertson and Dehle (2001) determined that
sexual assault by a spouse, cohabitating partner, or acquaintance correlated with more hyperarousal symptoms among college women than sexual assault committed by a date or current intimate partner. Further, sexual assault by a spouse or live-in partner predicted more intrusive symptoms than assault committed by other perpetrator types (Culbertson & Dehle, 2001). Finnish university students in a recent study by Björklund, Häkkänen-Nyholm, Huttunen, and Kunttu (2010) reported a range of physical and mental health symptoms that varied based on their relationship to perpetrators of physical or sexual assault. Parent offenders predicted general and mental health symptoms, intimate current and ex-partner offenders predicted abdominal symptoms, and stranger offenders predicted alcohol consumption (Björklund et al., 2010).

Whereas earlier research examining the role of violent threats or weapons on post-sexual assault distress in criminal justice, rape crisis center, and community samples found little relationship (Campbell et al., 1999; Frank, Turner, & Stewart, 1980; Kilpatrick, Veronen, & Best 1984), more recent research has associated PTSD with victims who were assaulted with a weapon (Bownes, O’Gorman, & Sayers, 1991), or who had a greater perceived life threat during the sexual assault (Masho & Ahmed, 2007; Ullman & Filipas, 2001b). Likewise the use of physical violence as a sexual assault coercion tactic has been linked with post-assault distress in some college and community samples (Brown, Testa, & Messman-Moore, 2009; Littleton & Henderson, 2009; Ullman & Siegel, 1993), or marginally or unrelated to depression, PTSD, substance use, and anxiety in other assessments of university and rape crisis center respondents (Atkeson, Calhoun, Resick, & Ellis, 1982; Griffin & Read, 2012; Kilpatrick et al., 1984). Regarding infliction of an injury beyond the sexual assault or rape itself, two studies using national
or random-digit-dialing samples found a positive relationship with post-assault distress (Acierno, Resnick, Kilpatrick, Saunders, & Best, 1999; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993) and a separate study on college students found no relationship (Ullman & Filipas, 2001b). The relationship between coercion tactics and post-assault distress may not be entirely straightforward. Brown, Testa, and Messman-Moore (2009) documented respondents reporting that trauma levels due to alcohol/drug incapacitated rape fell between those due to physically forcible rape and verbal coercion, as anticipated. However, perpetrator attributions of responsibility and scores on particular domains of trauma (current levels and emotional impact) were equivalent for incapacitated rape and forcible rape (Brown et al., 2009). Another study reveals that lower levels of physically violent coercion tactics were associated with being an unacknowledged victim, and greater physical violence was indirectly related to PTSD symptomology through maladaptive coping in college women (Littleton & Henderson, 2009).

Early research on substance use prior to an assault found no connection to post-rape or sexual assault distress in community samples (Campbell et al., 1999; Resnick, Yehuda, & Acierno, 1997). In contrast, Griffin and Read (2012) related incapacitated sexual victimization among college women to higher scores on problem drinking measures. Likewise, Resnick et al.’s (2013) survey of sexual assault medical services patients found survivors whose sexual assaults involved substance use indicated higher rates of alcohol use and misuse 6 months later. In a national phone survey, Zinzow et al. (2010) linked experiences with substance-facilitated rape and/or rape by force or threat of force to PTSD, and forcible assault to depression. Victim substance use and lower levels
of physically violent coercion in sexual assault or rape have also been associated with
greater victim self-blame and subsequent distress in samples of college students and low-
income women (Brown et al., 2009; Tucker, Wenzel, Straus, Ryan, & Golinelli, 2005),
although Miller et al. (2010) found no relationship between university women's alcohol
use during a sexual assault and subsequent self-blame.

Post-Sexual Assault Experience

Research on post-sexual assault trauma has extensively investigated victim social
support and coping styles. Positive informal or formal social support has been found to
alleviate post-rape or sexual assault distress in college and community samples
(Campbell, Ahrens, Sefl, Wasco, & Barnes, 2001; Orchowski, Untied, & Gidycz, in
press), or have little impact in one London criminal justice sample (Andrews, Brewin, &
Rose, 2003). Although these studies’ findings conflict, it should be noted that Andrews et
al.’s (2003) measured social support differently than Campbell et al. (2001) and
Orchowski et al. (in press). Andrews et al. (2012) measured whether disclosures of sexual
victimization received emotional support, practical support, or negative responses.
Alternately, the other two studies implemented versions of Ullman’s (1996b, 2000)
Social Reactions Questionnaire (SRQ) describing between 12 and 48 social reactions to a
disclosure. Campbell et al. (2001) and Orchowski et al.’s (in press) findings significantly
associating positive social support with post-assault recovery may indicate that the SRQ
is a more sensitive measure of the range of disclosure responses than that used in
Andrews et al. (2003). Another measure, the Social Support Questionnaire (Sarason,
Sarason, Shearin, & Pierce, 1987), detected that high quality social support (someone the
respondent can “count on” and accepts the flaws of the respondent) was a protective moderated mediator for the relationship between severe sexual trauma and problematic substance use, whereas higher quantity of social support was a risk moderated mediator, potentially due to heightened alcohol use through greater socializing (Johnson & Johnson, in press).

Negative reactions to sexual assault disclosure are more consistently connected to increased psychological distress and/or alcohol use among sub-populations (Borja, Callahan, & Long, 2006; Campbell et al., 2001; Jacques-Tiura, Tkatch, Abbey, & Wegner, 2010; Ullman & Filipas, 2001b; Ullman et al., 2007; Ullman, Starzynski, Long, Mason, & Long, 2008), to an extent greater than the beneficial impact of positive social reactions (Andrews et al., 2003; Davis, Brickman, & Baker, 1991; Campbell et al., 2001; Ullman, 2010). Negative responses to initial disclosures may be the most consequential, at times silencing victims for years (Ahrens, 2006). Survivors of childhood sexual abuse face unique challenges with disclosures. Among victims of childhood sexual abuse, delayed disclosure, negative reactions to childhood disclosures, and self-blame at time of abuse for survivors of sexual abuse by relatives are associated with greater PTSD symptomology (Ullman, 2007). Other elements of sexual assault disclosures associated with negative reactions are assaults involving alcohol use (Ullman & Filipas, 2001a), and assault committed by relatives or strangers in comparison to acquaintances or romantic partners (Ullman, 2007; Ullman et al., 2006). Negative reactions based on victim-offender relationship were found in both studies to predict PTSD symptoms (Ullman, 2007; Ullman et al., 2006). In addition to PTSD symptomology, negative social support has been documented in convenience community samples as predicting greater
"avoidance coping," where victims socially withdraw, stay-at-home, and use substances (Ullman et al., 2007; Ullman, 1996c).

Similar to negative social reactions, avoidance coping hinders recovery from sexual assault (Gutner, Rizvi, Monson, & Resick, 2006; Frazier, Mortensen & Steward, 2005; Merrill, Thomsen, Sinclair, Gold, Milner, 2001; Ullman, et al., 2007; Ullman, Relyea, Peter-Hagene, & Vasquez, 2013; Najdowski & Ullman, 2011). Najdowski and Ullman (2011) examined coping strategies and depression symptoms in a Chicago convenience community sample of women reporting one or more unwanted sexual experiences, ranging from unwanted sexual contact to rape. Repeat victims were more likely to report depression than victims assaulted in childhood only. A path analysis of data collected at two points over a year, Time 1 and Time 2, revealed that repeat sexual victimization directly related to depression at Time 2. Maladaptive coping at Time 1 in response to childhood sexual abuse predicted repeat sexual victimization. Maladaptive coping at Time 1 also indirectly related to higher depression scores at Time 2, through predicting maladaptive coping at Time 2, in response to the repeat sexual victimization (Najdowski & Ullman, 2011). These findings suggest that coping strategies in response to childhood sexual victimization link directly with repeat victimization and indirectly with long-term depression.

Alternately adaptive strategies, consisting of communicating feelings and pursuing social support, are generally associated with speedier and more successful recoveries (Frazier, Tashiro, Berman, Steger, Long, 2004; Frazier, et. al., 2005; Gutner et al., 2006; Runtz & Schallow, 1997; Steel, Sanna, Hammond, Whipple, & Cross, 2004). However, some research complicates the relationship between adaptive strategies and
post sexual assault recovery. Brand and Alexander (2003) assessed a mid-Atlantic newspaper-recruited sample of childhood sexual abuse survivors, finding both avoidance and seeking social support predicted greater adult dysfunction in work, social life, extended family, intimate relationships, and financial management, whereas distancing predicted less dysfunction. Johnson Shehan, and Chard’s (2003) clinical sample of contact childhood sexual abuse victims connected approach coping strategies with passive aggressive and histrionic personality disorder, and avoidance coping strategies with PTSD symptomology and avoidant, dependent, borderline, paranoid, schizotypal and schizoid personality disorders. Greater access to friends, relatives, and religious services protected against PTSD and depression in a convenience Chicago sample of African-American sexual assault survivors, although religious coping predicted greater levels of depression and PTSD symptoms (Bryant-Davis, Ullman, Tsong, & Gobin, 2011).

The formal alternative to victim support from friends, family, and partners includes the criminal justice and medical care systems. Rates of survivors seeking formal support range from 18% to 40% of survivors filing a police report and seeking prosecution, and 9% to 60% of survivors speaking with mental health professionals (Busch-Armendariz, Bell, DiNitto, & Neff, 2003; Campbell et al., 1999; Ullman, 1996a; Ullman & Filipas, 2001a; Sedgwick, 2006, Kilpatrick, Amstadter, Resnick, & Ruggiero, 2007). Sexual assault victims are more likely to seek formal support when strangers perpetrate crimes (78% vs. 57.6%), when there are injuries beyond the sexual assault itself (73.2% vs. 55.7%), and when perpetrators threaten victims’ lives (71.6% vs. 55.1%) (Ullman & Filipas, 2001a). However, research has indicated formal support systems may
be associated with problematic responses to victim disclosures. Negative social reactions (controlling, egocentric) are more common for women telling formal than informal support sources, particularly for women of color regarding egocentric reactions (Ullman & Filipas, 2001a). Sexual assault victims in a Chicago convenience sample reported more negative reactions from formal support sources than informal support sources and more victim blaming, controlling, stigmatizing, and egocentric responses when assaults involved alcohol use (Ullman & Filipas, 2001a). Expectations of negative reactions by formal support systems influence willingness to report a sexual victimization. One clinical study found women who did not report their sexual assault were more likely to believe that police would be insensitive or victim-blaming, compared with women who did report their sexual assault (Jones, Alexander, Wynn, Rossman, & Dunnuck, 2009).

Secondary victimization, where post-assault services are delivered insensitively or accusably, can substantially interfere with recovery. Campbell and Raja (2005) surveyed sexual assault survivors at a Veteran’s Administration Hospital Women’s Clinic regarding their experiences with legal and/or medical systems post-assault. Fifty nine percent of women were encouraged by legal and/or medical personnel not to report the assault, 65% were asked about their sexual history, and between 65% and 82% of women felt guilty, depressed, anxious, distrustful, and reluctant to seek further support, consistent with other findings (Campbell, 2005). Victims whose assaults do not conform to rape scripts, such as acquaintance rape, report more victim-blaming questions, and women with lower SES, and women of color describe facing greater challenges seeking assistance (Campbell, 2008). Research indicates that experiences with secondary victimization and unwillingness by the criminal justice system to pursue rape prosecution
is associated with more severe PTSD (Campbell et al., 1999; Campbell & Raja, 2005), although Walsh and Bruce (2011) found that the further a rape prosecution went in the legal system, the less perceived control respondents reported regarding their current distress and recovery. Masho and Ahmed’s (2007) random-digit-dialing sample of adult rape or contact childhood sexual abuse survivors indicated that respondents recounting talking to a crisis hotline or a counselor displayed greater PTSD symptomology. However, PTSD symptoms may reflect a more traumatic assault, spurring survivors to reach out to multiple forms of social support. Alternately, talking with police was associated with less PTSD (Masho & Ahmed, 2007).

**Summary**

Although post-sexual assault mental health and coping strategies certainly reflect genetic predispositions and post-traumatic stress, research determining negative post-assault experiences hinder recovery provides support for the perspective that post-victimization distress does not occur in isolation to culture. Post-sexual assault distress emerges not only from the severity of victimization and victim coping strategies, but additionally from societal responses to the victim and assignment of responsibility. In spite of repeat sexual victimization broadly documented as a risk factor for post-victimization distress, unique post-assault recovery trajectories of those victimized by one perpetrator only versus multiple victimizations by separate perpetrators have received rare consideration. The present study considers whether variations in individual factors, first sexual victimization context, and post-victimization experiences distinguish long-term mental health outcomes between respondents sexually victimized by one offender only and repeat victims.
CHAPTER IV

ECOLOGICAL FRAMEWORK

A major shortcoming to the body of literature on sexual repeat victimization risk is the lack of organizational structure categorizing predictors of repeat victimization and post-sexual victimization mental health. Formulating explanatory theories of sexual repeat victimization and post-sexual victimization mental health is challenging without an inclusive, empirically driven framework organizing risk and protective factors. Likewise, the construction of an effective policy response to this complex social problem necessitates an understanding how individual, situational, and sociocultural level factors contribute to vulnerability to sexual repeat victimization and trauma. From a normative perspective, the heavy focus on individual risk factors is problematic, as “…most available research encourages a victim-blame interpretation” (Grauerholz, 2000, pp. 5). A consequence of a victim-centered research focus is policy recommendations targeting potential victims, rather than broad, institutional change. Recommendations urging women to not socialize, drink alcohol, or interact with men restricts women's access to society, and places the burden of crime prevention on likely victims, rather than the criminal justice system (Day, 1994). Likewise, critics of a PTSD post-victimization mental health perspective protest that policy implications would emphasize the victimization alone, overlooking the role of cultural responses to the crime in victim resilience and recovery.

Due to the mixed findings of extant repeat victimization likelihood studies (Breitenbecher, 2001), and the victim focused implications of individual level theories, the current study employs an ecological framework, combining individual factors with
situational, and sociocultural variables (Belsky, 1980; Brofenbrenner, 1977; 1979). Further, the present study continues the line of ecological investigation of post-sexual assault mental health (Charuvastra & Cloitre, 2008, Neville et al. 2004, & Samuels-Dennis et al., 2010), with an application to sexual repeat victimization. Ecological frameworks of sexual repeat victimization likelihood and trauma avoid exclusive emphasis on individual factors, and integrate individual, situational, and sociocultural factors to potentially construct a better specified model than those of individual level theories only. An ecological model of repeat victimization not only consolidates variable concepts, but approaches them from a particular perspective. The ecological perspective considers how offenders exploit victim history, victim behaviors, and social settings to perpetrate crimes that are unlikely to result in formal or informal sanctions. Moreover, an ecological perspective considers cultural standards dictating which victims and situations are likely to generate societal responses critical of the victim and forgiving of the perpetrator. Similarly, an ecological theory of post-victimization mental health proposes trauma not only originates in the sexual assault itself but in cultural treatment of the crime, victims, and perpetrators.

The ecological model examines three nested hierarchical groupings of variables: 1) childhood development, 2) context of the sexual victimization, and 3) social power (See Figure 4.1). The first two categories describe how one's personal history and the context of the sexual victimization relate to perpetrator aggression. Social power variables include formal and informal social organizations, such as one’s job, community, social support system, and the distribution of wealth (Grauerholz, 2000). The term "social power" is based on the conceptualization of power as the ability of an individual to
influence others to their will, commonly for goals of security or advantage (Cartwright & Zander, 1968; Weber, 1998). This definition of power encompasses social identities, such as race or ethnicity, as group level indicators of sociocultural influence.

![Figure 4.1: Conceptual Groupings of Variables in the Ecological Framework](image)

**Framework Assumptions**

Theories explaining violence against women originated through bringing a gendered power disparity as enabling a certain group, men, to commit violence against another group, women. More recent theories of violence against women have expanded to focus on the intersectionality of multiple oppressive hierarchies, where partner and sexual violence is understood to not only impact women differently than men, but to be experienced differently by unique subgroups of men and women, based on other identities linked to variations in power, such as class, race, and sexual orientation (Bograd, 1999; Crenshaw, 1991; Heise, 1998; Sokoloff & Dupont, 2005). Physical and sexual violence committed against women and children by known perpetrators was initially regarded as a private, family dysfunction, then a psychological issue of perpetrator deviance, and until recently as a component of a larger system of power that differently impacts women and children versus men (Crenshaw, 1991). However, a focus
on men as perpetrators and women and children as victims overlooks intra-group differences influencing each woman's experienced reality, such as race and class, in addition to gender. Intersectional approaches avoid the essentialization of the concept of "woman", but are not purely postmodern. Simply because identity categories are socially constructed, they are not considered to be irrelevant to patterns such as pay or health disparities (Crenshaw, 1991). For example, queer and heterosexual may each comprise ends of an envisioned continuum of sexuality, but one, heterosexuality, is legally and culturally privileged over the other--as witnessed in marriage inequality, worker protection rights inconsistently protecting gays and lesbians from termination due to their sexualities, and culturally, through hate crimes and media representations (Bograd, 1999).

How a social identity such as sexuality intersects with other dimensions such as race and socioeconomic status influences how victimization is experienced and responded to, how personal versus social responsibilities are portrayed, and the degree to which a party is safe from victimization (Bograd, 1999).

Context can also vary patterns of social power (Bograd, 1999). Students who attend traditional four-year colleges are on average from wealthier backgrounds than the general population, and consequently may be presumed to experience preferential criminal justice treatment. However, the risk of sexual assault on college campuses is considerable, with research documenting that among survivors of sexual violence, female college students are more likely to experience a new sexual assault than non-students (Kilpatrick et al., 1998). Some university systems have been decried for their response to campus sexual assault, commonly involving pressuring victims to participate in university administrative proceedings that lead to either academic penalties or no
repercussions for their alleged assailants (Lombardi, 2009). As a result, financial or
gender inequality alone cannot account for the origins of sexual violence. Unilateral
theories on gender inequality may explain why women are so frequently victimized by
male intimates, but they do not clarify why most men do not sexually assault women, or
why all women are not sexually assaulted (Heise, 1998). An ecological framework
differentiates why one victim may be targeted in one situation or moment in time and not
another (Heise, 1998), or why recovery from a victimization may vary within and
between social identities.

**Ecological Risk and Protective Factors for Sexual Repeat Victimization and Trauma**

In order to further specify how each grouping of variables in the ecological
framework applies to the concepts of sexual repeat victimization likelihood and trauma,
risk factors are discussed by each ecological category: childhood development, context of
the first victimization, and social power.

**Childhood Development**

**Sexual Repeat Victimization**

A variety of variables that have been linked to sexual repeat victimization, may be
categorized as “childhood development” risk factors, or factors that comprise an
individuals’ background or personal history. Childhood physical abuse is one example of
a personal history variable that pertains to sexual repeat victimization likelihood, and
research documents its relationship to adult physical and/or sexual victimization for both
men and women (Desai et al. 2002). Early parenthood has largely been examined as a
consequence of rather than as a risk factor for repeat victimization (Friesen, Woodward,
Horwood, & Fergusson, 2009; Logan, Holcombe, Ryan, Manlove, & Moore, 2007), but
unintended pregnancies and abortions have been linked with sexual repeat victimization (Wyatt et al., 1992). Consequently, such a variable may also function as a childhood development risk factor for repeat sexual victimization.

Post-Sexual Victimization Trauma

With respect to childhood development factors that may relate to post-sexual victimization mental health, childhood physical abuse potentially establishes trauma that predates experiences of sexual victimization (Briere & Jordan, 2009). Another personal history variable is physical health problems, which are more likely among survivors of sexual assault or rape than non-victims (Cloutier, Martin, & Poole, 2002).

Context of Victimization

Sexual Repeat Victimization

Perpetrators connect the childhood development and context of the first victimization variables, reacting to perceived victim vulnerability and probability of sanctions from formal and informal systems of justice. Factors related to the likelihood of perpetrators acting aggressively and avoiding sanctions include immediate antecedents to the victimization, such as alcohol use or fighting, or direct consequences of the sexual repeat victimization, such as an injury or pregnancy. Although there are some studies contradicting the relationship between substance use and risk of sexual repeat victimization likelihood, overall the literature reveals a fairly strong association (Breitenbecher, 2001; Krebs, Lindquist, Warner, Fisher, & Martin, 2009). Pregnancy has been documented both as a risk and protective factor for sexual repeat victimization, so it is unclear how the impact of a pregnancy as a result of a primary victimization influences
for sexual repeat victimization (Collins, 1998; Wyatt, 1992). The use of physical violence as a coercion tactic in a primary victimization predicts future repeat sexual victimization (Casey & Nurius, 2005; Griffin & Read, 2012). An important covariate of coercion tactic is victim-offender relationship, with research documenting intimate offenders using greater physical violence than strangers and acquaintances (Murphy et al., 2011).

Post-Sexual Victimization Trauma

Variables from the context of victimization may also relate to long-term mental health trauma. A younger age at the time of a primary sexual victimization has been associated with greater long-term psychological distress (Masho & Ahmed, 2007; McCutcheon et al., 2010). A minimal number of studies have examined the relationship between victim and/or perpetrator substance use and psychological outcome, but the studies that have examined these factors have found non-significant effects (Campbell et al., 1999; Resnick, Yehuda, & Acierno, 1997). This may be due to the lesser degree of violence used when substances are used as a coercion tactic. However, if an individual willingly used alcohol or drugs prior to the assault, they may, due to victim blaming, feel a higher degree of guilt or responsibility for their victimization, compounding depression, and/or other negative mental health outcomes (Brown et al., 2009; Tucker et al., 2005).

The nature of the victim-offender relationship has been found in some research to not directly relate to mental health outcome (Campbell et al., 1999; Ullman & Filipas, 2001b), although other studies have noted that sexual assault by acquaintances or known offenders had a higher association of PTSD (Masho & Ahmed, 2007; Temple et al., 2007). A resultant pregnancy from the first victimization is an additional example of context of the first victimization factor that may increase post-repeat victimization
trauma, due to the both short-term and/or long-term necessity of addressing unwanted pregnancy.

Another individual level variable includes maladaptive strategies of coping behavior, such as socially withdrawing, which can include staying at home or disengaging from the outside world, which are associated with higher levels of depression post-victimization (Frazier et al., 2005; Gutner et al., 2006; Ullman, et al., 2007).

**Social Power**

Sexual Repeat Victimization

Social power variables would include those that pertain to one's social and financial resources that could act as protective or risk factors in one's likelihood of being sexually revictimized or developing severe trauma. Low socioeconomic status and education levels have been documented as a risk factor for sexual and interpersonal victimization and repeat victimization (Acierno, Resnick, & Kilpatrick, 1997; Mears, Carlson, Holden, & Harris, 2001). Race and ethnicity has been minimally researched with respect to repeat victimization (Classen et al., 2005). One exception includes a study by Urquiza and Goodlin-Jones (1994), who documented the majority of African American women (62%), just under half of White women (44%), and Hispanic/Latina women (40%), and one quarter of Asian American women reporting sexual revictimization. Coping strategies and access to social support have primarily been researched in relation to post-sexual victimization recovery; however both variables may be linked indirectly to sexual repeat victimization through the variable of post-victimization distress. Whereas situations where a victim files a police report, presses charges, and the perpetrator was
convicted have been documented as protective variables in partner violence repeat victimization (Jordan, 2004; Lewis, 2004), such criminal justice outcome variables have not been examined to the same extent with respect to repeat sexual victimization.

Sexual Victimization Trauma

Race/ethnicity has also been found to have some influence (Burge, 1988; McFarlane et al., 2005) or non-significant findings (Elliott et al., 2004) on mental health outcomes. Economic stress has been linked with psychological trauma as a result of victimization; although the relationship between education level and psychological distress post-victimization is less clear (Campbell et al., 2009). Access to formal sources of support, or criminal justice and medical care professionals, has been associated with greater PTSD symptomology, potentially reflecting a more traumatic assault, spurring survivors to reach out to multiple forms of social support (Masho & Ahmed, 2007). Generally, negative social reactions are more common for women talking with formal sources of support than informal (Ullman & Filipas, 2001a). However, such variables may also act as protective or risk factors for mental health problems trauma, depending on victim satisfaction with the therapeutic or criminal justice process.

Implications of Ecological Models of Sexual Repeat Victimization and Post-Sexual Victimization Trauma

Compared with predominant models of repeat victimization, the ecological model considers not only individual victim and situational factors, but the larger social context influencing how society and offenders react to victim psychology, interpret victim behavior, and foster or constrain the social settings conducive to sexual victimization.
The ecological model extends beyond the context of the victim and the abuse, but additionally considers each following disclosure where the victim is informed of who is responsible for her victimization, and whether that victimization was even a crime. Moreover, the ecological model suggests policy intervention at multiple levels, where rape defense classes and dry campuses suggested in individual level models are complemented with comprehensive sexual education addressing violent and healthy intimacy in K-12 settings, expansion of sexual assault nurse (SANE) programs and rape crisis programs, and large-scale public health campaigns addressing behavioral and sociocultural norms of sexual victimization and victim blame.

**Summary**

Predominant models of repeat victimization focus on individual victim psychology/trauma, victim behavior, or situational factors, with little empirical support and policy implications that emphasize the victim. Likewise, PTSD models of post-sexual victimization mental health primarily focus on victimization itself as a source of trauma. Alternately, ecological models of repeat sexual victimization and post-victimization trauma consider not only victim and victimization specific variables, but additionally the societal reaction to victimization, cultural assignment of responsibility, and access to post-victimization support and justice. The present study proposes an ecological framework for understanding sexual repeat victimization and post-victimization mental health, which encompasses individual, situational, and sociocultural conceptual groupings of variables. Whereas this framework does not neatly predict how each individual variable impacts the outcome variable, it does organize multiple factors into conceptual groupings. The ecological structure is suitable for a complex, ongoing
social phenomenon such as sexual repeat victimization and psychological trauma. Ultimately any theory of sexual repeat victimization that solely identifies variables distinguishing those victimized by one perpetrator from those victimized multiple times by separate perpetrators will be insufficient, as a complete theory must explain the causal mechanisms behind each variable’s cumulative contribution to increasing likelihood of repeat victimization (Marx et al., 2005). However, the current research contributes to the first step of theory development: identifying multiple risk and protective factors of sexual repeat victimization. The present study is not a test of the ecological model due to the limits of the data set employed, and instead examines the influence that ecological individual, environmental, and sociocultural variables have on sexual repeat victimization likelihood and post-victimization mental health.
CHAPTER V

RESEARCH METHODS

Research Questions

In order to glean a more accurate representation of the dynamics behind sexual repeat victimization and post-victimization mental health, the present study incorporates a large, random-digit dialing national sample with the objective of greater external and statistical validity. The following section begins with a discussion of the study design, followed by the operationalization of the dependent, independent, and control variables. This study focuses on the following two research questions: 1) Which ecologically based factors predict respondents victimized by one perpetrator only versus repeat victims of sexual violence? 2) Which ecologically based factors predict depression symptoms in respondents victimized by one perpetrator only versus repeat victims of sexual violence?

Study Design

The present research assessed data collected in Patricia Tjaden and Nancy Thoennes’ research titled “Violence and Threats of Violence Against Women and Men in the United States, 1994-1996,” known as the National Violence Against Women Survey (NVAWS). \(^1\) Data were collected through random-digit dialing (RDD) of households with a functioning phone line in the United States, stratified by U.S. Census region. Women and men 18 years of age or older and residents of the households were eligible to participate in the interview, with the female version of the survey implemented between 1995 and 1996, and the male version in 1996. Both Spanish and English versions of the

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\(^1\) Institutional review board (IRB) approval was granted in May of 2011 to conduct secondary data analysis on these data.
interview were available and Spanish versions of both male and female surveys were fielded in 1996. Due to the nature of the survey, female participants were interviewed by female interviewers only. In addition, interviewers were trained on detecting signs that the respondent was apprehensive about being overheard or was in distress, and contact information for local victim support services was offered to respondents disclosing violent victimization. Schulman, Ronca, Bucuvalas, Inc. (SRBI), a professional survey research organization, conducted the interviews using a computer-assisted interviewing system. Although the NVAWS includes interviews with males, the current study is restricted to analysis of data from 8,000 female participants due to low rates of male disclosures of sexual repeat victimization. In addition, women's risk of sexual repeat victimization is almost twice that of men (Barnes, Noll, Putnam, & Trickett, 2009), indicating gendered trajectories of sexual repeat victimization. Of the women contacted who were eligible to participate in this study, 72.1% agreed to be interviewed.

Respondents were asked about demographic information, health-related variables, the number of current and past intimate cohabitating relationships, and experiences with violent victimization. Sections of the survey covered 1) fear of violence and fear management, 2) emotional abuse experienced by intimate partners, 3) forcible rape or stalking, and 4) incidents of threatened violence experienced by any type of perpetrator. If a respondent indicated during the interview screening that they had experienced attempted or completed rape, investigators followed up with questions on the characteristics and consequences of the most recent victimization incident by perpetrator type. Perpetrator type was identified by the nature of the relationship between the perpetrator and the respondent: current spouse, ex-spouse, male live-in partner, female
live-in partner, other relative, acquaintance, or stranger. Questions regarding detailed
information of each victimization by perpetrator type included the number of times the
victimization occurred, if the incident occurred in the last 12 months or in years prior to
the interview, whether drugs or alcohol were used, whether injuries or pregnancy
occurred, and criminal justice system engagement and outcome.

Sample

The present study contributes to the literature through its use of a national,
random-digit-dialing sample of women 18 years of age or older. Desai et al. (2002) note
that majority of research linking childhood and adult victimization has been carried out
with clinical, college, and convenience samples. In contrast, population-based studies are
able to provide an estimation of victimization incidence and consequently establish a
basis for generalizable intervention programs. Women in college and clinical samples
share similar education levels and/or socioeconomic statuses, which may influence the
probability of repeat victimization and post-victimization mental health (Messman-Moore
& Long, 2003). As prior research has indicated, low socioeconomic status (Ellis,
Atkeson, & Calhoun, 1982; Mears et al., 2001; Miller, Moeller, Kaufman, DiVasto,
Pathak, & Christy, 1978), race (Mears et al., 2001), and transiency (Ellis et al., 1982;
Miller et al., 1978) are risk factors for repeat sexual victimization and post-victimization
mental health, which are potentially truncated or overrepresented in samples exclusively
comprising college students or clinical populations, respectively. Additionally, the
complexity of the questionnaire used in the NVAWS includes a range of variable
constructs, permitting the selection of multiple ecologically based variables. Lastly, the
NVAWS is one of few publicly available data sets with a sufficient number of sexual repeat victims to conduct multivariate analysis.

Despite myriad advantages of the NVAWS data, responses were collected over 10 years ago. As a result, it is important to consider whether the relationships among variables collected in the mid-1990s would be applicable to the present day. Variables were selected based on ecological assumptions of power, with the understanding that gender and race/ethnicity influence inequality. In addition, it is important to consider whether the incidence and scope of sexual victimization has changed significantly over the past 20 years. As a result, the sample description will include a comparison to present-day national demographics. Within the total sample of women the average age was 44.2 (SD = 17.57) (See Table 5.1). The highest educational attainment levels for respondents were most commonly high school (34.6%), or attending some college (29.3%). Consistent with the sample, presently 29.3% of women ages 18 and older in the civilian non-institutionalized population graduate high school, and 29.8% attend some college (U.S. Census Bureau, 2012). Over half of women earned an income of $20,000 or less (57.3%). When considering the generalizability of the NVAWS sample to today’s context, it must be noted that the female-to-male earnings ratio has increased from 70% in 1995 to 77% in 2008 (DeNavas-Walt, Proctor, & Smith, 2009). Progress in the gender earnings inequality gap may arguably result in diminished generalizability of the present research. However, the Gini index grew from 40.8 in 1997 to 45 in 2007 (Central Intelligence Agency, 2013), indicating on a scale of 0 to 100, that inequality in family income has increased between the point in time when the NVAWS was collected and the present day. Shaefer and Edin (in press) document this economic trend, noting that in
1996, 1.7% of households lived in extreme poverty, or on less than $2 per family member per day, in contrast to 4.3% in 2011.

Table 5.1: Sample Characteristics.

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-25</td>
<td>947</td>
<td>12.1%</td>
</tr>
<tr>
<td>26-35</td>
<td>1773</td>
<td>22.6%</td>
</tr>
<tr>
<td>36-45</td>
<td>1885</td>
<td>24.0%</td>
</tr>
<tr>
<td>46-55</td>
<td>1396</td>
<td>17.8%</td>
</tr>
<tr>
<td>56-65</td>
<td>840</td>
<td>10.7%</td>
</tr>
<tr>
<td>66 and Older</td>
<td>1014</td>
<td>12.9%</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>1224</td>
<td>15.4%</td>
</tr>
<tr>
<td>Married/Common-Law</td>
<td>4999</td>
<td>62.9%</td>
</tr>
<tr>
<td>Divorced/Separated/Widowed</td>
<td>1730</td>
<td>21.8%</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White and Non-Latina</td>
<td>6217</td>
<td>79.2%</td>
</tr>
<tr>
<td>White and Hispanic or Latina</td>
<td>235</td>
<td>3.0%</td>
</tr>
<tr>
<td>Black or African-American</td>
<td>780</td>
<td>9.9%</td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>133</td>
<td>1.7%</td>
</tr>
<tr>
<td>Native American or Alaskan Native</td>
<td>88</td>
<td>1.1%</td>
</tr>
<tr>
<td>Mixed Race</td>
<td>397</td>
<td>5.1%</td>
</tr>
<tr>
<td>Education Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some Grade School</td>
<td>856</td>
<td>10.7%</td>
</tr>
<tr>
<td>High School Graduate</td>
<td>2752</td>
<td>34.6%</td>
</tr>
<tr>
<td>Some College</td>
<td>2336</td>
<td>29.3%</td>
</tr>
<tr>
<td>College Graduate</td>
<td>1360</td>
<td>17.1%</td>
</tr>
<tr>
<td>Post-Graduate</td>
<td>659</td>
<td>8.3%</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Time</td>
<td>3678</td>
<td>47.6%</td>
</tr>
<tr>
<td>Part Time</td>
<td>1009</td>
<td>13.1%</td>
</tr>
<tr>
<td>Homemaker</td>
<td>1233</td>
<td>15.9%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>278</td>
<td>3.6%</td>
</tr>
<tr>
<td>Student</td>
<td>357</td>
<td>4.6%</td>
</tr>
<tr>
<td>Retired</td>
<td>1176</td>
<td>15.2%</td>
</tr>
<tr>
<td>Individual Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $20,000</td>
<td>3395</td>
<td>57.3%</td>
</tr>
</tbody>
</table>
Most women in the sample identified themselves as white, non-Hispanic (79.2%) or Black or African American (9.9%). Racial and ethnic demographics have markedly changed since the 1990s. The proportion of White Americans in 1990 comprised 77% of the population, and only 72.4% in 2010, and 9% of Americans in 1990 were Hispanic or Latino versus 16.3% in 2010 (U.S. Census, 1992a, 1992b, 2011). However, racial and ethnic inequality has not progressed substantially over the past 15 years. In 1995, 11.2% of White, non-Hispanics, 29.3% of African Americans, 30.3% of Latinos, and 14.6% of Asian-Americans lived below the poverty level, consistent with 2009, where 12.3% of White, non-Hispanics, 25.8% of African Americans, 26.6% of Latinos, and 12.1% of Asian Americans lived in poverty (U.S. Census, 2012).

One thousand four hundred and eight women indicated in the NVAWS rape screening question that they had experienced a completed or attempted rape, and of the women who went on to answer questions about each victimization (1,400), 15.5% were raped by one offender and 2% were raped by more than one offender over their lifetime. The Bureau of Justice Statistics indicates that between 1995 and 2010, attempted or completed rape or sexual assault against women and girls 12 and older decreased from 5.0 per 1,000 women and girls to 2.1 (Planty, Langton, Krebs, Berzofsky, & Smiley-
McDonald, 2013). Rates of sexual violence against men also decreased from 0.6 to 0.1 over that same time period, indicating a closing gender gap in sexual violence, but a gender gap nonetheless. Conversely, a lower percentage of sexual crimes reported to the police culminated in arrests in 2005-10 (31%) in comparison to 1994-98 (47%), and the rates of reporting to police increased minimally from 29% between 1994-1998 to 35% in 2010 (Planty et al., 2013).

When considering changes in the scope of sexual victimization over time, Planty et al.’s (2013) recent assessment indicates few trends. Sexual victimizations committed by strangers were consistently in the minority at around 22% between 1994 and 2010. In addition, over time, women and girls who were never married, divorced, or separated and women in the lowest socioeconomic status consistently experienced the highest rates of sexual victimization, compared with married or widowed females, or women and girls in higher income brackets. The location of the crime was most consistently close to or at the victim’s home, and primarily occurred when the victim was sleeping or doing other activities in the home, across time periods (Planty et al., 2013). One trend over time specifies that in 1994-1998 women and girls in urban areas were at greatest risk, compared with those in suburban or rural areas. In 2005-2010, women and girls in rural areas become the most vulnerable (3.0 per 1,000), followed by urban (2.2 per 1,000), and then suburban areas (1.8 per 1,000) (Planty et al., 2013). This shift in geographic vulnerability may reflect the increasing concentration of poverty in rural America over time (Farrigan, 2012). Although improvements in gender income equality may have influenced women’s social power, increased overall inequality would suggest that an ecological model is appropriate—where gender alone is not representative of less power,
and instead, an intersection of social identities such as gender, race, and socioeconomic status may leave particular subgroups of individuals vulnerable to crime and excluded from systems of justice.

**Measures**

**Dependent Variables**

Research Question One: Predictors of Rape Victimization by One Perpetrator Versus Multiple Victimization by Separate Perpetrators

The measure for the dependent variable of sexual victimization included a series of questions about an experience where someone used or threatened force to penetrate the respondent’s vagina or anus by penis, tongue, fingers, or object, or the respondent’s mouth by penis. Both attempted and completed rape incidents were included. Although the bulk of research on repeat sexual victimization assesses sexual assault, which includes unwanted sexual touching or exposure in addition to attempted and completed rape, the current study examines attempted and completed rape only, due to the particular measure used in the NVAWS. However, the isolation of rape as a dependent variable may enhance the current research’s ability to examine the phenomenon of repeat victimization as there may be a more consistent likelihood of repeat victimization when the initial assault is more severe (Mayall & Gold, 1995; Roodman & Clum, 2001), and risk factors for rape versus other types of sexual victimization may vary (Testa & Dermen, 1999).

Respondents were asked behaviorally specific questions about sexually violent acts in order to obtain greater accuracy in responses, as some research indicates that when
individuals are asked if they have been “raped” or “sexually assaulted,” lower rates of victimization are reported, despite having experienced the crimes (Fisher & Cullen, 2000). Those who had experienced one or ongoing rape victimization by one perpetrator over a lifetime were categorized as “one-perpetrator rape victims” and coded as (0), and those who had experienced two or more rape victimizations by distinct perpetrators over a lifetime were categorized as “repeat victims,” and coded as (1). The operationalization of repeat victimization as multiple victimizations by different offenders was selected for methodological reasons. In the survey, details regarding the most recent victimization by each distinct offender were collected, hindering the ability to isolate characteristics of the “first” victimization by offenders who assaulted the victim multiple times. As a result, in order to preserve time order, repeat victimization was operationalized as multiple victimizations by different offenders. However, survey research generally has difficulty isolating unique characteristics of each incident when multiple victimizations were perpetrated by the same offender. As a result, the majority of sexual repeat victimization research operationalizes repeat victimization as two or more sexual victimizations perpetrated by distinct offenders (Casey & Nurius, 2005).

More specifically, the dependent variable comprises two groups. The first group, “one-perpetrator rape victims” includes women who have experienced one or ongoing rape victimizations by one perpetrator only. The second group includes “repeat victims,” consisting of women sexually victimized by distinct perpetrators on separate occasions (See Figure 5.1). Including women who have experienced one or ongoing rape victimization by one perpetrator in the non-repeat victimized group appears counter intuitive. However, the differentiation between non-repeat victimized respondents and
repeat victims is not based exclusively on the number of incidents. Rather, it concerns the number of perpetrators, consistent with previous research and operationalizations of sexual repeat victimization (Casey & Nurius, 2005). Only rarely has ongoing victimization by one perpetrator been isolated from one violent incident by one perpetrator in repeat victimization measurements (Casey & Nurius, 2005).

<table>
<thead>
<tr>
<th>One-Perpetrator Victims</th>
<th>Repeat Victims</th>
<th>Number of Perpetrators</th>
<th>Number of Rape Victimizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>More than 1</td>
<td>1</td>
<td>More than 1</td>
</tr>
</tbody>
</table>

**Figure 5.1: Operationalization of Sexual Repeat Victimization**

A total of 1,408 female sexual assault victims were identified. Of the 1,408 women who reported an attempted or completed rape in the screening questions, 1,400 respondents gave additional details on their victimization experiences, comprising 1,241 women raped by one perpetrator and 159 women raped multiple times by separate perpetrators. Due to the fact that time since victimization was measured in years, 19 repeat victims who reported victimizations in the same year were excluded due to the inability to determine which victimization was the first. In total then, the examination of predictors of one-perpetrator versus repeat rape victimization was based on a sample of 1,381 females age 18 or older.

**Research Question Two: Long-Term Post-Victimization Mental Health**

An eight question inventory examined long-term post-sexual victimization depression. The time frame encompassed the week prior to the interview, inquiring how often the respondent felt a) full of pep, b) very nervous, c) down in the dumps, d) full of energy, e) downhearted and blue, f) worn out, g) happy, and h) tired. The response ranges
for the depression inventory were coded ordinally as: never (0), rarely (1), some of the
time (2), and most of the time (3). Questions a), d), and g) were reverse coded so that
answers indicating more pep, energy, or happiness were given lower values on the
depression scale. A greater number of questions answered with a score of three or four
indicated more frequent and extensive depression symptoms. Answers to the eight
questions were summed and averaged for a total possible continuous range of 0-1, with 1
indicating the highest level of depression, and 0 indicating no depression symptoms in the
week prior to the interview. Cronbach’s $\alpha = .80$ for the depression scale, indicating strong
internal reliability.

**Independent Variables**

Independent variables in this study were chosen based on prior repeat sexual
victimization and post-victimization distress research, and organized according to the
ecological framework. Variable selection was guided by the assumption that reduced
individual control, through financial, institutional, prejudicial, physical, or psychological
constraints, heightens the risk of sexual repeat victimization and post-victimization
distress. This assumption reflects intersectional theories of sexual victimization (Bograd,
one and research question two in the current research due to temporal issues. Research
question one considers predictors of sexual repeat victimization, and as a result,
independent variables must reflect the time period prior to the most recent victimization,
or represent ascribed characteristics, such as race/ethnicity or socioeconomic status.
Research question two examines mental health at the time of interview, and consequently
a broader selection of independent variables may be considered.
Childhood Development

Childhood development variables include factors from one's individual history that are predicted to influence likelihood of repeat victimization and long-term post-victimization mental health (See Tables 5.2 and 5.3). For research question one and two early pregnancies or giving birth prior to the age of 18, and childhood maltreatment are childhood development independent variables. In addition, for research question two on post-victimization mental health, rape victimization history is an independent variable. It should be noted that childhood development variables can act as risk or protective factors differentiating not only repeat rape victims from those victimized by one perpetrator only, but also non-victims from rape victims. Although research has associated childhood maltreatment and early parenthood with sexual victimization (Boyer & Fine, 1999; Sanders & Moore, 1999) and repeat sexual victimization (Schaaf & McCane, 1998; Wyatt et al., 1992), little work has been done on the relative strength of the relationships, so it is difficult to speculate whether these variables have an equivalent or varied influence differentiating non-victims from rape victims versus repeat victims from those victimized by one perpetrator only. One exception includes Merrill et al. (1999), who found that once childhood sexual assault was controlled for, childhood physical abuse did not independently influence likelihood of adult sexual assault, potentially indicating childhood maltreatment is a weaker predictor of repeat sexual assaults than a previous sexual assault.
### Table 5.2: Ecological Variables in Sexual Repeat Victimization Likelihood Model

<table>
<thead>
<tr>
<th>Variable Type</th>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control Variables</strong></td>
<td>Years since rape victimization by first perpetrator</td>
</tr>
<tr>
<td></td>
<td>Age at rape victimization by first perpetrator</td>
</tr>
<tr>
<td><strong>Childhood development</strong></td>
<td>Parenthood (reference: Parenthood at ≥ 18 years of age)</td>
</tr>
<tr>
<td></td>
<td>Parenthood at &lt; 18 years of age</td>
</tr>
<tr>
<td></td>
<td>No children</td>
</tr>
<tr>
<td><strong>First perpetrator</strong></td>
<td>Victim-offender relationship (reference: Family)</td>
</tr>
<tr>
<td><strong>victimization context</strong></td>
<td>Stranger</td>
</tr>
<tr>
<td></td>
<td>Acquaintance</td>
</tr>
<tr>
<td></td>
<td>Current or Ex-Partners</td>
</tr>
<tr>
<td></td>
<td>Hanging out prior to victimization</td>
</tr>
<tr>
<td></td>
<td>Drinking/drugs prior to victimization</td>
</tr>
<tr>
<td></td>
<td>Date prior to victimization</td>
</tr>
<tr>
<td></td>
<td>Fighting prior to victimization</td>
</tr>
<tr>
<td></td>
<td>Offender use of verbal or physical coercion</td>
</tr>
<tr>
<td></td>
<td>Whether victim got pregnant from rape</td>
</tr>
<tr>
<td><strong>Social power</strong></td>
<td>Race/ethnicity</td>
</tr>
<tr>
<td></td>
<td>Income</td>
</tr>
<tr>
<td></td>
<td>Education</td>
</tr>
<tr>
<td></td>
<td>Disclosure of victimization by first perpetrator to therapist</td>
</tr>
<tr>
<td></td>
<td>Disclosure of victimization by first perpetrator to informal sources of support</td>
</tr>
<tr>
<td></td>
<td>Degree of police involvement regarding victimization by first perpetrator</td>
</tr>
</tbody>
</table>

### Table 5.3: Ecological Variables in Post-victimization Mental Health Model

<table>
<thead>
<tr>
<th>Variable Type</th>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control Variables</strong></td>
<td>Years since rape victimization by first perpetrator</td>
</tr>
<tr>
<td><strong>Childhood development</strong></td>
<td>Rape by one offender versus multiple rape victimizations by separate offenders</td>
</tr>
<tr>
<td></td>
<td>Chronic disease or serious injury</td>
</tr>
<tr>
<td><strong>First perpetrator</strong></td>
<td>Age at rape victimization by first perpetrator</td>
</tr>
<tr>
<td><strong>victimization context</strong></td>
<td>Victim-offender relationship (reference: Family)</td>
</tr>
<tr>
<td></td>
<td>Stranger</td>
</tr>
<tr>
<td></td>
<td>Acquaintance</td>
</tr>
<tr>
<td></td>
<td>Current or Ex-Partners</td>
</tr>
<tr>
<td></td>
<td>Hanging out prior to victimization</td>
</tr>
<tr>
<td></td>
<td>Drinking/drugs prior to victimization</td>
</tr>
<tr>
<td></td>
<td>Date prior to victimization</td>
</tr>
<tr>
<td>Variable Type</td>
<td>Variable</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Social power</td>
<td>Fighting prior to victimization</td>
</tr>
<tr>
<td></td>
<td>Offender use of verbal or physical coercion</td>
</tr>
<tr>
<td></td>
<td>Whether victim got pregnant from rape</td>
</tr>
<tr>
<td></td>
<td>Whether victim needed time off from work or school post-assault</td>
</tr>
<tr>
<td></td>
<td>Race/ethnicity</td>
</tr>
<tr>
<td></td>
<td>Income</td>
</tr>
<tr>
<td></td>
<td>Education</td>
</tr>
<tr>
<td></td>
<td>Disclosure of victimization by first perpetrator to therapist</td>
</tr>
<tr>
<td></td>
<td>Disclosure of victimization by first perpetrator to informal sources of support</td>
</tr>
<tr>
<td></td>
<td>Degree of police involvement regarding victimization by first perpetrator</td>
</tr>
</tbody>
</table>

Early parenthood is determined by subtracting the age of each respondent’s oldest child from the age of the respondent at the time of interview. This is a categorical variable, including women who never had children (0), women who gave birth prior to 18 years of age (1), and women who became mothers at age 18 or over (2). For the regression, giving birth at 18 and over is the referent group, with giving birth prior to 18 years of age and never having children coded as dummy variables. Childhood maltreatment is measured with a twelve item scale, adopted from Straus’s Conflict Tactics Scale (Straus, Hamby, Boney-McCoy, & Sugarman, 1996), where respondents were asked whether a parent, step-parent, or guardian ever a) threw something at them, b) pushed, grabbed, or shoved them, c) pulled their hair, d) slapped or hit them, e) kicked or bit them, f) choked or attempted to drown them, g) hit them with some object, h) beat them up, i) threatened them with a gun, j) threatened them with a knife or other weapon, k) used a gun on them, or l) used a knife or other weapon on them beside a gun. For each item, respondents were coded as 1 if they had experienced that behavior and a 0 if not. Reliability among the twelve items Cronbach’s was strong, $\alpha = .79$. Responses for the
twelve childhood maltreatment measure were summed and averaged, resulting in a continuous measure that ranges from 0-1. Higher values indicate more experiences with childhood maltreatment.

Chronic and severe physical health problems were determined by two questions: "Have you ever sustained a serious injury, such as a spinal cord, neck or head injury that is disabling or interferes with your normal activities?" and "Do you have a chronic disease or health condition that is disabling or interferes with your normal activities?" Both questions had "yes" (1) or "no" (0) response options. The questions were collapsed into one measure, where an answer of "yes" (1) to one or both questions reflected a history of physical health problems, and an answer of "no" (0) to both questions indicated no history of physical health problems.

Context of Rape Victimization Variables

Independent variables measuring the context of the most recent rape victimization by the first or only offender include victim age, the pre-victimization context, coercion tactic used during the assault, the perpetrator-victim relationship, and pregnancy as a result of the rape for both the repeat victimization and mental health models (See Tables 5.2 and 5.3). Regarding the pre-victimization context, respondents were asked "Could you tell me what started or triggered this incident?" Answers included yes (1) or no (0) responses to four options: a) Nothing in particular or hanging out, b) Perpetrator and/or offender using substances, c) On a date or engaging in sexual activity, or d) Fighting or breaking up. Coercion tactic was determined by whether the perpetrator a) slapped, b) hit, c) kicked, d) bit, e) choked, f) attempted to drown, g) beat up, or h) hit the respondent with an object, and h) whether the perpetrator used a gun, knife, or other weapon. Threat
occurred if the perpetrator a) threatened to harm or kill the respondent or someone close
to them, or b) if the respondents believed someone close to them or themselves would be
seriously harmed or killed during the assault. Respondents answered yes (1) or no (0) to
each violence and threat question. Violence and threat of violence were collapsed into
one ordinal measure indicating whether the offender used verbal coercion (0), threats of
violence (1), or physical violence or a weapon (2). Pregnancy as the result of the first
sexual assault was measured by a “yes” (1) or “no” (0) answer. For the post-victimization
mental health model, respondent age at the time of the rape victimization by the first or
only offender is measured in years.

Perpetrator-victim relationship was identified by the respondent selecting whether
the perpetrator was a) a current spouse, b) an ex-spouse, c) a male live-in partner, d) a
female live-in partner, e) a relative, f) an acquaintance, or g) a stranger. Responses were
collapsed into four nominal categories including strangers (0), acquaintances, (1) current
or ex-partners, (2), or family members (3). For the regression, family was the referent
group, with strangers, acquaintances, current or ex-partners, and family members coded
as dummy variables.

Social Power

Social power variables include race/ethnicity, income, education, disclosure to a
therapist, disclosure to an informal source of support, and degree of engagement with the
criminal justice system for research questions one and two (See Tables 5.2 and 5.3). Race
and ethnicity were determined through yes (1) or no (0) responses to six response
options: a) White/Non-Hispanic, b) Black or African-American, c) Asian or Pacific
Islander, d) American Indian or Alaskan native, e) Mixed-race, and f) Hispanic. Due to
88% of respondents identifying as White/non-Latina and African-American, the variable was collapsed into a dichotomous measure, with Latina and women of color represented by 0, and non-Latina White women represented by 1.

The income measure inquired how many earnings the respondent accrued from all sources in 1995 before taxes. Although household rather than individual income is traditionally measured in economic research, the present study is primarily interested in the respondent herself, rather than household buying capability. Although the income measure reflects income at the time of interview, the Pew Charitable Trust finds that 70% of Americans born in the bottom quintile of family income remain below the middle as adults, reflecting a degree of economic stability over a lifetime (Urahn, Currier, Elliott, Wechsler, Wilson, & Colbert, 2012). Considering individual income is additionally advantageous when examining interpersonal violence, as the wage gap between men and women has been associated with higher rates of domestic violence (Aizer, 2010).

Responses include 10 options: less than $5,000 (1), $5,000-$10,000 (2), $10,000-$15,000 (3), $15,000-$20,000 (4), $20,000-$25,000 (5), $25,000-$35,000 (6), $35,000-$50,000 (7), $50,000-$80,000 (8), $80,000-$100,000 (9), or over $100,000 (10). Although these response options are not mutually exclusive, the options were read to respondents over the phone and respondents were instructed to stop the interviewer once they heard the category that applied. As a result, one could assume respondents interpreted the categories to be: less than $5,000 (1), $5,001-$10,000 (2), $10,001-$15,000 (3), $15,001-$20,000 (4), $20,001-$25,000 (5), $25,001-$35,000 (6), $35,001-$50,000 (7), $50,001-$80,000 (8), $80,001-$100,000 (9), or over $100,001 (10). Education level determined the highest level that the respondent completed, including seven categories ranging from
no schooling (1), first through eighth grade (2), some high school (3), high school graduate (4), some college (5), four year college degree (6), to postgraduate (7). Similar to income, responses were coded so that higher values reflected higher education levels.

A disclosure to a therapist about the rape victimization by the first or only offender is coded as “yes” (1) or “no” (0). Access to informal sources of support was indicated by whether, in response to the question "To whom did you talk to about this incident?", the respondent answered a) family, in-laws, b) friend/neighbor, c) minister/clergy/priest/rabbi, d) intimate partner, or e) a coworker, boss, employer. Respondents gave up to four answers to this question, and as a result, informal support was coded as an ordinal variable between one and four from “told no one” (0) to “told four sources of informal support” (4). Victim engagement of the criminal justice system was an ordinal variable with three response options, “no police report” (0), “police report” (1) and “charges filed” (2).

Control Variables

Control variables included years since the most recent or only rape victimization by the first or only offender, or the time between the interview and the victimization, ranging from 0 years to 97 years and age at primary rape victimization. Recency of sexual victimization is a commonly included control variable in sexual victimization research, as the length of time since a trauma influences memory information access (Higgins, 1989). Age at rape victimization was incorporated as a control variable in conjunction with the recency variable in the repeat rape victimization model analysis to account for variability in “exposure” time over a lifetime in which an individual may be sexually victimized.
Data Analysis

Prior to examining multivariate models, data were first assessed descriptively and relationships were considered at the bivariate level. Subsequently, the data were analyzed at the multivariate level to answer the first research question: 1) Which ecologically based factors predict respondents victimized by one perpetrator only versus repeat victims\(^2\) of sexual violence? A logit regression model was applied to research question one. The Hosmer and Lemeshow \(R^2\)-statistic was examined to determine the amount of variance in the dependent variable explained by the independent variables, and the sexual repeat victimization likelihood model’s level of explanatory power. The significance of each coefficient was interpreted, as well as the odds ratios for significant variables. All statistical significance tests were set at \(\alpha = .05\). An initial analysis of all variables in a linear regression indicated the average variance inflation factor (VIF) was 1.25, with the VIF minimum = 1.1 and the VIF maximum = 1.37. These VIF scores determined multicollinearity is not problematic (Bowerman & O’Connell, 1990). A VIF of 1 indicates no correlation between one predictor and other predictors. Generally, VIF scores greater than 4 necessitate additional investigation of the variables’ relationships, and VIF scores greater than 10 reflect serious multicollinearity concerns (Bowerman & O’Connell, 1990). With respect to the regression rule of thumb recommending a minimum of 10 observations per predictor (Harrell, 1984), and the high number of independent variables, models were run initially with all predictors, and then re-specified to only include variables significantly different among groups in the preliminary bivariate analysis.

\(^2\) Again, repeat victimization does not refer to the number of incidents but to the number of perpetrators, consistent with prior operationalizations of repeat victimization (Casey & Nurius, 2005).
analyses. The significance of individual coefficients as well as the overall fit of the model were consistent between models, and as a result the full models were considered.

Ordinary least squares (OLS) regression was used to investigate research question two, whether ecologically based factors in a model of long-term post-victimization mental health vary for respondents victimized by one perpetrator only and repeat victims of sexual violence. OLS regression was applied to the full sample of victims first and then separately for those victimized by one perpetrator and repeat victims. Significant independent and control variables were interpreted based on regression coefficients, and Adjusted $R^2$ determined the explanatory power of the ecological model for post-sexual victimization mental health.

**Missing Data Analysis**

For variables with missing data, multiple imputation was applied. Multiple imputation was selected due to the advantages of this technique adding random normal error to each imputed estimate, in contrast to single imputation or the expectation maximization algorithm (Graham, 2012). Specifically, a Bayesian procedure, the Markov-Chain Monte Carlo (MCMC) method imputed missing data based on the non-monotone, arbitrary patterns of the missing data. The MCMC method of multiple imputation is the most widely used multiple imputation strategy, due to its ability to handle almost any pattern of missing data and its computational efficiency (Allison, 2009). Although complete case analysis or listwise deletion is a traditional approach to missing data, listwise deletion can result in biased parameter estimates and a loss of power. Graham (2009) recommends against listwise deletion, even in data sets with minimal missing data or missing data that are not missing at random. According to
Allison (2009), no test is available to detect whether data are missing at random. However, the inclusion of auxiliary variables, or variables not intended for analysis but "helpful" to the imputation, in the multiple imputation can diminish the level of error that results from imputing data that are not missing at random (Graham, 2012). In the present study, a total of 62 variables were imputed, with an average of 1.92% missing data (See Table A-1), and 27 additional auxiliary variables are included as predictors in the multiple imputation procedure, which had no missing data. For each iteration and variable included in the multiple imputation model, a fully conditional specification method estimated a model with the other variables as predictors in order to impute missing data. After estimating predicted values, random draws were taken from the estimated error distribution for each linear regression. The estimation of random variation addresses the bias present in most imputation methods, where variance is underestimated (Allison, 2009). Although scholars previously suggested around five imputations were sufficient, more recent research estimates a minimum of twenty to forty imputations to obtain statistical power equivalent to full information maximum likelihood analyses (Graham, Olchowski, & Gilreath, 2007). The present analysis calculated missing values estimates across 200 iterations and 50 imputations. After generating the fifty imputed data sets, and analyzing the data, results were combined to obtain multiple imputation inference using Rubin’s rules (Rubin, 1987). Parameters were estimated through averaging the regression coefficients over the number of imputed data sets, or fifty. Standard Errors (SE) were calculated through first estimating the within imputation variance ($U$), or the average of the squared SE over $m$, or the number of imputations,

$$U = \Sigma SE^2 / m,$$
as well as the between imputation variance ($B$), or the sample variance of the regression coefficient ($P$) over the 50 imputed data sets,

$$B = \sigma^2_P.$$

**Selection Bias**

In addition to the challenges of incomplete cases, the current data presented another potential problem: censored observations on the dependent variable. A classic example of censored observations is the assessment of the relationship between income and voting preference, where the absence of non-voters in the sample misleads conclusions about income and voting behavior in the general population (Dubin & Rivers, 1989). In the present research, a sample comprising women sexually victimized by one or multiple perpetrators excludes non-victims, despite the possibility that factors differentiating non-victimization from rape victimization may relate to those differentiating repeat victimization from victimization by one perpetrator only. For example, alcohol consumption has been separately documented as a risk factor for both sexual victimization and sexual repeat victimization (Abbey, 2002; Greene & Navarro, 1998; Kaysen, Neighbors, Martell, Fossos, & Larimer, 2006; Testa et al., 2010). Likewise, some researchers assessing risky sexual behavior observe an association with both sexual victimization and sexual repeat victimization (Champion, Foley, Durant, Hensberry, Altman, & Wolfson, 2004; Fargo, 2009; Himelein, 1995; Krahé et al., 1999). However, a recent examination of predictors of two sexual victimization states: non-victim or victim and single or repeat victim, indicated that the two states were unrelated (Fisher et al., 2009). Heckman (1974) proposed a method for testing and addressing selection bias in linear regression, and Dubin and Rivers (1989) extended this procedure.
to logit and probit models. In the current research, a logit regression model predicted repeat victimization likelihood \( \gamma_{1i} \) based on multiple predictors, such as childhood maltreatment and social support (denoted by \( x_{1i} \)), with some variance based on unknown factors (\( u_{1i} \)).

\[
\gamma_{1i} = \beta_1 x_{1i} + u_{1i}
\]

However, a sample of victims of sexual assault may be censored, should the likelihood of repeat victimization be found to be dependent on the likelihood of ever being victimized. As a result, Heckman (1974) recommends first modeling a "selection equation," to determine if the likelihood of selection into the population of interest, in this case survivors of rape, relates to the likelihood of being selected into the outcome of interest in the “substantial equation,” or repeat rape victimization. A selection equation differentiating likelihood of non-victimization from victimization (\( \gamma_{2i} \)) may share predictors (\( x_{2i} \)) in common with those of the substantial equation, such as demographic variables, and must include additional factors unique to the selection equation.

\[
\gamma_{2i} = \beta_2 x_{2i} + u_{2i}
\]

When \( \gamma_{2i} \) is greater than zero, victimization has occurred and the number of victimizations (\( \gamma_{1i} \)) may be observed, whereas a \( \gamma_{2i} \) equaling zero indicates non-victimization and a censored number of victimizations (\( \gamma_{1i} \)). In this case, a control variable based on the residuals of the selection equation, the Inverse Mills Ratio, was added as a factor in the substantial equation predicting repeat victimization in order to test and if necessary, correct for the unmeasured influence of any victimization. Lastly, although the Heckman correction procedure provides unbiased parameter estimates,
standard errors are biased by heteroscedasticity. As a result, the corrected standard errors are calculated through a Weighted Least Squares regression (Smits, 2003).

In the present study, two selection models were specified for each substantial equation. Each selection model may share predictors with those of the substantial equation, but must have at least one unique predictor. For the sexual repeat victimization likelihood substantial equation, the selection model into a sample of rape victims includes childhood maltreatment, domestic violence, education, depression, and substance misuse (See Table A-4). Childhood maltreatment has been associated with sexual victimization (Kimerling et al., 2007), and a history of domestic violence was included due to the high risk of sexual victimization in violent relationships (Frieze & Browne, 1989). Likewise, education level was incorporated based on the high risk of sexual violence individuals face when attending institutions of higher education (Fisher, Cullen, & Turner, 2000). Measures of depression and substance misuse at the time of interview were predictors because of their potential relationship with pre-victimization mental health, and subsequent association with victimization. Heritability of major depression is estimated to be 34%, with the remaining associations explained by environmental factors (Nes, Czajkowski, Røysamb, Ørstavik, Tambs, & Reichborn-Kjennerud, 2012).

For the sexual repeat victimization likelihood substantial equation the Heckman selection equation analyses indicated that depression (AOR=2.15, se = 0.11, p = 0.001), substance use (AOR=1.68, se = 0.15, p = 0.001), education level (AOR=1.08, se = 0.03, p = 0.01), experiencing childhood maltreatment (AOR=28.03, se = 0.20, p = 0.001) and domestic violence (AOR=1.30, se = 0.07, p = 0.001) all significantly increased the odds of becoming a victim of sexual victimization rather than a non-victim.
For the post-victimization mental health substantial equation, the selection model into a sample of victims included childhood maltreatment, domestic violence, and education (See Table B-9). Initial analyses conducted as a part of the Heckman selection equation indicated that education (AOR=1.08, se = 0.03, \( p = 0.001 \)), experiencing childhood maltreatment (AOR= 35.16, se = 0.20, \( p = 0.001 \)), and domestic violence (AOR= 3.67, se = 0.07, \( p = 0.001 \)), all significantly increased the odds of experiencing any sexual victimization versus being a non-victim. Each selection equation was used to formulate the Inverse Mills Ratio, or lambda, for each substantial equation. A significant coefficient for any of the lambdas in the regression equations indicate a selection effect, or that the unobservable variables contributing to selection into a sample of rape victims were significantly correlated with selection into a sample of repeat rape victims.

**Summary**

A large national random-digit-dialing sample was assessed to answer the following research questions: 1) Which ecologically based factors predict respondents victimized by one perpetrator only versus repeat victims of sexual violence?, and 2) Which ecologically based factors predict depression in respondents victimized by one perpetrator only versus repeat victims of sexual violence? Relationships among ecological variables, repeat victimization, and depression were first descriptively assessed on a bivariate level. Logistic regression addressed which factors alternately predict rape by one offender versus multiple rape victimizations by separate offenders. Predictors of long-term post-rape depression were considered first among the full sample of victims, and then separately for women victimized by one offender versus women repeat victimized by multiple offenders using OLS regression.
CHAPTER VI

RESULTS

Descriptive and bivariate statistics of the sample are examined first. Bivariate and multivariate analyses are then discussed for each research question. All reported statistics describe the data post-imputation analysis.

Sample Description

The sample is described through comparing respondents victimized by one perpetrator only and repeat victims of rape by separate perpetrators on demographics and victimization context variables (see Table 6.1).

Table 6.1: Descriptive Statistics for Sample and Bivariate Comparisons between One-Perpetrator Victims and Repeat Rape Victims (n=1381)

<table>
<thead>
<tr>
<th>Control variables</th>
<th>One-Perpetrator Victims (n=1241) Mean (SD)/ n(%)</th>
<th>Repeat Victims (n=140) Mean (SD)/ n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Years since victimization by first perpetrator***</td>
<td>20.99(13.48) 26.24(13.34)</td>
</tr>
<tr>
<td></td>
<td>Age at rape victimization by first perpetrator***</td>
<td>18.39(9.11) 14.20(8.67)</td>
</tr>
<tr>
<td></td>
<td>Parenthood</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No children</td>
<td>311(25.1%) 28(20%)</td>
</tr>
<tr>
<td></td>
<td>Parenthood at &lt; 18 years of age</td>
<td>107(8.6%) 16(11.4%)</td>
</tr>
<tr>
<td></td>
<td>Parenthood at ≥ 18 years of age</td>
<td>823(66.3%) 96(68.6%)</td>
</tr>
<tr>
<td></td>
<td>Childhood maltreatment***</td>
<td>0.16(0.20) 0.26(0.24)</td>
</tr>
<tr>
<td></td>
<td>Depression***</td>
<td>0.38(0.19) 0.44(0.21)</td>
</tr>
<tr>
<td></td>
<td>Domestic violence history***</td>
<td>0.53(0.50) 0.88(0.33)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>First perpetrator victimization context</th>
<th>One-Perpetrator Victims (n=1241) Mean (SD)/ n(%)</th>
<th>Repeat Victims (n=140) Mean (SD)/ n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stranger</td>
<td>188(15.1%) 10(7.1%)</td>
<td></td>
</tr>
<tr>
<td>Acquaintance</td>
<td>572(46.1%) 37(26.4%)</td>
<td></td>
</tr>
<tr>
<td>Partner</td>
<td>249(20.1%) 32(22.9%)</td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>232(18.7%) 61(43.6%)</td>
<td></td>
</tr>
<tr>
<td>Hanging out prior to</td>
<td>0.11(0.42) 0.23(0.31)</td>
<td></td>
</tr>
<tr>
<td>Victimization ***</td>
<td>One-Perpetrator Victims (n=1241) Mean (SD)/n(%)</td>
<td>Repeat Victims (n=140) Mean (SD)/n(%)</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Drinking/drugs prior to victimization</td>
<td>0.22(0.40)</td>
<td>0.20(0.38)</td>
</tr>
<tr>
<td>Date prior to victimization</td>
<td>0.16(0.36)</td>
<td>0.11(0.31)</td>
</tr>
<tr>
<td>Fighting prior to victimization</td>
<td>0.19(0.38)</td>
<td>0.16(0.36)</td>
</tr>
<tr>
<td>Offender use of verbal or physical coercion</td>
<td>0.95(0.91)</td>
<td>1.15(0.86)</td>
</tr>
<tr>
<td>Whether victim got pregnant from the assault</td>
<td>0.05(0.22)</td>
<td>0.01(0.08)</td>
</tr>
<tr>
<td>Education</td>
<td>4.81(1.10)</td>
<td>4.80(1.13)</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td>0.78(0.42)</td>
<td>0.78(0.42)</td>
</tr>
<tr>
<td>Income</td>
<td>0.91(1.25)</td>
<td>0.75(1.04)</td>
</tr>
<tr>
<td>Disclosure of victimization by first perpetrator to therapist</td>
<td>0.30(0.46)</td>
<td>0.38(0.49)</td>
</tr>
<tr>
<td>Disclosure of victimization by first perpetrator to informal sources of support</td>
<td>0.79(0.73)</td>
<td>0.78(0.68)</td>
</tr>
<tr>
<td>Degree of police involvement regarding victimization by first perpetrator</td>
<td>0.29(0.71)</td>
<td>0.25(0.66)</td>
</tr>
</tbody>
</table>

Notes: † ρ ≤ .10, * ρ ≤ .05, ** ρ ≤ .01, *** ρ ≤ .001.

### Demographic Variables

Comparison between women victimized by one perpetrator and repeat victims reveal multiple demographic differences. Childhood maltreatment varied among the victimization groups $F(1,1379) = 28.91, p = .001$. Due to significant differences in population variances, the Games-Howell post-hoc analysis procedure was selected, finding respondents victimized by one perpetrator (M=0.16, SD=0.20) were significantly less likely than repeat victims (M=0.26, SD=0.24) to report childhood maltreatment.

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3 Again, repeat victimization does not refer to the number of rape incidents but to the number of perpetrators, consistent with prior operationalizations of repeat victimization (Casey & Nurius, 2005).
Depression scale scores also differed, $F(1, 1379) = 12.57, p = .001$, such that respondents sexually victimized by one perpetrator ($M=0.38, SD=0.19$) scored lower values than women victimized multiple times by separate offenders ($M=0.44, SD=0.21$) on a depression measure. Giving birth before the age of 18 or never having children did not significantly differ between those sexually victimized by one perpetrator and those victimized multiple times by different perpetrators, $\chi^2(2)=3.03, p = .25$.

A history of domestic violence also related to sexual victimization, $F(1, 1379) = 63.87, p = .000$. Due to significant differences in population variances, the Games-Howell post-hoc analysis procedure was selected, finding that that women victimized by one perpetrator ($M=0.53, SD=0.50$) were less likely than women victimized multiple times by separate perpetrators ($M=0.88, SD=0.33$) to report experiencing domestic violence. Race/ethnicity, $F(1, 1379) = 0.44, p = .52$, education, $F(1, 1378) = 0.04, p = .85$, and income, $F(1, 1379) = 2.33, p = .20$, were unconnected to victimization experience.

**Rape Victimization Variables**

All control variables varied significantly between respondents victimized by one perpetrator and those raped multiple times by distinct perpetrators, including years since rape victimization by the first or only offender, and age at rape victimization by the first or only offender. Repeat victims$^4$ were sexually victimized earlier in life ($M=14.20, SD=8.67$) than women victimized by one perpetrator only ($M=18.31, SD=9.11$), $F(1, 1378) = 25.74, p = .000$. Similarly, repeat victims’ victimization by the first offender

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$^4$ Again, repeat victimization does not refer to the number of rape incidents but to the number of perpetrators, consistent with prior operationalizations of repeat victimization (Casey & Nurius, 2005).
occurred longer prior to the interview (M=26.24, SD=13.34) than the victimization of one-perpetrator victims (M=20.99, SD=13.48), F(1, 1378) =15.84, p = .000.

Within the context of victimization by the first or only offender, the offender was significantly more likely to be a family member and less likely to be a stranger or acquaintance among repeat victims than those victimized by one perpetrator only, χ²(3)=53.92, p = .000. Precipitating circumstances were more likely to be described as “nothing in particular” among women victimized multiple times by separate offenders (M=0.23, SD=0.31) than by those raped by one offender (M=0.11, SD=0.42), F(1, 1378) =18.25, p = .000. Reports of drinking or taking drugs, F(1, 1378) =0.96, p = .65, being on a date or engaging in sexual activity, F(1, 1378) =2.15, p = .17, and fighting prior to the rape victimization by the first or only perpetrator, F(1, 1378) =1.09, p = .40, did not vary based on repeat victimization history. Repeat victims reported the use of force or a weapon during their first victimization (M=1.15, SD=0.86) more frequently than did one-perpetrator victims (M=0.95, SD=0.91), F(1, 1378) =6.94, p = .01. Unexpectedly, repeat victims were also more likely to become pregnant after the rape perpetrated by the first offender (M=0.05, SD=0.22) than women raped by one perpetrator only (M=0.01, SD=0.08), F(1, 1378) =5.62, p = .02.

The difference in disclosures to therapists regarding the rape victimization by the first or only perpetrator between one-perpetrator victims (M=0.30, SD=0.46) and repeat victims (M=0.38, SD=0.49) broached significance at p = .06, F(1, 1378) =3.56, to the effect that women victimized multiple times by separate perpetrators were marginally more likely to disclose to a therapist than those raped by one perpetrator only. Disclosures to informal sources of support, F(1, 1378) =0.59, p = .84, and involvement
of the criminal justice system, $F(1, 1378) =0.44, p = .52$, were unrelated to victimization experience.

**Research Question One**

A logistic regression model addressed research question 1) Which ecologically based factors in a model of sexual repeat victimization predict respondents victimized by one perpetrator only versus repeat victims of sexual violence? Findings indicated moderate support for the included ecological variables, with the Hosmer and Lemeshow finding $R^2 = 0.17$ and the overall model significant $\chi^2 (19) = 150.36, p = .000$ (see Table A-2).

In the substantial equation model, two control variables assessed the influence of the time gap between the phone interview and rape victimization experience. The recency variable did not significantly influence the odds of repeat victimization\(^5\), but an older age during the rape victimization decreased the odds of future victimization by a different perpetrator by 4\% (AOR=0.96, se = 0.02, $p = .01$).

Within the childhood development level, neither having a child before the age of 18 nor experiencing childhood maltreatment predicted repeat rape victimization by different offenders. The lack of influence of childhood maltreatment is notable, as the experience of childhood maltreatment was found to increase the odds of any victimization by 2,703\% in the Heckman selection model differentiating the odds of non-victimization versus any rape victimization.

\(^5\) Again, repeat victimization does not refer to the number of rape incidents but to the number of perpetrators, consistent with prior operationalizations of repeat victimization (Casey & Nurius, 2005).
In the context of victimization by the first or only perpetrator category, victim-offender relationship was found to significantly predict the odds of repeat rape victimization by distinct offenders. Rape victimization by a stranger decreased the odds of repeat victimization by 73% (AOR=0.27, se = 0.43, \( p = .002 \)). Likewise, rape victimization by an acquaintance decreased the odds of repeat victimization by distinct offenders by 46% (AOR=0.54, se = 0.30, \( p = 0.04 \)), in comparison with referent group of first time victimization by a family member. Victimization by current or ex-partners was unrelated to repeat rape victimization by a different perpetrator.

The pre-victimization context also significantly related to repeat rape victimization by different offenders, such that “hanging out” prior to the rape victimization increased the odds of repeat victimization by a different offender by 156% (AOR=2.56, se = 0.41, \( p = 0.02 \)). Alternately, drinking or doing drugs, being on a date or engaging in sexual activity, and fighting prior to the rape victimization were unrelated to repeat rape victimization. These findings contradict expectations that factors that may increase victim blame would predict vulnerability to repeat victimization. Follow up investigation did not indicate that the influence of “doing nothing” on the odds of repeat victimization was driven by its correlation with other significant predictors of repeat victimizations, such as victim-offender relationship, pregnancy as a result of the victimization, or age at victimization by the first or only offender. Through examining standardized residuals in Chi-Square tests, those who were just “hanging out” were not significantly more likely to become pregnant after victimization by the first or only offender (\( z = 1.2 \)), or to be victimized by strangers (\( z = 0.4 \)), acquaintances (\( z = -0.4 \)), partners (\( z = -1.5 \)), or family (\( z = -0.1 \)) (See Table A-3). Likewise, those who reported
just "hanging out" prior to the rape victimization versus those who were using substances, on a date or engaging in sexual activity, or fighting with the offender did not significantly vary regarding age at time of the victimization, $F(1, 1364) = 0.96, p = .59$.

Both of the last two variables in the context of the victimization category significantly related to repeat rape victimization by distinct offenders. As offender coercion tactics transitioned from verbal coercion to physical violence or use of a weapon, the odds of repeat victimization increased by 32% at (AOR=$1.32$, se = 0.12, $p = 0.02$). Unexpectedly, if the victim became pregnant as a result of the assault, the odds of repeat rape victimization by different offenders decreased by 90% (AOR=$0.10$, se = 1.03, $p = 0.02$). Further examination to determine if pregnancy outcome related to repeat victimization was unsuccessful as only respondents victimized by one perpetrator only answered the subsequent question regarding whether the pregnancy resulted in a live birth. Within the social power level, race/ethnicity, income, victim disclosures, and engagement with the criminal justice system were unrelated to the odds of repeat rape victimization by distinct offenders. Lastly, lambda was significant (AOR=$0.84$, se = 0.04, $p = 0.000$), indicating that the variables contributing to selection into a sample of rape victims are significantly associated with those influencing selection into a sample of repeat rape victims.

**Research Question Two**

**Post-Victimization Mental Health among All Rape Victims: Bivariate Relationships**

Relationships between predictor variables and post-victimization mental health are first assessed at the bivariate level for all victims. Recency of the rape victimization by the first or only offender, $\beta = .00$, $t(1379) = 0.86$, $p = 0.41$, and age at the rape
victimization by the first or only offender, $\beta = .00$, $t(1379) = 0.00$, $p = 0.80$, were unrelated to depression at the time of interview. A history of chronic health problems, $\beta = .21$, $t(1379) = 7.81$, $p = 0.000$, significantly predicted more severe depression scores. Experiencing multiple rape victimizations by separate offenders, $\beta = .10$, $t(1379) = 3.54$, $p = 0.000$, also significantly and positively related to depression symptoms on a bivariate level.

Within the context of the rape victimization by the first or only perpetrator, the use of physical violence as a coercion tactic, $\beta = .03$, $t(1379) = 1.30$, $p = 0.20$, and pregnancy as a result of rape victimization, $\beta = -.03$, $t(1379) = -1.13$, $p = 0.26$, were unrelated to depression at the time of interview for all victims. Victim-offender relationship, $F(3,1377) = 2.96$, $p = 0.03$, significantly related to depression symptoms at interview. Due to adherence to the assumption of homogeneity of variance, a Tukey post-hoc test was selected. Post-hoc analysis revealed the mean depression score for those victimized by partners ($M=.40$, $SD=.21$) or family ($M=.40$, $SD=.40$), were borderline significantly different at $p = .08$ than those victimized by acquaintances ($M=.37$, $SD=.18$). Hanging out, $\beta = .01$, $t(1379) = -0.60$, $p = 0.55$, using substances, $\beta = .02$, $t(1379) = 0.45$, $p = 0.65$, being on a date or engaging in sexual activity, $\beta = .02$, $t(1379) = -1.29$, $p = 0.20$, or fighting with the perpetrator, $\beta = .02$, $t(1379) = 0.26$, $p = 0.79$, prior to the rape victimization by the first or only offender were unrelated to depression on a bivariate level. Time off from school and work after rape victimization by the first or only perpetrator significantly predicted depression, $\beta = .11$, $t(1379) = 4.07$, $p = .000$.

Race/ethnicity, $\beta = .05$, $t(1379) = 2.02$, $p = 0.05$, and income, $\beta = -.13$,
$t(1379) = -4.98, p = 0.000$, were both associated with depression at the time of interview, such that being white and having a higher income were protective against depression. Likewise, higher education levels were protective against depression, $\beta = -.21, t(1379) = -7.80, p = 0.000$. Therapist disclosure, $\beta = .03, t(1379) = 1.17, p = 0.24$, and victim engagement of the criminal justice system, $\beta = .01, t(1379) = 0.55, p = 0.58$, were not significantly linked to depression at the time of interview for the full sample of rape victims on a bivariate level.

**Post-Victimization Mental Health among Respondents Sexually Victimized by One Perpetrator Only: Bivariate Relationships**

Among respondents victimized by one offender only, recency of the rape victimization by that offender, $\beta = .01, t(1153) = 0.49, p = 0.63$, and age at rape victimization, $\beta = .00, t(1153) = 0.77, p = 0.44$, were unrelated to post-victimization mental health. A history of health problems, $\beta = .18, t(1153) = 6.43, p = 0.000$, predicted more severe depression scores among respondents sexually victimized by one offender only on a bivariate level.

Within the context of the rape victimization, the use of physical violence as a coercion tactic, $\beta = -.02, t(1153) = 0.55, p = 0.58$, and pregnancy, $\beta = -.03, t(1153) = -1.14, p = 0.25$, did not influence depression. Victim-offender relationship, $F(3, 1237) = 2.39, p = .07$, only marginally related to depression at the time of interview among women raped by one offender at $p = .07$. Hanging out, $\beta = .02, t(1153) = 0.61, p = 0.55$, using substances, $\beta = .02, t(1153) = 0.20, p = 0.84$, being on a date or engaging in sexual activity, $\beta = .02, t(1153) = -0.75, p = 0.46$, and fighting with the perpetrator, $\beta = .02, t(1153) = -0.10, p = 0.93$, prior to the rape victimization were unrelated to depression
for women sexually victimized by one offender only. Time off from school and work after the rape victimization significantly predicted depression, $\beta = .11$, $t(1153) = 3.73$, $p = .000$, on a bivariate level.

In contrast to bivariate findings for all victims, race/ethnicity, $\beta = .03$, $t(1153) = 0.91$, $p = 0.37$, was unrelated to depression scores for women sexually victimized by one offender only. A greater income level was protective against depression, $\beta = -.13$, $t(1153) = -4.77$, $p = 0.000$, similar to education level $\beta = -.20$, $t(1153) = -7.15$, $p = 0.000$. Therapist disclosure, $\beta = .01$, $t(1153) = 0.46$, $p = 0.65$, and victim engagement of the criminal justice system, $\beta = .02$, $t(1153) = 0.84$, $p = 0.41$, were not significantly linked to depression at the time of interview for respondents sexually victimized by one perpetrator only on a bivariate level.

Post-Victimization Mental Health among Respondents Sexually Victimized Multiple Times by Separate Offenders: Bivariate Relationships

Among respondents sexually victimized by multiple offenders over time, recency of the rape victimization by the first offender, $\beta = .00$, $t(138) = -0.03$, $p = 0.85$, and age at victimization, $\beta = .00$, $t(138) = -0.77$, $p = 0.44$, were unrelated to long-term post-victimization mental health. Consistent with one-perpetrator victims, a history of health problems, $\beta = .36$, $t(138) = 4.51$, $p = 0.000$, significantly predicted depression at the time of interview for respondents sexually victimized multiple times by distinct offenders.

Within the context of the rape victimization by the first offender, the use of physical violence as a coercion tactic, $\beta = 0.14$, $t(138) = 1.61$, $p = 0.11$, and pregnancy were unconnected to depression for women sexually victimized by separate perpetrators over time, $\beta = 0.13$, $t(138) = 1.49$, $p = 0.14$. Victim-offender relationship, $F(3, 136) =$
0.21, \( p = .89 \), did not relate to depression at the time of interview among women repeat victimized by separate offenders. Hanging out, \( \beta = .04, t(138) = -0.76, p = 0.45 \), using substances, \( \beta = .05, t(138) = 1.08, p = 0.28 \), being on a date or engaging in sexual activity, \( \beta = .06, t(138) = -1.62, p = 0.11 \), and fighting with the perpetrator, \( \beta = .05, t(138) = 1.40, p = 0.16 \), prior to the rape victimization were unrelated to depression on a bivariate level for women repeat victimized by separate perpetrators. Although time off from school and work after victimization significantly predicted depression for one-perpetrator rape victims, this relationship was not significant among respondents repeat victimized by different offenders, \( \beta = 0.14, t(138) = 1.61, p = 0.11 \).

In contrast to findings for the one-perpetrator victimization sample, being white protected against depression, \( \beta = 0.25, t(138) = 3.03, p = 0.003 \), and income, \( \beta = -0.10, t(138) = -1.14, p = 0.30 \), was not associated with depression for women repeat victimized by distinct offenders. Consistent with findings among one-perpetrator rape victims, higher education levels were protective against depression, \( \beta = -0.26, t(138) = -3.17, p = 0.002 \) for repeat victims. Therapist disclosure, \( \beta = 0.13, t(138) = 1.55, p = 0.12 \), and victim engagement of the criminal justice system, \( \beta = -0.04, t(138) = -0.51, p = 0.61 \), were not significantly associated with depression at the time of interview for respondents repeat sexually victimized by different perpetrators on a bivariate level.

Multivariate linear regression assesses research question 2) Which ecologically based factors in a model of long-term post-victimization mental health predict depression in respondents victimized by one perpetrator only versus repeat victims\(^6\) of sexual

\(^6\) Again, repeat victimization does not refer to the number of rape incidents but to the number of perpetrators, consistent with prior operationalizations of repeat victimization (Casey & Nurius, 2005).
violence? OLS examines the relationships between each factor in long-term depression while controlling for the influence of all other indicators. A full model including both respondents victimized by one perpetrator only and repeat victims of rape by separate perpetrators was assessed first, and then respondents victimized by one perpetrator and repeat victims were modeled separately to examine the relationships between ecological predictors and depression (See Table A-2).

Post-Victimization Mental Health among All Rape Victims: Multivariate Relationships

In the substantial equation assessing long-term mental health outcomes among all victims, continuous and ordinal variables were entered collectively in the first step and victim-offender relationship was entered in the second step. The first step explained a moderate amount of variance (Adjusted $R^2 = 0.11$, $F(18,1346) = 9.85, p = .000$). Due to the lack of impact on victim-offender relationship, the final model was similar to the model in the first step (Adjusted $R^2 = 0.11$, $F(21,1343) = 8.71, p = .000$). In the second step, the control variable recency was not significantly related to long-term depression, $\beta = .00$, $t(1362) = -0.07$, $p = .95$. Among childhood development variables, both repeat rape victimization by separate offenders, $\beta = .06$, $t(1362) = 2.03$, $p = .04$, and history of health problems were significantly related to depression, $\beta = .17$, $t(1362) = 6.42$, $p = .000$, consistent with bivariate findings.

In the context of the victimization by the first or only perpetrator category, pregnancy as a result of rape victimization protected against later depression symptoms, $\beta = -.06$, $t(1362) = -2.39$, $p = .02$, in contrast to bivariate findings which documented no relationship. Taking time off from school and/or work predicted greater depression, $\beta =$
.10, $t(1362) = 3.43, p = .001$. Diverging again from non-significant bivariate findings, within the social power level, both income, $\beta = -.07, t(1362) = -2.08, p = .04$, and education, $\beta = -.18, t(1362) = -6.51, p = .000$, were protective against depression. Age at victimization by the first or only offender, interaction between the victim and offender prior to the rape victimization, and post-victimization support seeking were unrelated to depression. Lambda was significantly related to depression, $\beta = -.11, t(1362) = -4.17, p = .000$, indicating that the variables contributing to selection into a sample of rape victims are significantly correlated with the variables associated with depression levels in the full sample. Differences between bivariate and multivariate models suggest that some predictors may act as suppressor variables, leading to underestimated relationships when investigated on the bivariate level. Subsequent regression analyses model long-term depression outcome separately for respondents victimized by one perpetrator only versus repeat victims of rape by separate perpetrators, revealing variations in predictors of depression.

**Post-Victimization Mental Health for Respondents Sexually Victimized by One Perpetrator Only: Multivariate Relationships**

Among respondents sexually victimized by one perpetrator, the first step of the model explained a small amount of variance (Adjusted $R^2 = 0.09, F(17,1208) = 8.15, p = .000$). Just as in the full model of all victims, victim-offender relationship did not influence depression for one-perpetrator rape victims, leaving the final model similar to that in step one, (Adjusted $R^2 = 0.09, F(20,1205) = 7.12, p = .000$).

Significant predictors in the final step of the one-perpetrator rape victims’ model were consistent with those found in the full model examining all victims. Among
childhood development variables only a history of health problems were significantly related to greater depression at the time of interview, $\beta = .15, t(1223) = 5.28, p = 0.000$.

In the context of the rape victimization category, pregnancy as a result of rape victimization was negatively associated with depression for one-perpetrator rape victims, $\beta = -.07, t(1223) = -2.54, p = .01$. The use of physical violence as a coercion tactic was marginally significantly predictive of depression symptoms at $p = .10, \beta = -.05, t(1223) = -1.62$. Taking time off from school and/or work predicted greater depression, $\beta = .11, t(1223) = 3.35, p = .001$, among respondents victimized by one perpetrator only. Within the social power level, both education, $\beta = -.17, t(1223) = -5.59, p = .000$, and income, $\beta = -.08, t(1223) = -2.37, p = .02$, were protective against depression. Age at sexual victimization, pre-victimization activities, and post-victimization support seeking were unrelated to depression for respondents victimized by one perpetrator only. Lambda was significantly related to depression, $\beta = -.12, t(1223) = -3.97, p = .000$, indicating a selection effect among a sample of women victimized by one perpetrator only.

**Post-Victimization Mental Health for Respondents Sexually Victimized Multiple Times by Separate Offenders: Multivariate Relationships**

Among repeat victims of rape by separate offenders, several of the effects found in the full model and one-perpetrator rape victim models disappeared, and several unique effects emerged. Similar to the models for all victims and one-perpetrator rape victims, step one explained most of the variance in the repeat victim model, (Adjusted $R^2 = 0.23$, 

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Footnote: 7 Again, repeat victimization does not refer to the number of rape incidents but to the number of perpetrators, consistent with prior operationalizations of repeat victimization (Casey & Nurius, 2005).
$F(17,121) = 3.44, p = .000$), varying only somewhat from the final model (Adjusted $R^2 = 0.27, F(20,118) = 3.46, p = .000$).

The final step of the model found a history of health problems were significantly related to depression, $\beta = .37, t(136) = 4.27, p = .000$, for repeat victims. Coefficient comparison tests indicate a significant difference based on repeat victimization history regarding the influence of chronic health problems on depression, $t(1362) = 2.16, p = .03$, such that a stronger effect is found among repeat victims. In the context of the rape victimization level, doing nothing prior to the victimization protected against depression at the time of interview, $\beta = -0.22, t(136) = -2.06, p = 0.04$, for women victimized by multiple perpetrators over time. In addition, having the first offender be an acquaintance rather than a family member was predictive of long-term depression, $\beta = .26, t(136) = 2.70, p = 0.01$, and an offender that was a partner rather than a family member predicted greater depression at $p = .09, \beta = .17, t(136) = 1.68$. This borderline relationship may reflect a longer average recovery period between victimization by family members and time of interview than those by acquaintance or partners, although recency of was not significant in the multivariate model. Follow up ANOVA analyses on the relationship between recency of victimization and victim-offender relationship finds the average number of years since the victimization significantly varies, $F(3, 136) = 3.38, p = .02$. Due to the assumption of homogeneity of variances being violated, Games-Howell post-hoc tests were conducted. Recency of victimization by first offenders who were family members ($M=29.84, SD=13.25$) was significantly greater than that by acquaintances ($M=22.0, SD=11.94$), and borderline greater than that by strangers at $p = .08$. 
In the social power category education, $\beta = -.25, t(136) = -2.83, p = 0.005$, and police engagement, $\beta = -.17, t(136) = -2.00, p = 0.05$, were protective against negative mental health outcome among those repeat victimized by multiple perpetrators over time. Coefficient comparison tests reveal no significant difference in the influence of education on depression between one-perpetrator victims and repeat victims, $t(1362) = -1.14, p = .26$. Being a woman of color increased long-term depression symptoms, $\beta = -.21, t(136) = -2.62, p = 0.009$, for repeat victims of rape by separate offenders. Lambda was significantly related to depression, $\beta = -.16, t(136) = -1.98, p = .05$, indicating a selection effect in the sample of repeat victims of rape by distinct offenders.

**Summary**

The current research contributes to the body of literature on sexual repeat victimization and post-victimization trauma through employing models integrating ecological individual, situational, and sociocultural variables in a national probability sample. Multivariate logit regression finds that repeat sexual victimization is more likely in respondents when victimization by the first or only offender occurs early in life and is perpetrated by family members with greater physical force in ambiguous pre-victimization contexts. In addition, unique risk factors for long-term depression in respondents victimized by one perpetrator only versus repeat victims of rape by separate perpetrators are identified. Multivariate OLS regression indicates in a full model of rape victims that a history of health problems, sexual repeat victimization, and taking time off from work or school after the victimization by the first or only offender predicted greater depression. Higher education, income, and pregnancy as a result of the victimization by the first or only offender were protective against long-term depression symptoms.
Findings in a depression model among women sexually victimized by one perpetrator only determine similar risk and protective factors as those in the full model of all victims, with the addition of physical violence as a coercion tactic marginally protecting against depression at \( p < .10 \). Risk and protective factors in the multivariate model of long-term depression symptoms for repeat victims of rape by separate offenders diverge from those of the full and one-perpetrator rape victim models. Among repeat rape victims, greater quantity of informal support after the victimization by the first offender predicted greater depression at the time of interview. Rape by an acquaintance rather than a family member predicted depression symptoms, and rape by a current or ex-partner was marginally associated with depression symptoms at a \( p < .10 \) level. A pre-victimization context of "doing nothing" was protective against depression at the time of interview for respondents repeat victimized by different perpetrators. Lastly, being white, having higher education levels, and police engagement were protective against depression for repeat rape victims. These results are considered with respect to extant research findings and policy implications in Chapter 7.
CHAPTER VII
DISCUSSION

Research Question One

Findings in the current study suggest vulnerability to repeat victimization increases when rape victimization occurs at a younger age and is perpetrated by family members through physical coercion with little pre-victimization warning. Results within each ecological category are considered with respect to previous research.

Control Variables

Age at victimization by the first or only perpetrator was significantly younger among repeat victims of rape than respondents victimized by one perpetrator only in both bivariate and multivariate analyses, consistent with prior research (Casey & Nurius, 2005). Descriptive analyses reveal the average age of rape victimization by the first or only perpetrator was 18 years old for respondents victimized by one offender, and less than 15 years old for repeat rape victims.\(^8\)

Childhood Development

Within the childhood development category, neither having a child before the age of 18 nor experiencing childhood maltreatment predicted repeat rape victimization by separate offenders in the multivariate model. The absence of a relationship between childhood maltreatment and repeat victimization is unexpected. Experiencing childhood maltreatment increased the odds of any rape victimization by 2,703% in the Heckman selection model, and reports of childhood maltreatment were significantly greater among

\(^8\) Again, repeat victimization does not refer to the number of rape incidents but to the number of perpetrators, consistent with prior operationalizations of repeat victimization (Casey & Nurius, 2005).
repeat rape victims than respondents victimized by one offender only in the bivariate model. Further, Casey and Nurius (2005) found that repeat sexual assault victims had greater nonsexual trauma in childhood than women victimized by one offender only. However, the lack of association between childhood maltreatment and sexual repeat victimization is consistent with Merrill et al. (1999)’s analysis, indicating that once the effects of childhood sexual assault were considered, childhood physical abuse no longer predicted adult sexual assault. The current research finding’s consistency with one of two previous studies may be result of dependent variable operationalization. Although the sampling method in the current study comports more closely to Casey and Nurius’s (2005) general population sample than Merrill et al.’s (1999) female Navy recruit sample, Merrill et al. (1999) operationalized adult sexual victimization as rape, consistent with the current study, whereas Casey and Nurius (2005) measured adult sexual assault.

**Context of Rape Victimization**

In the context of the rape victimization by the first or only perpetrator, victim-offender relationship significantly influenced the likelihood of repeat rape victimization by separate offenders in both bivariate and multivariate models. In comparison to respondents whose first or only assailants were family members, the odds of repeat victimization were 73% lower for respondents victimized by strangers, and 63% lower for respondents victimized by an acquaintance. Follow-up analyses revealed primary rape victimization by a family member related to age at victimization, and by proxy, lifetime exposure to perpetrators. Respondents whose first or only rape victimization was perpetrated by a family member were on average minors during the victimization (M = 9.95, SD = 6.19), whereas respondents victimized by acquaintances (M = 18.43, SD =
8.06), strangers (M = 18.86, SD = 8.45), or current or former partners (M = 24.17, SD = 9.37) were more likely to be adults at the time of victimization, \( F(3, 1380) = 154.23, p = .000 \). In addition, with the literature documenting more negative reactions to disclosures of sexual victimization by family members (Ullman, 2007), it is possible negative social support may additionally influence the relationship between victim-offender relationship and sexual repeat victimization.

Pre-victimization context significantly related to repeat rape victimization by separate offenders in both bivariate and multivariate analyses. Respondents who reported “doing nothing” prior to the first or only rape victimization had a 156% increased odds of repeat victimization. Findings revealing that victim behavior is unrelated to repeat rape victimization depart from previous research linking victim alcohol use and sexual behavior to repeat victimization (Fargo, 2009; Greene & Navarro, 1998; Himelein, 1995; Krahé et al., 1999; Krebs et al., 2009; Fisher et al., 2000; Testa et al., 2010). However, pre-victimization behaviors represent an isolated incident rather than a general pattern of substance use. A follow-up ANOVA assessed responses to three questions regarding a) frequency of alcohol use over the previous 12 months, b) frequency of alcohol use over the previous two weeks, and c) average number of drinks per day in the previous two weeks. Respondents victimized by one perpetrator only and repeat victims did not differ with respect to frequency of alcohol use over the past year (\( F(1, 1379) = .00, p = 0.98 \)) or two weeks (\( F(1, 890) = .29, p = 0.59 \)). However, among respondents reporting drinking in the previous two weeks, repeat victims (M = 4.50, SD = 5.69) consumed a significantly higher number of drinks than respondents victimized by one perpetrator only (M = 2.43, SD = 2.25) \( F(1, 492) = 23.70, p = .000 \). Again, one is unable to
extrapolate an ongoing pattern of substance use based solely on substance use at the time of interview, although research documents the heritability of substance use at between 40% and 50% (Goldman, Koss, & Russ, 2005).

Results demonstrating that being on a date or engaging in sexual activity were unrelated to repeat rape victimization by distinct offenders disputes research connecting frequent consensual sexual activity with repeat victimization (Fargo, 2009; Himelein, 1995; Krahé et al., 1999), and replicates studies finding a minimal or no relationship between sexual behavior and repeat victimization (Mayall & Gold, 1995; Merrill et al., 1999; West et al., 2000). However, similar to alcohol use, it is problematic to assume pre-victimization behavior characterizes general patterns of sexual activity. Although the Tjaden and Thoennes’ (1998) survey did not comprehensively measure respondents’ sexual histories, one section included items on cohabitation and marriage, as well as other sexual involvements at the time of interview. ANOVA tests found repeat victimization related to number of marriages, where among current or previously married respondents, repeat victims (M = 1.25, SD = 2.01) reported a higher average number of marriages than did one-perpetrator rape victims (M = 0.84, SD = 1.84), \( F(1, 1114) = 5.46, p < .05 \).

Quantity of intimate partnerships is not a direct measure of sexual behavior, but Wyatt et al. (1992) documented an association between multiple partnerships, short sexual relationships, and repeat victimization. However, the current study finds only one measure of relationship history to associate with repeat victimization, leaving the association between patterns of intimacy and repeat victimization inconclusive.

Additionally, the finding that “hanging out” or “doing nothing in particular” predicted repeat rape victimization may support the literature on poor perception of threat
and sexual repeat victimization by separate offenders (Katz et al., 2010). Experiencing a rape victimization precipitated by ordinary circumstances may impair survivors’ perception of threat, increasing the odds of rape victimization by a new offender. Studies documenting indirect relationships between threat perception and repeat victimization (Katz et al., 2010; Macy, Nurius, & Norris, 2006; Nurius et al., 2000) suggest future research should consider pre-victimization context as a moderator in the relationship between threat perception and sexual repeat victimization.

The remaining two variables in the context of rape victimization category both significantly related to sexual repeat victimization in bivariate and multivariate models. Offender coercion tactics of physical violence or the use of a weapon increased the odds of repeat victimization by a different offender by 30%, consistent with Griffin and Read’s (2012) and Casey and Nurius’s (2005) findings. Unexpectedly, if respondents became pregnant as a result of rape by the first or only offender, the odds of repeat rape victimization decreased by 90%. Follow-up analyses on pregnancy outcome were unsuccessful, as only victims of rape by one perpetrator reported whether the pregnancy resulted in a live birth. Previous research identifies unwanted pregnancies and abortions as risk factors for sexual repeat victimization in a community sample of women (Wyatt et al., 1992), although pregnancies resulting from rape victimization were not exclusively considered. Alternately, Collins (1998) documented in a longitudinal sample of adolescent mothers that pregnancy at Time 1 reduced likelihood of sexual assault at Time 2. Collins (1998) likewise did not anticipate this finding, but suggested pregnancy may motivate offenders to select other targets, or reduce women's exposure to offenders through increasingly constrained behavior as the pregnancy progresses.
Social Power

Social power variables, including race/ethnicity, income, victim disclosures, and engagement of the criminal justice system, were all unrelated to the odds of repeat rape victimization in the multivariate model. The absence of a relationship between race/ethnicity and repeat victimization contrasts Urquiza and Goodlin-Jones’ (1994) findings, although the current sample was far more racially and ethnically homogenous than Urquiza and Goodlin-Jones’ (1994) sample, restricting comparison. Contrary to the literature associating low socio-economic status and education levels with sexual and interpersonal repeat victimization (Acierno et al., 1997; Kimerling, et al., 2007; Mears et al., 2001), the present study found no such relationships. This may be due to the complicated relationship between sexual victimization, higher education, and income. Although higher education increases average lifetime earnings (Carnevale, Rose, & Cheah, 2011), individuals attending institutions of higher education experience greater relative risk of sexual repeat victimization (Kilpatrick et al., 1998). In the current sample, each level of educational attainment increased the odds of any sexual victimization by eight percent in the Heckman selection model. As a result, although economic privilege may facilitate survivor access to systems of care and justice, the pathway to higher incomes, higher education, conversely increases women's vulnerability to sexual repeat victimization.

Disclosures of the rape victimization by the first or only offender to informal sources of support or therapists were unrelated to repeat rape victimization by separate offenders. These findings are congruent with research determining that the act of disclosure alone does not influence likelihood of repeat victimization by a new offender.
(Filipas & Ullman, 2006). In fact, maladaptive coping strategies of substance use, social isolation, and “acting out” sexually or aggressively appear to affect the odds of repeat victimization more than adaptive coping strategies of disclosing to social support networks or therapists (Filipas & Ullman, 2006). Victim engagement of the criminal justice system was unrelated to the odds of repeat rape victimization, potentially due to low prosecution rates of sexual assault cases (United States Department of Justice, 2010) and/or experiences with criminal justice professionals that left victims feeling blamed or at fault for their victimization (Ullman & Filipas, 2001). However, follow-up analyses among women reporting filing a police report revealed police satisfaction on a four-point scale from very satisfied (1) to very dissatisfied (4) did not significantly vary between women victimized by one offender (M = 2.56, SD = 1.18) and repeat victims (M = 2.63, SD = 1.16).

Research findings in the current study support ecological assumptions that the origins of sexual repeat victimization extend beyond victim history and behavior, as reports of childhood maltreatment and pre-victimization drinking, sexual activity, and/or fighting with the perpetrator were unrelated to the odds of repeat victimization by a new offender. In fact, likelihood of repeat rape victimization escalated when the first or only offender targeted younger victims or family members, used physical force, and/or exploited innocuous, ordinary settings to perpetrate their crime. The odds of repeat victimization were unaffected by the number of formal and informal sources of support respondents confided in, replicating prior research determining the quality of the reaction to a disclosure is more consequential than the act of disclosure itself.
Research Question Two

Informed by research finding repeat victims suffer more serious mental health symptomology than those victimized by one perpetrator only (Banyard et al. 2001), research question two developed and assessed a model of post-victimization depression to examine separately the mental health trajectories of women victimized by one offender versus repeat victims. Campbell et al.’s (2009) position that post-victimization trauma emerges not only in response to the victimization itself, but also to socio-cultural treatment of victims guided the current study to investigate whether variables beyond sexual victimization history predict depression among survivors. Results identified unique risk and protective factors for depression among women victimized by one perpetrator only and repeat victims of rape.

Control Variables

The number of years since the rape victimization by the first or only perpetrator occurred did not influence long-term depression in the bivariate or multivariate analyses, irrespective of repeat victimization history. These findings are duplicative, as one meta-analysis of 37 studies on child sexual abuse found a similar measure, age at victimization, unrelated to a range of negative psychological and behavioral outcomes (Paolucci, Genius, & Violato, 2001).

Childhood Development

Consistent with previous research, repeat rape victimization by separate perpetrators was positively associated with greater depression (Arata, 2000; Banyard et al., 2001; Kimerling et al., 2007; Messman-Moore et al., 2000). As expected, history of health problems predicted long-term depression for all victim types, replicating research
associating sexual victimization with poor physical and mental health (Cloutier et al., 2002). The extent of the significant relationship between physical and mental health among victims was influenced by the extent of sexual trauma. Coefficient comparison tests determined the relationship between health problems and depression was stronger among repeat victims than for respondents victimized by one perpetrator only. Cloutier et al. (2002) similarly connected severity of sexual victimization experiences with physical health problems, finding hypertension, high cholesterol, diabetes, and obesity more likely among victims of rape than victims of sexual assault (Cloutier et al., 2002).

**Context of Rape Victimization Variables**

Several indicators of depression varied between respondents victimized by one perpetrator and repeat victims. Doing nothing prior to the rape victimization by the first perpetrator acted as a protective factor against long-term depression for repeat rape victims only. This finding may suggest that conformity to stereotypical rape scripts reduces the risk of long-term depression among repeat rape victims, as attributions of victim “responsibility” for a sexual assault are predicted by the belief that victim behavior “encouraged” the perpetrator (Dietz, Littman, & Bentley, 1984). The inconsequence of substance use prior to the victimization on psychological outcome corresponds with the limited research assessing this relationship (Campbell et al., 1999; Resnick et al., 1997). Similarly, in the rape victimization by one perpetrator only model, the use of physical violence as a coercion tactic was marginally protective against depression at $p = .10$. Again, this may imply conformity to stereotypical rape scripts involving a physically aggressive offender is protective against depression for respondents sexually victimized by one perpetrator only, but the relationship is
in substantial. These findings may be weak as a result of mediation by social reactions to disclosures that result in greater trauma (Orchowski et al., in press; Ullman et al., 2006), or self-blame (Ullman, 2007).

Victim-offender relationship was found to be unrelated to depression for women victimized by one offender only, replicating some findings (Campbell et al., 1999; Kramer & Green, 1991; Mackey et al., 1992; Riggs, Kilpatrick, & Resnick, 1992), and contradicting other studies relating either stranger or known offenders assaults with greater depression and/or trauma (Bownes et al., 1991; Culbertson & Dehle, 2001; Ellis, Atkeson, & Calhoun, 1981; Masho & Ahmed, 2007; Ullman et al., 2006). In the model assessing long-term depression among repeat victims, primary victimization by a family member rather than an acquaintance was unexpectedly protective. Follow-up analysis indicated time since victimization was significantly greater for those victimized by family than acquaintances or partners. However, recency was not linked to long-term mental health in the multivariate model, consistent with some previous research (Paolucci et al., 2001).

For respondents victimized by one perpetrator only, pregnancy protected against long-term depression and taking time off from school and/or work were risk factors for greater depression. Further investigation into pregnancy outcome among respondents victimized by one offender only revealed that sixty percent of respondents impregnated through rape reported giving a live birth, but it is unknown whether respondents raised the infants. The association between time off and post-victimization mental health is consistent with previous research finding avoidance behavior associated with higher levels of depression post-victimization (Frazier et al., 2005; Gutner et al., 2006; Ullman,
et al., 2007). Avoidance coping may also be a response to negative social support, which is another risk factor for post-victimization distress (Ullman et al., 2007, Ullman, 1996c).

**Social Power**

Within the social power category, education was protective against long-term depression for both victim types. Income was additionally protective against depression for respondents victimized by one perpetrator only. As Campbell et al. (2009) note, the relationship between education level and post-victimization distress is unclear. In the present study, education appears protective against depression, despite increasing the odds of becoming a rape victim versus a non-victim by 8% with each subsequent step in education. However, education serving as a protective factor is consistent with the findings of another random-digit-dialing sample examining the impact of sexual assault and rape, although PTSD, rather than depression, was the outcome variable (Masho & Ahmed, 2007).

Race/ethnicity was unrelated to depression among women victimized by one perpetrator only, consistent with previous research (Ahrens et al., 2010; Elliott et al., 2004; Frank & Stewart, 1984; McFarlane et al., 2005; Sorensen & Siegel, 2010; Wyatt, 1992). However, being white was a protective factor for respondents repeat victimized by separate offenders, indicating a potential interaction between race/ethnicity and rape victimization history on mental health outcome. Police engagement shielded against long-term depression for repeat rape victims, consistent with Masho and Ahmed’s (2007) findings that talking with police predicted fewer PTSD symptoms. Results indicated informal support acted as a risk factor for depression among repeat rape victims only, possibly revealing differential experiences with disclosures of rape victimization between
women victimized by one offender and repeat rape victims. Johnson and Johnson (in press) identified high quality social support as a protective moderated mediator for the relationship between severe sexual trauma and problematic substance use. Conversely, a greater quantity of social support acted as a risk moderated mediator (Johnson & Johnson, in press). Police engagement guarded against long-term depression for survivors of repeat rape victimization, indicating access to justice after victimization by the first offender may be of greater relative importance to long-term recovery among repeat victims.

The overall model for women victimized by one offender only significantly predicted depression, but explained little of the variance. Alternately, the repeat rape victimization model accounted for a moderate amount of variance in psychological outcome. Model weakness may be due to the retrospective nature of the methods. In spite of these limitations, the current research contributes to our understanding of the greater mental health issues faced by repeat victims. With variables other than repeat rape victimization predicting mental health outcome, support is provided for the notion that victimization trauma emerges from socio-cultural factors beyond the victim and victimization itself.

**Research Limitations**

Although the large sample size and diverse demographics are strengths of the data used in the current study, there are serious methodological limitations. The data are cross-sectional, curtailing conclusions regarding temporal order. The retrospective nature of the research is problematic, with the average length between time of interview and victimization by the first or only offender at around twenty years. One recent review of
research on the accuracy of memories of traumatic events finds that for single, time-limited, and ongoing traumatic events, memories are generally correct, not dissimilar to memories for non-traumatic events (Pezdek & Taylor, 2002). However, over time, accuracy of recall diminishes, and with an average 20 years between the interview and rape victimization, there are legitimate concerns regarding the accuracy of the findings (Pezdek & Taylor, 2002). In addition, although the present data set yielded 1,381 total victims, only 140 of those victims were repeat victims, hindering multivariate analytic power.

Another limitation of the present data is the inability to develop an ordinal measure of sexual victimization. Ideally, a measure of victimization history would include one-time victimization by one perpetrator, multiple victimizations by one perpetrator, and multiple victimizations by distinct perpetrators. However, the nature of the measure used in the present study precludes differentiation beyond comparing women victimized by one offender with women victimized by multiple offenders. In addition, rape is measured in the NVAWS, rather than a continuum of sexual violence that ranges from noncontact sexual aggression to rape, such as the Sexual Experiences Survey (Koss et al., 2006), commonly used in sexual repeat victimization research. However, some research suggests there is not an apparent continuum of trauma severity in sexual victimization. Testa et al. (2004) found limited support for an ordinal sexual victimization measure, where rape was associated with greater trauma than verbal coercion, but other types of unwanted sexual experiences had similar trauma levels. Likewise, Clum, Nishith, and Calhoun (2002) found that survivors of rape by physical or substance coercion did not differ in their reports of victimization severity and although Brown et
al.’s (2009) respondents generally rated verbal coercion, incapacitated rape, and forcible rape from least to most traumatic, this order disappeared in some domains, such as current perceived trauma and emotional impact. Irrespective of whether an ordinal measure of sexual victimization accurately represents a trauma construct, access to information on a range of sexual victimization experiences would provide greater variance in the dependent variable.

External validity is problematic in this study due to selection bias. The response rate among women was 72.1%, limiting generalization of statistical findings. Women who agreed to participate in the NVAWS may be unrepresentative of general population, particularly due to the graphic nature of the questionnaire. The study has a diverse, large sample and a fairly high response rate, but the NVAWS does not weight the data to account for differences between those who participated and those who declined to participate. In addition, the research was restricted to households with telephones, excluding homeless and transient populations and households without a working phone line. Yet, homeless women are exceptionally vulnerable to sexual assault. Wenzel and colleagues found that over 10% of homeless women reported rape victimization in the previous 12 months, and almost 10% experienced sexual assault in the previous month (Wenzel, Koegel & Gelberg, 2000; Wenzel, Leake, & Gelberg, 2000). In addition, for the post-victimization long-term depression model, although the average length of time between the victimization by the first or only perpetrator and the interview was almost 20 years, nine respondents reported their victimization occurred the year of the interview, leaving the time order of the first victimization and onset of depression symptoms questionable. Lastly, the data were collected 14 to 16 years ago, again threatening
external validity. However, the age of these data are not necessarily a complication for the current study’s intent, as the direction of the relationships among variables relating to power and inequality, such as gender, race, and socioeconomic class, are stable (DeNavas-Walt et al., 2009; Shaefer & Edin, 2013; U.S. Bureau of the Census, 2011).

In spite of methodological limitations, the present study identified risk and protective factors within multivariate models of sexual repeat victimization and post-victimization depression, contributing to the first step of theory building. Although the data in the current study are retrospective and cross-sectional, they provided a unique opportunity to assess a rare population: repeat rape victims. Sexual repeat victimization research remains in early stages of theory development, and the present study responds to recent scholarly suggestions to situate sexual repeat victimization within an ecological perspective. Subsequent research replicating the current research should employ a prospective method to identify risk and protective factors with greater accuracy and determine the causal mechanisms driving relationships between predictors, repeat victimization, and post-victimization mental health (Marx et al., 2005).

**Future Research**

Future research on ecological predictors of sexual repeat victimization and post-victimization depression will respond to limitations in the current research. Although the sample size of Tjaden and Thoennes’ (1998) data is ideal, the data are over 10 years old, and missing data issues prevent the inclusion of some variables of interest. The National Institute of Justice is currently replicating the NVAWS, and these new data may offer several advantages. First, the demographic makeup of American population has markedly changed in the past decade (U.S. Census, 1992a, 1992b, 2011). Almost ninety percent of
the current study’s sample was White or African American or Black, resulting in the creation of a dichotomous race/ethnicity variable. Second, socio-structural variables such as race, income, or education relate to power and inequality across data collection time periods. Should both NVAWS surveys use the same measures for constructs of interest, the data set could be collapsed to include both time periods. Consequently, multivariate models could be reanalyzed with greater power in a larger data set, with collection data as a control variable.

Ultimately, a rigorous assessment of ecological predictors of repeat victimization and post-victimization mental health requires a prospective methodology to isolate causes from effects and variable interactions. Victimization research is primarily based on cross-sectional, large data sets due to the rare nature of the phenomenon. A prospective examination of sexual repeat victimization and post-assault distress that integrates quantitative and qualitative measures has the potential to offer information on risk and protective factors with greater nuance than statistical association alone. Most importantly, a mixed-methods prospective approach would permit closer examination of the causal pathways between risk factors and outcomes, with special attention to potential moderators, mediators, or interactions. Isolation of the causal mechanisms relating risk factors to repeat victimization or post-victimization depression additionally assists development of parsimonious models, necessary for quantitative analysis of a phenomenon as rare as repeat victimization.

Prospective replication of the current study would additionally address a common weakness of secondary data analysis—construct validity. Measures selected during primary data collection are based on particular research questions similar but not
equivalent to research questions driving secondary data analysis. Few indicators in the NVAWS match the sensitivity of scales commonly used in sexual repeat victimization research to measure constructs such as cumulative trauma, self-efficacy, social reactions to disclosures, coping strategies, and perceived cultural attributions.

**Alternative Validated Measures**

A central limitation of the current studies’ ecological assessment of sexual repeat victimization and post-victimization depression regards the lack of validated measures of constructs of interest, such as social support, coping strategies, and victim self-blame. Although the NVAWS provides information on the number of individuals survivors confided in, research determined that quality of social support is more relevant to post-sexual victimization recovery than quantity (Johnson & Johnson, in press). One commonly used measure on social reactions is the Social Reactions Questionnaire (Ullman, 2000). This measure evaluates positive and negative reactions to disclosures of victimization, including providing tangible or emotional support, blaming the victim, treating the victim differently, discouraging the victim from disclosing, and reacting egocentrically. Similarly, the NVAWS survey includes a range of post-victimization questions, but there is not a validated measure of coping strategies. One option is the "How I Deal with Things" (HIDWT: Burt & Kurtz, 1987) five-factor measure assessing cognitive, expressive, nervous/anxious, avoidance, or self-destructive coping strategies. Alternately, Ullman’s (1996c) coping strategies measure assesses whether survivors used substances, withdrew socially, acted out sexually, sought help through talking about the victimization, consulted a therapist, behaved physically aggressively, tried to forget about the victimization, or coped in some other way after a victimization. Although the
NVAWS data revealed some respondents did not file a police report because they felt culpable for their victimization, there was not a standalone attribution of blame measure. Ullman (1996d) measures attributions of responsibility by asking respondents, "Thinking back on this experience, how much do you feel each of the following are to blame for your experience?" Response options include: society, offender, own behavior, own personal character, other people, and other factors (Ullman, 1996d). Alternately Meyer and Taylor (1986) developed a 15-item attribution statement scale with three clusters of question categories: poor judgment (e.g. "I am a poor judge of character"), societal reasons (e.g. "Men have too little respect for women"), and victim type (e.g. "I have bad luck"). Both measures assess behavioral and characterological self-blame. Future replications of the current research should integrate validated measures for social reactions to disclosures, coping strategies, and self-blame to identify constructs of interest with greater sensitivity and accuracy than the current study.

In addition to future research integrating validated measures to assess the ecological model of sexual repeat victimization, scholars should consider theoretical comparison. Weak findings in the current research suggest an ecological model may be inappropriate for explaining the phenomenon of sexual repeat victimization. A priori selection and design of measures to conduct theoretical comparison between ecological and other sexual repeat victimization models may reveal another perspective has greater explanatory power.

Sexual Repeat Victimization Model Comparison Research

A possible comparison of repeat sexual victimization models could include variables measuring traumatic sexualization, attribution style, tension reduction, routine
activities, and ecological models. Traumatic sexualization theory (Finkelhor & Browne, 1985, 1988) proposes that early trauma results in stigmatization, betrayal, powerlessness, and traumatic sexualization. Stigmatization causes social withdrawal and/or substance misuse, and betrayal hinders healthy trust and intimacy skills, where one's ability to detect if someone is trustworthy or develop intimacy is compromised. Traumatic sexualization manifests itself as precocious or dysfunctional sexual behavior due to early sexual victimization. Measures of traumatic sexualization theory assess self-efficacy, feelings of powerlessness, age of first consensual sexual behavior, risky or avoidant sexual behavior, measures of social trust and sensitivity to social contracts, and coping styles of isolation and/or substance use. One common measure of reactions to social contract norms includes a Wason Selection Task (Stone, Cosmides, Tooby, Kroll, & Knight, 2002), where respondents are presented with if-then reasoning rules where one person receives a benefit from another person based on meeting a social requirement. Coping strategies could be measured either by the HIDWT scale (Burt & Kurtz, 1987), or Ullman’s (1996c) set of questions on post-victimization substance use, social withdrawal, sexual behaviors, help seeking, therapeutic consultation, aggressive behavior, and attempts to forget the victimization. Interpersonal agency may be measured using Smith, Kohns, Savage-Stevens, Finch, Ingate, and Lim’s (2000) scale, which includes five questions on the manner in which respondents interact with others to achieve particular outcomes (e.g. “I accomplish my goals by letting others know my needs and wants”).

Peterson and Seligman’s (1983) attribution style model suggests that internal, global, and stable attributions regarding a traumatic event result in learned helplessness and insufficient aggression in response to a threat. Measures of the attribution model
constitute indicators of attribution style, self-efficacy, learned helplessness, threat appraisals, and behavioral responses to a potential threat, consistent with those used in Nurius et al. (2000). Threat appraisal involves assessing whether a situation with another person is neutral, dangerous, or beneficial. As Nurius et al. (2000) explain, targets of sexual violence commonly confront ambiguous information, such as whether a man's suggestions to leave a social setting together are an appealing move toward intimacy, or an indicator of potential danger. Frequently, women balance safety concerns, the fear of social repercussions for misinterpreting a male's sexual or violent interest, and the desire to maintain relationships, where diplomatic resistance strategies may be elected in order to avoid tension and maintain a friendly rapport with an aggressive male (Nurius et al., 2000).

A tension reduction model proposes that sexual behavior and substance use perform as coping strategies in response to PTSD symptomology. This theory could be assessed through a measure of PTSD symptoms and risky sexual behavior, such as the trauma symptom inventory (TSI: Briere, 1995). The TSI measures intrusive experiences, defensive avoidance, anxious arousal, sexual concerns, and dysfunctional sexual behavior, or sexual behavior that is indiscriminate, used for nonsexual goals, and/or may result in self-harm. In terms of measuring alcohol use, the drinking habits questionnaire (Cahalan, Cisin, & Crossley, 1969) assesses patterns of alcohol use over the previous month.

Lifestyle/routine activities theory (Hindelang, Gottfredson, & Garofalo, 1978) focuses on routine behaviors of respondents that heighten their risk of repeat victimization. An examination of this theory would assess exposure to crime, or
socializing or working in male-dominated environments, victim attractiveness, or frequent substance use, and lack of guardianship, or traveling alone, consistent with measures used by Fisher et al. (2009).

Lastly, an ecological model of repeat victimization would include a consideration of childhood development, victimization context, and social power indicators consistent with the current study. In addition to integrating validated measures of social reactions, coping strategies, and self-blame to the current study's methodology, the current study could be extended through incorporating a measure of sexual assault prosecution rates. Research indicates the criminal justice system emphasizes prosecution of stranger rapes (Frohmann, 1991) and avoids prosecuting crimes that have been committed against groups with little power, such as prostitutes or ethnic minorities. Indicators of policies penalizing offenders and prioritizing victim safety include prosecution rates and funds allotted to victim services. With the inclusion of measures from each model of sexual repeat victimization, a time-series design would comprehensively assess each indicator’s relationship to sexual repeat victimization, and compare the goodness of fit of clusters of variables representing each model of sexual repeat victimization.

Because prospective designs are rare, it is valuable to avoid selecting one theory or framework to guide and consequently bias the design, implementation, and interpretation of a study. Future victimization studies employing theoretical comparison would preclude formulating overly narrow research questions and inadvertently truncating variables of interest.
Policy Implications

Ultimately, findings from the current studies and future research on contextual factors contributing to sexual repeat victimization and post-victimization trauma have the potential to impact policy. Findings based on an ecological framework suggest a public health approach to addressing sexual violence. A public health intervention involves ongoing systematic collection, analysis, and interpretation of data on the incidence, scope, and risk factors of the phenomenon of interest, in this case sexual repeat victimization and post-victimization trauma. This research-based strategy is similar to those which have explained and controlled many communicable diseases. In response to findings from ongoing research, policy development would involve three levels: primary prevention, and secondary and tertiary programs. Primary prevention would implement education to stop sexually abusive behaviors before they start and raise awareness on post-sexual victimization trauma. Secondary programs could target individuals at high risk for offending or victimization, prevent first time sexual offenders from recidivating, protect victims from repeat victimization, and aid survivors in post-victimization recovery. Lastly tertiary programs could stop future violence by offenders with a history of perpetration through community or clinical treatment and monitoring. In addition to the advantages of integrating and prioritizing prevention alongside of punishment, a public health policy approach shifts the cultural viewpoint on sexual victimization risk from the scale of individuals to the perspective of the population as a whole, on collective rather than individual risk (Janus, 2006).

Based on the findings from the current study, primary prevention and secondary programs could focus on several key factors. Results suggest that vulnerability to repeat
victimization\textsuperscript{9} escalates when victimization by the first or only offender occurs at an earlier life stage, and is perpetrated by family members using physical force with little pre-victimization warning. Post-rape victimization depression was found to be exacerbated by repeat victimization and time off from work or school, and alleviated by education and income in the full model. In addition, conformity to stereotypical rape experiences appeared to protect against long-term depression for survivors of victimization by one offender only and repeat victim models. Lastly, being White and greater police engagement shielded against depression for sexual repeat victims.

Findings indicating primary victimization by a family member predict repeat victimization by a new offender directs attention to the problem of familial sexual abuse. From a primary prevention perspective, education is central. Currently, the United States lacks standardized comprehensive sex education, or a curriculum addressing abstinence, safe sex, and healthy intimacy. As a result, many youth lack the opportunity to learn about the dynamics of sexual abuse and subsequently disclose any abuse to an adult outside their family. Consistent with previous research, the current study finds sexual violence is targeted toward the young, with the average age of victimization by the first or only offender at 18 years of age among women victimized by one offender, and less than 15 years old for repeat victims. As a result, K-12 curricula on health and relationships should integrate age-appropriate information on sexual violence based on each age group’s common vulnerabilities. For example, all age ranges should learn that most offenders are familiar to victims and that verbal coercion is more common than

\textsuperscript{9} Again, repeat victimization does not refer to the number of rape incidents but to the number of perpetrators, consistent with prior operationalizations of repeat victimization (Casey & Nurius, 2005).
physical violence coercion in sexual assault (Fisher et al., 2008). As youth become adolescents, discussions on drug-or alcohol-facilitated rape will become relevant, as well as what elements characterize healthy, non-violent intimacy. When discussing substance-facilitated sexual victimization, the bystander effect should be integrated into curriculum, as social settings with intoxicated males and females place individuals at risk for sexual assault above and beyond use of alcohol (Testa at all, 2010), possibly due to individualistic norms discouraging intervention even when witnessing possibly non-consensual sexual behaviors.

In the present study, ambiguous pre-victimization contexts predicted sexual repeat victimization by different offenders. Similarly, conformity to stereotypical rape scripts of a victim doing nothing to "provoke" the offender was protective against long-term depression for repeat victims and a physically forceful offender was borderline significantly protective against depression for women victimized by one offender only. Accordingly, a public health campaign addressing attitudes linking victim behavior and responsibility could be an effective component of a primary prevention intervention strategy. Primary prevention should additionally emphasize that the reality of sexual violence is rarely consistent with the stereotype of “stranger rape” (Campbell et al., 2009). In the current sample, only 14% reported their first or only rape victimization was committed by a stranger, in contrast with 86% who were attacked by current or former partners, acquaintances, or family members. When assessing victim-offender relationship based on rape victimization history, repeat victims were much more likely to be assaulted by known offenders (93% versus 85%) and less likely to be assaulted by strangers (7% vs. 15%) than those victimized by one offender only. Disclosing victims are commonly
expected to isolate which behaviors “precipitated” the victimization and responses from informal and formal sources of support may be improved by an educational public health campaign. One model is the Center for Disease Control's Rape Prevention and Education Program, with guiding principles involving educating youth about healthy relationships and changing social norms, both crucial components in addressing interpersonal violence. A public health media intervention about myths regarding sexual victimization has great potential, with exemplars such as the seatbelt "Click it or ticket" campaign in the United States and the condom use campaign in Brazil establishing that regular and private behaviors can be broadly influenced.

Strategies for secondary programs on sexual repeat victimization are more complex. Advocates for restorative justice reflect on complications the justice system faces when addressing crimes between loved ones, where survivors are unwilling to subject intimate and family abusers to potential incarceration, sex offender registries, and/or sex offender commitment. Findings in the current study indicate that repeat victims are more likely to be sexually victimized at a younger age by familial perpetrators than women victimized by one perpetrator only. Restorative justice could provide youth with the opportunity to share their story and validate that the offender is solely responsible for the violence, taking place in a less formal environment than standard prosecution processes (Daly & Stubbs, 2006). Nonetheless, restorative justice tactics regarding sexual abuse are divisive, due to concerns regarding victim safety, offender exploitation of the process, victim inability to articulate their desired outcome, community norms discouraging offender assignment of blame, blended loyalties among friends and family, and the potential lack of impact on offender behavior (Daly & Stubbs,
Research is in the preliminary stages assessing the effectiveness of restorative justice and gendered violence (Jülsch, 2006), but emerging pilot programs should consider assessing their impact on likelihood of sexual repeat victimization.

In terms of a secondary program intervention on post-sexual victimization mental health, existing programs such as sexual assault nurse examiner (SANE) programs and sexual assault response teams (SARTs) provide models for all medical and legal professionals on the front line, who are often the first sources of formal support victims seek out (Campbell et al., 2009). Generally, survivors indicate experiences with mental health professionals impact their recovery more positively than interactions with the criminal justice system (Campbell et al., 2001; Ullman, 1996a, 1996b; Taylor & Harvey, 2010). Although victims experience secondary victimization in forensic or medical examinations, survivors are less likely to report feeling guilty, depressed, anxious, distrustful, and reluctant to pursue further support than those disclosing to criminal justice support systems (Campbell, 2005, 2006; Campbell & Raja, 2005). In the present study, police engagement was protective against long-term depression in sexual repeat victims, suggesting that access to formal justice systems may support post-victimization recovery long-term.

Similarly, increasing funding and access to rape crisis centers would provide victims with improved support options and community advocacy (Campbell et al., 2009). Although therapeutic support options for victims are necessary, one study of women seeking assistance after domestic or sexual victimization found most reporting that pragmatic services, such as food, housing, and financial assistance were more helpful than professional counseling (Postmus, Severson, Berry, & Yoo, 2009). Advocates on the
front lines of service are aware of the diversity of survivor needs and can supplement the support friends, family, and the police provide.

**Conclusion**

Sexual repeat violence and its impact on survivors are trenchant, complex problems that have resisted simple theoretical explanations or policy solutions. Application of general criminological theory and policy to interpersonal violence is challenging, as evidence suggests that violent repeat victimization is unique. International crime surveys document that unlike other crimes, sexual repeat victimization rates are fairly consistent across countries (Farrell & Bouloukos, 2001). In addition, sexual crimes have the highest rates of repeat victimization, with between 40% and 50% of total incidents representing repeat victimizations (Farrell & Bouloukos, 2001). Evaluations of victim safety and support policies for this unique subtype of repeat victimization indicate lingering challenges. One study examining respondents’ experiences with victimization, police, and other government agencies across 54 countries found repeat victims were less likely to report to the police than other victims because they believed police were unwilling or incapable of helping them (Van Dijk, 2001). Repeat victims were also more likely to report dissatisfaction with the police, particularly in industrialized countries. Those who did not report their victimization to the police indicated that they addressed the problem on their own accord, perceived the issue to be inappropriate for the police, or reported fear or dislike of the police. On average, over 30% of victims of gender violence complained about the police being rude or incorrect (Van Dijk, 2001).

The body of literature on sexual victimization extensively documents the likelihood of repeat victimization and the multiplicative psychological impact of repeat
sexual trauma. Extant research has contributed prospective examinations of risk and protective factors of repeat victimization among clinical and university populations, typically with separate emphases on psychological trauma, behavioral, or situational variables. This current research complements these longitudinal assessments of clustered risk and protective factors through collectively examining a range of individual, situational, and sociocultural factors influencing repeat rape likelihood in a large, national random-digit-dialing sample. In addition, the present study extends prior research on post-sexual victimization mental health through modeling individual, situational, and sociocultural predictors of depression among a sample of rape survivors, and then separately among women victimized by one offender versus those victimized by multiple distinct offenders. Findings indicated that risk of repeat victimization by a new offender increases when victimization is perpetrated by a family member with greater physical force against younger individuals in an ambiguous pre-victimization context. Separate models of long-term depression risk for women victimized by one perpetrator only and repeat victims of rape by separate perpetrators detected unique risk and protective factors. For survivors of rape victimization by one perpetrator, long-term depression risk was predicted by chronic health problems and taking time off after the victimization. Pregnancy as a result of the rape victimization, education, and income were protective against long-term depression, and the use of physical violence as a coercion tactic in the primary victimization trended toward protecting against long-term depression for survivors of rape by one perpetrator. For repeat rape victims, chronic health problems, being a woman of color, and quantity of informal support predicted greater depression.
and police engagement, and an innocuous pre-victimization context shielded against long-term depression.

Ineffective policy responses to sexual repeat victimization and recovery and the limited success in developing explanatory theories of sexual repeat victimization reflect our incomplete understanding of the origins of sexual repeat victimization. A rich body of literature examining risk and protective factors informed the current ecological assessment of models of sexual repeat victimization and long-term post-victimization depression. Mixed findings and methodological limitations impede conclusions on the appropriateness of ecological sexual repeat victimization and post-victimization mental health models. Nonetheless, the current study diversifies the evidence regarding vulnerabilities and protective factors surrounding sexual repeat victimization and trauma in a general population sample for continued theory development and policy application.


### APPENDIX

#### A. TABLES

Table A.1: Percentage of Missing Data on Incomplete Cases

<table>
<thead>
<tr>
<th>Variable Names</th>
<th>Percent Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race/Ethnicity</td>
<td>1.4%</td>
</tr>
<tr>
<td>Income</td>
<td>12.2%</td>
</tr>
<tr>
<td>How often in the past week did you feel full of pep?</td>
<td>1.0%</td>
</tr>
<tr>
<td>How often the past week have you been very nervous?</td>
<td>0.6%</td>
</tr>
<tr>
<td>How often in the past week have you felt so down in the dumps at nothing to</td>
<td>0.4%</td>
</tr>
<tr>
<td>cheer you up?</td>
<td></td>
</tr>
<tr>
<td>How often in the past week we could you have a lot of energy?</td>
<td>0.6%</td>
</tr>
<tr>
<td>How often in the past week did you feel downhearted and blue?</td>
<td>0.6%</td>
</tr>
<tr>
<td>How often the past week did you feel worn out?</td>
<td>0.4%</td>
</tr>
<tr>
<td>How often the past week have you been a happy person?</td>
<td>0.4%</td>
</tr>
<tr>
<td>How often the past week did you feel tired?</td>
<td>0.6%</td>
</tr>
<tr>
<td>During the past 12 months, how often did you drink any alcoholic beverages,</td>
<td>0.3%</td>
</tr>
<tr>
<td>backspace?</td>
<td></td>
</tr>
<tr>
<td>When you were a child did any parent, stepparent, or guardian ever throw</td>
<td>0.4%</td>
</tr>
<tr>
<td>something at you that could hurt you?</td>
<td></td>
</tr>
<tr>
<td>When you were a child did any parent, stepparent, or guardian ever push, grab,</td>
<td>0.4%</td>
</tr>
<tr>
<td>or shove you?</td>
<td></td>
</tr>
<tr>
<td>When you were a child did any parent, stepparent, or guardian ever pull your</td>
<td>0.8%</td>
</tr>
<tr>
<td>hair?</td>
<td></td>
</tr>
<tr>
<td>When you were a child did any parent, stepparent, or guardian ever slapped or</td>
<td>0.4%</td>
</tr>
<tr>
<td>hit you?</td>
<td></td>
</tr>
<tr>
<td>When you were a child did any parent, stepparent, or guardian ever kick or</td>
<td>0.1%</td>
</tr>
<tr>
<td>bite you?</td>
<td></td>
</tr>
<tr>
<td>When you were a child did any parent, stepparent, or guardian ever choke or</td>
<td>0.1%</td>
</tr>
<tr>
<td>attempt to drown you?</td>
<td></td>
</tr>
<tr>
<td>When you were a child did any parent, stepparent, or guardian ever hit you</td>
<td>0.4%</td>
</tr>
<tr>
<td>with some object?</td>
<td></td>
</tr>
<tr>
<td>When you were a child did any parent, stepparent, or guardian ever beat you</td>
<td>0.1%</td>
</tr>
<tr>
<td>up?</td>
<td></td>
</tr>
<tr>
<td>When you were a child did any parent, stepparent, or guardian ever threaten</td>
<td>0.1%</td>
</tr>
<tr>
<td>you with a gun?</td>
<td></td>
</tr>
<tr>
<td>When you were a child did any parent, stepparent, or guardian ever threaten</td>
<td>0.1%</td>
</tr>
<tr>
<td>you with a knife or other weapon besides a gun?</td>
<td></td>
</tr>
<tr>
<td>When you were a child did any parent, stepparent, or guardian ever use a gun</td>
<td>0.1%</td>
</tr>
<tr>
<td>on you?</td>
<td></td>
</tr>
<tr>
<td>When you were a child did any parent, stepparent, or guardian ever used a</td>
<td>0.1%</td>
</tr>
<tr>
<td>knife or other weapon on you besides a gun?</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>1.1%</td>
</tr>
<tr>
<td>Variable Names</td>
<td>Percent Missing</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Education</td>
<td>0.1%</td>
</tr>
<tr>
<td>Chronic Injury or Health Problem</td>
<td>0.6%</td>
</tr>
<tr>
<td>First Child Age</td>
<td>2.6%</td>
</tr>
<tr>
<td>Domestic Violence Experience</td>
<td>0.4%</td>
</tr>
<tr>
<td>Victim-offender relationship</td>
<td>0.07%</td>
</tr>
<tr>
<td>Recency of First Rape Victimization</td>
<td>7.9%</td>
</tr>
<tr>
<td>Pre-Victimization Context</td>
<td>33%</td>
</tr>
<tr>
<td>Was he/she using drugs or alcohol the time of this incident?</td>
<td>20.4%</td>
</tr>
<tr>
<td>Were you using drugs or alcohol at the time of this incident?</td>
<td>2%</td>
</tr>
<tr>
<td>Offender Coercion Tactic</td>
<td>0.4%</td>
</tr>
<tr>
<td>Disclosure to a Therapist</td>
<td>0.6%</td>
</tr>
<tr>
<td>Informal Support Disclosure</td>
<td>2.1%</td>
</tr>
<tr>
<td>Time off from School or Work</td>
<td>1.6%</td>
</tr>
<tr>
<td>Police Engagement</td>
<td>0.9%</td>
</tr>
</tbody>
</table>
### Table A.2: Logistic Regression for Likelihood of Repeat Victimization Model

<table>
<thead>
<tr>
<th>Variable Type</th>
<th>Variable</th>
<th>$B$ ($SE$)</th>
<th>AOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Variables</td>
<td>Years since rape victimization by first or only perpetrator</td>
<td>0.01(0.01)</td>
<td>1.01</td>
</tr>
<tr>
<td></td>
<td>Age at rape victimization by first perpetrator</td>
<td>-0.05(0.02)**</td>
<td>0.96</td>
</tr>
<tr>
<td>Childhood development</td>
<td>Parenthood (reference: Parenthood at $\geq$ 18 years of age)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parenthood at $&lt; 18$ years of age</td>
<td>0.11(0.26)</td>
<td>1.12</td>
</tr>
<tr>
<td></td>
<td>No children</td>
<td>0.42(0.34)</td>
<td>1.52</td>
</tr>
<tr>
<td></td>
<td>Childhood maltreatment</td>
<td>0.49(0.47)</td>
<td>1.64</td>
</tr>
<tr>
<td>First perpetrator victimization context</td>
<td>Stranger (reference: Family)</td>
<td>-1.32(0.43)**</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td>Acquaintance</td>
<td>0.99(0.29)***</td>
<td>0.37</td>
</tr>
<tr>
<td></td>
<td>Current or Ex-Partners</td>
<td>-0.22(0.35)</td>
<td>0.80</td>
</tr>
<tr>
<td></td>
<td>Hanging out prior to victimization</td>
<td>0.94(0.41)*</td>
<td>2.56</td>
</tr>
<tr>
<td></td>
<td>Drinking/drugs prior to victimization</td>
<td>-0.13(0.57)</td>
<td>0.88</td>
</tr>
<tr>
<td></td>
<td>Date prior to victimization</td>
<td>0.07(0.45)</td>
<td>1.07</td>
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<tr>
<td></td>
<td>Fighting prior to victimization</td>
<td>-0.21(0.49)</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>Offender use of verbal or physical coercion</td>
<td>0.28(0.12)*</td>
<td>1.32</td>
</tr>
<tr>
<td></td>
<td>Whether victim got pregnant from the assault</td>
<td>-2.33(1.03)*</td>
<td>0.10</td>
</tr>
<tr>
<td>Social power</td>
<td>Race/ethnicity</td>
<td>0.08(0.24)</td>
<td>1.09</td>
</tr>
<tr>
<td></td>
<td>Income</td>
<td>-0.09(0.10)</td>
<td>0.92</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>0.09(0.10)</td>
<td>1.10</td>
</tr>
<tr>
<td></td>
<td>Disclosure of victimization by first perpetrator to therapist</td>
<td>-0.06(0.22)</td>
<td>0.94</td>
</tr>
<tr>
<td></td>
<td>Disclosure of victimization by first perpetrator to informal sources of support</td>
<td>-0.13(0.14)</td>
<td>0.88</td>
</tr>
<tr>
<td></td>
<td>Degree of police involvement regarding victimization by first perpetrator</td>
<td>-0.14(0.18)</td>
<td>0.87</td>
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<tr>
<td>Lambda</td>
<td></td>
<td>0.18(0.04)***</td>
<td>0.84</td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td>-1.31(0.72)***</td>
<td>0.27</td>
</tr>
</tbody>
</table>

**Notes:** $R^2 = 0.17$ (Hosmer & Lemeshow), 0.10 (Cox & Snell), 0.22 (Nagelkerke).  
Model $\chi^2 = 150.36$***.  
$^+p \leq .10, \,*p \leq .05, \,**p \leq .01, \,**\,*p \leq .001.$
Table A.3: Pre-Victimization with Cross-Tabulation Tables

Table A.3a: Pre-Victimization Context by Victim-Offender Relationship

<table>
<thead>
<tr>
<th></th>
<th>Doing “Nothing”</th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
<td>Total</td>
</tr>
<tr>
<td>Stranger</td>
<td>172</td>
<td>26</td>
<td>198</td>
</tr>
<tr>
<td>% Within Stranger</td>
<td>86.9%</td>
<td>13.1%</td>
<td>100%</td>
</tr>
<tr>
<td>Standardized residual</td>
<td>-0.2</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>Acquaintance</td>
<td>528</td>
<td>82</td>
<td>609</td>
</tr>
<tr>
<td>% Within Partner/Acquaintance</td>
<td>86.7%</td>
<td>13.3%</td>
<td>100%</td>
</tr>
<tr>
<td>Standardized residual</td>
<td>-0.3</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>Partner</td>
<td>255</td>
<td>26</td>
<td>281</td>
</tr>
<tr>
<td>% Within Partner/Acquaintance</td>
<td>90.7%</td>
<td>9.3%</td>
<td>100%</td>
</tr>
<tr>
<td>Standardized residual</td>
<td>0.5</td>
<td>-1.5</td>
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</tr>
<tr>
<td>Family</td>
<td>258</td>
<td>35</td>
<td>293</td>
</tr>
<tr>
<td>% Within Family</td>
<td>88.1%</td>
<td>11.9%</td>
<td>100%</td>
</tr>
<tr>
<td>Standardized residual</td>
<td>0.0</td>
<td>-0.1</td>
<td></td>
</tr>
</tbody>
</table>

1212 169 1381

Notes: $\chi^2 = 7.72, p = .17$

Table A.3b: Pre-Victimization Context by Pregnancy as a Result of First Victimization

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</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
<td>Total</td>
</tr>
<tr>
<td>No pregnancy</td>
<td>1158</td>
<td>157</td>
<td>1315</td>
</tr>
<tr>
<td>% Within No pregnancy</td>
<td>88.1%</td>
<td>11.9%</td>
<td>100%</td>
</tr>
<tr>
<td>Standardized residual</td>
<td>0.1</td>
<td>-0.3</td>
<td></td>
</tr>
<tr>
<td>Pregnancy</td>
<td>55</td>
<td>11</td>
<td>66</td>
</tr>
<tr>
<td>% Within Pregnancy</td>
<td>83.3%</td>
<td>16.7%</td>
<td>100%</td>
</tr>
<tr>
<td>Standardized residual</td>
<td>-0.4</td>
<td>1.2</td>
<td></td>
</tr>
</tbody>
</table>

1212 169 1381

Notes: $\chi^2 = 2.22, p = .19$
<table>
<thead>
<tr>
<th>Step 1</th>
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<th>Full Model</th>
<th></th>
<th></th>
<th></th>
<th>Repeat victims</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years since rape victimization by first perpetrator</td>
<td>.55(.03)**</td>
<td>1.00</td>
<td>.00(00)</td>
<td>.01</td>
<td>-0.00(.00)</td>
<td>-0.05</td>
</tr>
<tr>
<td>Rape by one offender versus multiple perpetrator</td>
<td>.04(.02)*</td>
<td>0.06</td>
<td>0.00(00)</td>
<td>0.00</td>
<td>-0.00(00)</td>
<td>-0.05</td>
</tr>
<tr>
<td>Chronic disease or serious injury</td>
<td>.08(.01)**</td>
<td>0.17</td>
<td>.07(.01)**</td>
<td>.15</td>
<td>16.04(.04)**</td>
<td>0.35</td>
</tr>
<tr>
<td>Age at rape victimization by first perpetrator</td>
<td>.00(.00)</td>
<td>0.00</td>
<td>.00(00)</td>
<td>.01</td>
<td>-0.00(00)</td>
<td>-0.12</td>
</tr>
<tr>
<td>Hanging out prior to victimization</td>
<td>.00(.02)</td>
<td>0.01</td>
<td>.01(.02)</td>
<td>.02</td>
<td>-0.09(.05)**</td>
<td>-0.17</td>
</tr>
<tr>
<td>Drinking/drugs prior to victimization</td>
<td>.00(.02)</td>
<td>0.00</td>
<td>.01(.02)</td>
<td>.00</td>
<td>0.01(.06)</td>
<td>0.01</td>
</tr>
<tr>
<td>Date prior to victimization</td>
<td>.00(.02)</td>
<td>0.00</td>
<td>.00(.02)</td>
<td>.00</td>
<td>0.00(.06)</td>
<td>0.00</td>
</tr>
<tr>
<td>Fighting prior to victimization</td>
<td>.00(.02)</td>
<td>0.00</td>
<td>-0.00(.02)</td>
<td>-0.01</td>
<td>0.02(.06)</td>
<td>0.04</td>
</tr>
<tr>
<td>Offender use of verbal or physical coercion</td>
<td>0.01(.01)</td>
<td>-0.04</td>
<td>-0.01(.01)**</td>
<td>-0.05</td>
<td>0.01(.02)</td>
<td>0.03</td>
</tr>
<tr>
<td>Whether victim got pregnant from the assault</td>
<td>-.06(.02)**</td>
<td>-0.06</td>
<td>-0.06(.02)**</td>
<td>-0.07</td>
<td>0.27(.20)</td>
<td>0.11</td>
</tr>
<tr>
<td>Whether victim needed time off from work or school post-assault</td>
<td>.04(.01)**</td>
<td>0.10</td>
<td>.04(.01)**</td>
<td>.11</td>
<td>0.03(.05)</td>
<td>0.07</td>
</tr>
<tr>
<td>Social power</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td>-0.01(.01)</td>
<td>-0.02</td>
<td>-0.00(.01)</td>
<td>-0.01</td>
<td>-0.08(.04)**</td>
<td>-0.16</td>
</tr>
<tr>
<td>Income</td>
<td>-0.01(.01)</td>
<td>-0.07</td>
<td>-0.01(.01)**</td>
<td>-0.08</td>
<td>0.01(.02)</td>
<td>0.06</td>
</tr>
<tr>
<td>Education level</td>
<td>.03(.01)**</td>
<td>0.18</td>
<td>-0.03(.01)**</td>
<td>-0.17</td>
<td>0.05(.02)**</td>
<td>-0.26</td>
</tr>
<tr>
<td>Disclosure of victimization by first perpetrator to therapist</td>
<td>.01(.01)</td>
<td>0.01</td>
<td>.00(.01)</td>
<td>0.00</td>
<td>0.04(.04)</td>
<td>0.09</td>
</tr>
<tr>
<td>Disclosure of victimization by first perpetrator to informal sources of support</td>
<td>-.00(.01)</td>
<td>-0.01</td>
<td>-0.01(.01)</td>
<td>-0.02</td>
<td>0.05(.03)**</td>
<td>0.15</td>
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<tr>
<td>Step 2</td>
<td><strong>Full Model</strong></td>
<td><strong>One perpetrator victimization</strong></td>
<td><strong>Repeat victims</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------</td>
<td>-----------------------------------</td>
<td>-------------------</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td><strong>B(SE)</strong></td>
<td><strong>AOR</strong></td>
<td><strong>B(SE)</strong></td>
<td><strong>AOR</strong></td>
<td><strong>B(SE)</strong></td>
<td><strong>AOR</strong></td>
</tr>
<tr>
<td><strong>Degree of police involvement regarding victimization by first perpetrator</strong></td>
<td>-.01(.01)</td>
<td>-.03</td>
<td>-.01(.01)</td>
<td>-.02</td>
<td>-.06(.03)*</td>
<td>-.17</td>
</tr>
<tr>
<td>Lambda</td>
<td></td>
<td>-.11</td>
<td>-.01(.00)**</td>
<td>-.12</td>
<td>-.01(.01)+</td>
<td>-.13</td>
</tr>
<tr>
<td><strong>Adjusted R²</strong></td>
<td>.11</td>
<td></td>
<td>.09</td>
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<td>.23</td>
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<td><strong>ΔR²</strong></td>
<td>.12***</td>
<td></td>
<td>.11***</td>
<td></td>
<td>.33***</td>
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<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Years since rape victimization by first perpetrator</td>
<td>-.00(.00)</td>
<td>.00</td>
<td>.00(.00)</td>
<td>.00</td>
<td>-.00(.00)</td>
<td>-.05</td>
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<tr>
<td><strong>Childhood development</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rape by one offender versus multiple rape victimizations by separate offenders</td>
<td>.04(.02)*</td>
<td>.06</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Chronic disease or serious injury</td>
<td>.08(.01)**</td>
<td>.17</td>
<td>.07(.01)**</td>
<td>.15</td>
<td>.17(.04)***</td>
<td>.37</td>
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<tr>
<td><strong>First perpetrator victimization context</strong></td>
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<tr>
<td>Age at rape victimization by first perpetrator</td>
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<td>.00</td>
<td>.00(.00)</td>
<td>.02</td>
<td>-.00(.00)*</td>
<td>-.21</td>
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<tr>
<td>Victim-offender relationship (reference: Family)</td>
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<td></td>
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</tr>
<tr>
<td>Stranger</td>
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<td>.00</td>
<td>-.01(.02)</td>
<td>-.02</td>
<td>.08(.07)</td>
<td>.10</td>
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<tr>
<td>Acquaintance</td>
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<td>-.01</td>
<td>-.02(.02)</td>
<td>-.05</td>
<td>.12(.05)*</td>
<td>.26</td>
</tr>
<tr>
<td>Current or Ex-Partners</td>
<td>-.00(.02)</td>
<td>.00</td>
<td>-.01(.02)</td>
<td>-.03</td>
<td>.09(.05)*</td>
<td>.17</td>
</tr>
<tr>
<td>Hanging out prior to victimization</td>
<td>.01(.02)</td>
<td>.01</td>
<td>.02(.02)</td>
<td>.03</td>
<td>-.11(.05)*</td>
<td>-.22</td>
</tr>
<tr>
<td>Drinking/drugs prior to victimization</td>
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<td>.00</td>
<td>.00(.02)</td>
<td>.00</td>
<td>-.00(.05)</td>
<td>-.01</td>
</tr>
<tr>
<td>Date prior to victimization</td>
<td>.00(.02)</td>
<td>.00</td>
<td>.00(.02)</td>
<td>.00</td>
<td>-.04(.07)</td>
<td>-.06</td>
</tr>
<tr>
<td>Fighting prior to victimization</td>
<td>.00(.02)</td>
<td>.00</td>
<td>-.00(.02)</td>
<td>.00</td>
<td>.03(.05)</td>
<td>.05</td>
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<tr>
<td>Offender use of verbal or physical coercion</td>
<td>-.01(.01)</td>
<td>-.04</td>
<td>-.01(.01)*</td>
<td>-.05</td>
<td>-.00(.02)</td>
<td>.00</td>
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<td>Whether victim got pregnant from the assault</td>
<td>-.06(.02)*</td>
<td>-.06</td>
<td>-.06(.02)**</td>
<td>-.07</td>
<td>.23(.19)</td>
<td>.09</td>
</tr>
<tr>
<td>Whether victim needed time off from work or school post-assault</td>
<td>.04(.01)**</td>
<td>.10</td>
<td>.04(.01)**</td>
<td>.11</td>
<td>.03(.04)</td>
<td>.06</td>
</tr>
<tr>
<td>Social power</td>
<td>Full Model</td>
<td>One perpetrator victimization</td>
<td>Repeat victims</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
<td>------------</td>
<td>------------------------------</td>
<td>----------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td>-0.01(0.01)</td>
<td>-0.02</td>
<td>-0.00(0.01)</td>
<td>-0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>-0.01(0.01)*</td>
<td>-0.07</td>
<td>-0.01(0.01)*</td>
<td>-0.08</td>
<td>-0.11(0.04)*</td>
<td>-0.21</td>
</tr>
<tr>
<td>Education level</td>
<td>-0.03(0.01)***</td>
<td>-0.18</td>
<td>-0.03(0.01)***</td>
<td>-0.17</td>
<td>-0.05(0.02)**</td>
<td>-0.25</td>
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<tr>
<td>Disclosure of victimization by first perpetrator to therapist</td>
<td>0.00(0.01)</td>
<td>0.01</td>
<td>-0.00(0.01)</td>
<td>0.00</td>
<td>0.05(0.04)</td>
<td>0.12</td>
</tr>
<tr>
<td>Disclosure of victimization by first perpetrator to informal sources of support</td>
<td>-0.00(0.01)</td>
<td>-0.01</td>
<td>-0.01(0.01)</td>
<td>-0.02</td>
<td>0.05(0.03)*</td>
<td>0.17</td>
</tr>
<tr>
<td>Degree of police involvement regarding victimization by first perpetrator</td>
<td>-0.01(0.01)</td>
<td>-0.03</td>
<td>-0.01(0.01)</td>
<td>-0.02</td>
<td>-0.07(0.03)*</td>
<td>-0.17</td>
</tr>
<tr>
<td>Lambda</td>
<td>-0.01(0.00)***</td>
<td>-0.11</td>
<td>-0.01(0.00)***</td>
<td>-0.12</td>
<td>-0.01(0.01)*</td>
<td>-0.15</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.11</td>
<td>0.09</td>
<td>0.27</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>$AR^2$</td>
<td>0.00</td>
<td>0.00</td>
<td>0.05*</td>
<td></td>
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</tbody>
</table>