THE RELATIONSHIP BETWEEN HEALTH RISK BEHAVIORS AND
SEXUAL ASSAULT: A PROSPECTIVE ANALYSIS

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Carrie R. King
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SEXUAL ASSAULT: A PROSPECTIVE ANALYSIS

BY

CARRIE R. KING

has been approved for

the Department of Psychology
and the College of Arts and Sciences by

Christine A. Gidycz
Associate Professor of Psychology

Leslie A. Flemming
Dean, College of Arts and Sciences
The current study focused on 540 female undergraduate women from Ohio University. The women responded to self-report questionnaires at 3 times periods held 3 months apart. Participants’ child, adolescent, and adult sexual assault experiences were assessed, as well as were multiple health risk behaviors utilizing the National College Health Risk Behavior Survey. Overall, this study replicated previous findings that a strong association exists between the experience of sexual assault and engagement in health risk behaviors. Yet the hypotheses that one experience or behavior uniquely predicts the other was unfounded by the current analyses. Specifically, the hypothesis that rates of engagement in health risk behaviors at one time period would be associated with, and would predict, sexual assault experiences reported at a later time period was not strongly supported. Additionally, the hypothesis that rates of sexual assault experiences reported at one time period would be associated with the engagement in health risk behaviors at a later time period was supported to some degree, but the predictive nature of this relationship was not confirmed. Chi-Square analyses revealed contingency relationships between Time 1 sexual assault and 3-month-follow-up reports of drug or alcohol use prior to the most recent engagement in sexual intercourse, number of sexual partners, illicit drug use, marijuana use, cocaine use, and smoking tobacco. However, linear regression analyses, performed to determine the nature of these relationships, were primarily non-significant.
The regression analyses revealed that, of the six health risk behaviors examined, Time 1 sexual assault experiences predicted only Time 3 tobacco smoking. Even weaker findings were revealed for the contingency and predictive relationships between Time 2 sexual assault experiences and Time 3 health risk behaviors. These results are in contrast to previous reports showing a temporal relationship between substance abuse and sexual assault. This study highlights the need for future study, especially an exploration of the intercorrelation of health risk behaviors, and the need for initiatives where individuals, groups, and organizations integrate health goals (such as decreasing substance abuse) with goals to decrease sexual assault and to treat its victims.

Approved: Christine A. Gidycz
Associate Professor of Psychology
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Overview

The prevalence of sexual assault on college campuses is alarming. Researchers consistently report that approximately one out of four college women have experienced a rape or an attempted rape (Brener, McMahon, Warren, & Douglas, 1999; Koss, 1985; Koss, Leonard, Beezley, & Oros, 1985). More specifically, recent studies indicated that between 43% (Gidycz et al., 1998) to 50% (Gidycz et al., 1997) of college women surveyed reported some form of sexual assault experience, and approximately 18% experiencing a sexual assault since age 14 (Gidycz et al., 1997; Pihlgren, Gidycz, & Lynn, 1993). Decades of research have been dedicated to examining the physical and mental health outcomes of sexual assault, such as injury, transmission of sexually transmitted diseases, and posttraumatic stress disorder (Resnick, Acierno, & Kilpatrick, 1997). More recent literature has extended the scope of this research to include a focus on the relationship between sexual assault and health risk behaviors, such as substance abuse, dangerous driving practices, and sexual promiscuity.

Multiple studies have confirmed a relationship between health risk behaviors and sexual assault. Specifically, researchers have presented significant links between sexual assault and (a) suicidal ideation and attempts (Brener et al., 1999), (b) sexual promiscuity (Hotte & Rafmann, 1992; Polit, White, & Morton, 1990) and beliefs regarding sex (Nagy, Adcock, & Nagy, 1994), (c) alcohol and drug use (Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997; Nagy, DiClemente, & Adcock, 1995; Polusny & Follette, 1995), (d) smoking tobacco (Brener et al., 1999), and (e) other health risks, such as weapon
carrying (Anteghini, Fonseca, Ireland, & Blum, 2001; Nagy et al., 1994), driving after drinking (Brener et al., 1999), physical fighting (Brener et al., 1999), and disordered eating behaviors (Nagy et al., 1994; Silverman, Raj, Mucci, and Hathaway, 2001). The association of these variables and the question of whether these behaviors place women at risk for being sexually assaulted, whether they result as a consequence of sexual assault, or whether the relationship is bidirectional, has yet to be determined.

The investigation of the nature of the relationship between health risk behaviors and sexual assault must consider public health, as the health of the general population, and local and national health efforts affect both risk behaviors and assault, and are in turn affected by them. For example, sexual assault is related to some of the most economic and emotionally costly of addictions. The economic burden of illicit drug, alcohol, and tobacco addiction is estimated at greater than $400 billion every year, including health care costs, lost worker productivity, and crime (McGinnis & Foege, 1999). Exposure to second-hand smoke affects nonsmokers; drug and alcohol abuse are risk factors for crime and incarceration, family violence, fatal accidents and disabling injury, birth defects, and divorce. Such deleterious effects of health risk behaviors lead to the conclusion that their relationship with sexual assault must be better understood in order to improve the mental and physical health of sexual assault victims and individuals who engage in health risk behaviors, as well as the social and monetary “health” of the larger community.

Previous examinations of the relationship between sexual assault and health risk behaviors have repeatedly confirmed significant associations between the two (Anteghini
et al., 2001; Brener et al., 1999; Nagy et al., 1994; Nagy et al., 1995; Silverman et al., 2001). Unfortunately, the majority of existing literature is retrospective and can only reveal strong relationships between sexual assault and health risk behaviors, without making implications for the directionality of the relationships between the variables. Studies that have investigated the relationship between health risk behaviors and sexual assault prospectively (Kilpatrick et al., 1997) have limited the scope of the health risk behaviors examined to include alcohol and drug use only. In addition, previous research in this area has measured sexual assault with surveys that have limited scope and hampered ability to distinguish between varying levels of sexual assault experiences.

Many comprehensive studies of health risk behaviors and sexual assault have highlighted the need for prospective studies that include several health risk variables, and that inquire about health behaviors prior to a woman’s most recent sexual assault experience. The current study builds on past research by examining a multitude of health risk behaviors, and corrects for methodological limitations by using a prospective design that incorporates an in-depth analysis of sexual assault experiences. Specifically, we will focus on the health risk behaviors of (a) suicidal ideation and attempts, (b) sexual promiscuity and beliefs regarding sex, (c) alcohol and drug use, (d) smoking tobacco, and (e) other health risks, such as weapon carrying, driving after drinking, physical fighting, and disordered eating behaviors. These behaviors will be investigated at three points in time, approximately three months apart, and will highlight engagement in behavior prior to the women’s most recent experiences of sexual assault. The overriding purpose of this
study will be to determine whether health risk behaviors place women at risk for being sexually assaulted, or whether they result as a consequence of sexual assault. Information from this study can be used to affect prevention and intervention programming efforts on an individual level, as well as on the level of public health.
Literature Review

Incidence and Prevalence of Sexual Assault

The United States has long had the highest incidence of violent crime of any industrialized nation (Acierno, Resnick, Kilpatrick, Saunders, & Best, 1999). Although that rate has declined over the past several years, it remains staggering, with 3% of the population reporting to law authorities that they have been victims of violent crime within the past year (United States Department of Justice, 2001), and more than 1 in every 5 Americans reporting anonymously to researchers that they have been victims of serious physical or sexual assault during their lifetimes (Kilpatrick et al., 1997). Moreover, researchers have found that approximately 1 woman in 5 will be sexually assaulted over the course of her life (Koss, 1993). The National Women’s Study, a longitudinal investigation that included a national probability sample of 4,009 individuals, found a 13% lifetime prevalence rate of sexual assault (Resnick, Kilpatrick, Best, & Kramer, 1992). Similarly, a more recent study, The National Violence Against Women Survey, assessed a representative sample of 8000 women in the United States (Tjaden & Thoennes, 2000) and found comparable results. The researchers found that 14.8% of the women reported having been sexually assaulted at some point in their lives.

Sexual assault against women on college campuses is of particular concern, as incidence rates are equally high and sometimes higher than those found in the general population (Goodman, Koss, Fitzgerald, Russo, & Keita, 1993; Koss, Gidycz, & Wisniewski, 1987). Studies on the frequency of sexual assault have found that 54%
(Koss et al., 1987) to 78% (Muehlenhard & Linton, 1987) of college women have experienced some form of sexual victimization. In addition, it has been estimated that one out of four college women have experienced a sexual assault or an attempted sexual assault (Koss, 1985; Koss et al., 1985). More recent reports support these statistics, with 43% (Gidycz et al., 1998) to 50% (Gidycz et al., 1997) of college women surveyed indicating some form of sexual assault experience, and approximately 18% experiencing a sexual assault since age 14 (Gidycz et al., 1997; Pihlgren et al., 1993). In agreement with these results, a nationally representative sample of college women demonstrated that 15% of the women had experienced a sexual assault since the age of 15, and 20% admitted to having experienced a sexual assault over their lifetimes (Brener et al., 1999). Finally, Fisher, Cullen, and Turner (2000), in a nationally representative study of 4446 college women, found that 10% were sexually assaulted by the time they had entered college. In addition, when asked about sexual assault experiences since they began college (approximately 7 months prior to the survey), 1.7% of the women admitted to having been sexually assaulted in that limited time period.

Definition and measurement. Many of the figures regarding sexual assault are quite similar when comparing data within related populations (e.g. college women). However, some of the results do vary. The divergent results gleaned from incidence and prevalence data can be partially accounted for by differing terminology and definitions utilized to describe and categorize sexual assault experiences (Saunders, Kilpatrick, Hanson, Resnick, & Walker, 1999). In this area of research, sexual assault is defined in
various ways and is also referred to as sexual abuse, sexual victimization, and rape. A review of the literature suggests that the term “abuse” is usually applied to children or to repeated acts of assault by the same person. Consequently, for the purpose of this study incidents referred to as “abuse” will be reserved specifically for the victimization of children. The current study will utilize the terms assault, victimization, and rape when describing incidents of assault against adult women, with the understanding that “sexual assault” comprises all types of assault, including rape.

Fortunately, although studies vary in their definitions of sexual assault and rape, research in this area is moving toward using more standardized measures and definitions (Breitenbecher, 2000; Yeater & O’Donohue, 1999). Whenever reported, the definitions used to categorize experiences as assault are provided. In general, rape is legally defined in Ohio and many other states as vaginal, anal, or oral penetration via force or threats of force, or when the victim is incapacitated (e.g., unconscious) or administered a substance to impair resistance (Ohio Revised Code, 1998). In the current study, sexual victimization is classified according to the protocol established by Koss et al. (1987) and includes unwanted sexual contact (unwanted fondling, kissing, or petting subsequent to verbal pressure, the misuse of authority, force, or threat of force), attempted rape (an attempt to engage in intercourse by force, threat of force, or administration of intoxicants), coerced intercourse (unwanted intercourse subsequent to verbal pressure or the misuse of authority), and rape. This research protocol is based on the Sexual Experiences Survey
In addition to research vocabulary and classification processes, the varied wording utilized when inquiring about sexual assault experiences can also partially account for incidence and prevalence rate variations. Previously, assessment methods of sexual assault experiences have been variable and often non-specific (Resnick, Kilpatrick & Lipovsky, 1991). Past research has shown that the manner in which you present women with the question of sexual assault has a profound effect on the incidence of sexual assaults they report as such (Acierno, Resnick, & Kilpatrick, 1997). Specifically, research suggests that many women who have experiences legally defined as rape are not likely to conceptualize those experiences as rape. For example, questions that assess rape in specific behavioral terms, such as “Have you had sexual intercourse when you didn’t want to because a man threatened or used some degree of physical force (twisting your arm, holding you down, etc.) to make you?” (Koss & Oros, 1982) are more likely to extract an affirmative response than are questions utilizing general, and sometimes culturally loaded or poorly understood terms, such as “Have you ever been raped?” (Layman, Gidycz, & Lynn, 1996).

Sequalae of Sexual Assault

The deleterious effects of sexual assault are far-reaching, encompassing mental health and medical problems. Scientific literature has shown that a myriad of problems, including sexual dysfunction (Koss, 1993), physical problems (Irwin et al., 1995), mental
health difficulties (Acierno et al., 1997; Gidycz & Koss, 1991; Tanzman, 1992), and self-esteem problems (Koss, 1993) result from sexual assault. It is firmly established that sexual assaults pose physical harm and severe threats to the safety and perceived safety of women and children in our society (Finkelhor, 1986; Koss, 1993).

*Physical health.* Women who present to general practitioners with a history of sexual assault have been shown to report more symptoms of illness and perceive their health less favorably than non-victimized women (Koss, Koss, & Woodfruff, 1991; Thompson, Arias, Basile, & Desai, 2002). Sexual assault victims are at increased risk of experiencing chronic disease and somatic symptoms in both reproductive and nonreproductive organ systems (Golding, 1994). Victims of sexual assault are more likely to suffer from chronic conditions including general pain, gastrointestinal disorders, headaches, psychogenic seizures, and premenstrual symptoms than women who do not report victimization (Koss & Heslet, 1992).

Sexual victimization is also related to physical issues regarding sexuality. Not surprisingly, female victims of acquaintance rape are significantly more likely than are non-victims to have a history of abortions, pregnancies, and genital infections (Tanzman, 1992). Victims of sexual assault are also more likely to suffer from sexual dysfunction than are non-victims. In a single data collection phase, Letourneau, Resnick, Kilpatrick, Saunders, and Best (1996) examined victims of sexual assault, their depression and Post Traumatic Stress Syndrome (PTSD) symptomatology, and symptoms of sexual dysfunction. The researchers found that completed rape (rather than lesser degrees of
sexual assault) was significantly associated with sexual dysfunction. A regression analysis showed Major Depression and PTSD, especially, to be significant predictors of sexual dysfunction.

Unfortunately, such reports on the relationship between sexual assault and physical health are often gleaned from retrospective reporting and are correlational in nature. That is, women are assessed for physical health characteristics after they experience a sexual assault, rather than prior to their most recent experience of sexual assault. Therefore, the causal relationship between sexual assault and physical health problems cannot be inferred.

**Mental health.** Sexual assault is also strongly associated with mental and emotional suffering (Acierno et al., 1997; Thompson et al., 2002). Burnam, Stein, Golding, and Siegel (1988), in a retrospective study that is representative of the literature, compared women who reported a history of sexual victimization (including childhood experiences) to women who did not. The researchers found that women with histories of victimization experienced a significantly higher lifetime prevalence of psychological difficulties. Specifically, sexual assault victims were 2 to 4 times more likely than were non-victims to experience depressive disorders, drug abuse and dependence, and anxiety disorders.

Researchers have consistently shown victims of sexual assault to be at greater risk than non-victims for anxiety disorders, posttraumatic stress disorder, depressive disorders (Resnick et al., 1997), and suicidal ideation (Brener et al., 1999). Saunders et al. (1999),
in a nationally representative telephone survey of 4008 women in the United States, identified mental health variables that were strongly associated with the history of experiencing sexual assault before the age of 18. Women were asked to retrospectively report on sexual assault experiences, and symptomatology of depression, PTSD, and substance abuse. Approximately 8% of the women reported at least one completed rape prior to the age of 18. It was clearly evident that there was a connection between victimization and mental illness. Victims were twice as likely as non-victims to have experienced a major depressive episode, and three times as likely to be currently depressed. Moreover, the lifetime prevalence of PTSD in victims was greater than 30%, compared to less than 10% in non-victims. Similarly, victims were significantly more likely than non-victims to present with problematic substance use at the time of the interview.

It stands without question that the relationship between depression and sexual assault is strong, as it has been confirmed in comprehensive research over many years (Breslau, Davis, Andreski, & Peterson, 1991; Resnick et al., 1997; Tanzman, 1992). In a study of women who had recently been sexually assaulted, Frank and Stewart (1984) found that 50% of the victims scored in at least the moderately depressed range on a popular self-report symptom checklist - the Beck Depression Inventory. Using data from the National Women’s Study, Goodman, Koss, and Russo (1993) reported that 30% of sexual assault victims had experienced at least one major depressive episode, compared to 10% of non-victims. In another comprehensive women’s study, Kilpatrick et al. (1997)
found that lifetime rates of depression were as high as 46% in women who had experienced one sexual assault, and about 80% in women who had multiple sexual assault experiences.

Numerous studies indicate that anxiety and sexual assault are associated (Gidycz, Coble, Latham, & Layman, 1993). In a study of adult female alcoholic inpatients (Windle, Windle, Scheidt, & Miller, 1995), researchers found that experiencing childhood sexual assault was associated with significantly higher rates of antisocial personality disorder, suicide attempts, and generalized anxiety disorder. In both clinical and non-clinical populations, a strong link has been identified between sexual assault and the specific anxiety disorder of posttraumatic stress disorder (PTSD).

PTSD is among the most common anxiety disorders. Community based studies show that lifetime prevalence rates of PTSD range from between 1% and 14% of individuals (Diagnostic and statistical manual of mental disorders, fourth edition, 1994). These rates vary widely due to variable data collection methods and populations sampled. The relationship between PTSD and sexual assault is highly significant (Goodman, Koss, & Russo 1993; Resnick et al., 1997). In a study of sexual assault victims who presented in an emergency room (and a minority who were referred by mental health professionals), Rothbaum, Foa, Riggs, Murdock, and Walsh (1992) found an extremely high rate of PTSD. The researchers reported that among the sexual assault victims (that they studied within two weeks of victimization), 90% met the diagnostic criteria for PTSD. Three
months after their assaults, PTSD symptomatology had decreased but continued to be high, as 50% of the women met PTSD criteria.

Support for this relationship can also be found in the general population. Data from the National Women’s Study (Goodman, Koss, & Russo, 1993) suggested that 11% of women who had been sexually assaulted at any point in their lives were actively exhibiting diagnosable levels of PTSD at the time of assessment. Though compiling these results appears to suggest that PTSD symptomatology decreases over time, as the assault moves further into a woman’s past, it is clear that a woman who is assaulted is at a high risk of experiencing PTSD at some point. Further, she is at an especially high risk immediately following the assault.

Research suggests that PTSD also affects the presence and manifestations of other mental disorders. Among a community sample of women who had been criminally victimized (Boudreaux, Kilpatrick, Resnick, Best, & Saunders, 1998), results indicated that victims of completed rape were more likely than non-victims to meet the criteria for PTSD, major depressive disorder, agoraphobia, obsessive-compulsive disorder, and social phobia. A Multivariate Logistic Regression that controlled for demographics and crime factors (e.g. injury) and that entered PTSD in the final step, showed that the strength of the relationships between non-PTSD disorders and victimization were greatly reduced. The researchers suggested this was an indication that PTSD was an important mediating factor in the relationships between sexual assault and mental disorders and distress.
Furthermore, the nature of the relationship between sexual assault and PTSD appears to be bidirectional. In addition to the aforementioned studies that highlighted the presence of PTSD after an assault, research also shows PTSD can increase one’s vulnerability to revictimization. In a longitudinal study of risk factors and the effects of sexual assault, Acierno et al. (1999) found that women with PTSD at wave one were at an increased risk of experiencing a new sexual assault (when past victimization was not controlled) over the interim period of two years.

Additionally, the bidirectional relationship between sexual assault and mental health has been evidenced in studies of more general anxiety and depression. Gidycz et al. (1993), in a prospective analysis of college women, found a significant relationship between depression and anxiety, and sexual assault. Specifically, symptom levels of depression and anxiety measured at the beginning of the study significantly predicted the occurrence of victimization over a 9-week period. That is, women who were more highly distressed at the initial data collection phase were more likely to report having been sexually assaulted over the interim period. However, the path analysis links were such that childhood and early adolescent victimization predicted psychological adjustment at the initial assessment.

The Gidycz et al. (1993) study suggests that mental disorders such as PTSD, anxiety, and depression are potentially consequences of assaults and predictors of revictimization. Additionally, the Acierno et al. (1999) study supports the finding that such mental disorders are risk factors for revictimization. There is preliminary evidence
that additional variables, such as health behaviors, may be risk factors for experiencing a sexual assault. Such prospective studies highlight the need to examine sexual assault and related variables in a longitudinal context.

Relationship between Sexual Assault and Health Risk Behaviors

Numerous studies have assessed health risk behaviors and their associations with sexual assault via utilization of retrospective designs. Specifically, researchers have presented significant links between sexual assault and (a) suicidal ideation and attempts (Brener et al., 1999), (b) sexual promiscuity (Hotte & Rafmann, 1992; Polit et al., 1990) and beliefs regarding sex (Nagy et al., 1994), (c) alcohol and drug use (Kilpatrick et al., 1997; Polusny & Follette, 1995), (d) smoking tobacco (Brener et al., 1999), and (e) other health risks, such as weapon carrying (Anteghini et al., 2001; Nagy et al., 1994), driving after drinking (Brener et al., 1999), physical fighting (Brener et al., 1999), and disordered eating behaviors (Nagy et al., 1994; Silverman et al., 2001; For a summary of these studies and their findings, see Appendix A). The association of these variables and the question of whether these behaviors place women at risk for being sexually assaulted, or whether they result as a consequence of sexual assault, has yet to be determined. Unfortunately, the majority of existing literature is retrospective and can only reveal strong relationships between sexual assault and health risk behaviors, without making implications for the directionality of the relationships between the variables. Further, the majority of studies have focused on only a limited number of health risk behaviors and
failed to conduct comprehensive evaluations of behaviors that are likely to lead to negative health outcomes.

**Suicidal ideation and attempts.** The relationship between suicidal ideation and attempts, and sexual assault has been gleaned from both large- and small-scale studies, spanning many years. For example, Riggs, Alario, and McHorney (1990) conducted a study that focused solely on suicidal ideation that strongly supported its relationship with sexual assault. The researchers surveyed 635 high school students in a single session. Results indicated that sexually abused students (5.4% of the sample) were more than three times as likely to have attempted suicide than their non-abused peers.

The most extensive study to date that confirmed the relationship between sexual assault and health risk behaviors was reported in Brener et al.’s (1999) assessment of college women. A nationally representative sample of college women, approximately 4600 in total, utilized the comprehensive National College Health Risk Behavior Survey (NCHRBS) to indicate health risk behaviors. Sexual assault was measured within the NCHRBS via 3 items, gauging whether or not forced sexual intercourse occurred and age at first and last sexual assault. Although this method of measurement is more comprehensive than some studies in the area, it risks the exclusion of many women who have been sexually assaulted, but who do not describe the event as “forced intercourse”. Unlike the majority of studies in this area, Brener et al. (1999) controlled for demographic variables associated with health risk behaviors and found intriguing results. In a comparison to women who had not been sexually assaulted, the researchers found
that women who had been sexually assaulted were significantly more likely to engage in various health risk behaviors. Overall, for women who had been sexually assaulted, the odds of engaging in health risk behaviors were 1.5 to 2.7 times higher than non-victimized women. Specifically, more than twice as many women who had been sexually assaulted had considered suicide in the preceding 12 months (19%), compared to women who had not been sexually assaulted (8%). In Logistic Regression analyses that controlled for demographic variables, suicidal ideation remained a significant predictor of sexual assault.

Similar results have been found among adolescent populations. Nagy et al. (1994) studied 3018 racially diverse, 8th and 10th grade adolescents. The researchers gleaned information on health risk behaviors from a survey derived from the National Adolescent Student Health Survey (NASHS). Sexual assault histories were assessed via 3 items indicating “forced intercourse” by a date, relative, and stranger. Unfortunately, such a limited definition of sexual assault makes a broad generalization of the findings difficult and fails to capture many young women’s unwanted sexual experiences. Nagy et al. (1994) compared three groups of students: those who had been sexually abused (10%), students who were sexually active and non-abused (28%), and not sexually active, non-abused students (62%). However, analyses did not take into account these separate abuse experiences. This limitation was not explained.

Students who had been sexually assaulted characterized the perpetrator as a date (50%), a stranger (12%), a family member (11%), or a combination of these individuals
(27%). Males and females were analyzed separately. Chi-Square analyses comparing the groups showed that girls’ rates of risky health behaviors were significantly higher for the abused group. When compared with non-abused girls, girls who had been sexually abused were more likely to have exhibited symptoms of mental illness, including suicidal ideation and attempts in the past year.

In a separate and more detailed study, Nagy et al. (1995) utilized an almost identical health risk behavior questionnaire, added “unwanted sexual contact” to the original items regarding forced intercourse, and followed similar data collection processes in assessing 3124, racially diverse, 12- to 17-year-old female adolescents. The inclusion of broader definitions for sexual assault in this study most likely led to more accurate results, as many girls experience sexual assault that they would not describe as “forced intercourse”.

Girls who had been sexually abused (13% of the entire sample) were compared to girls who had not been sexually abused, and who were self-identified as sexually experienced (32% of the total sample). Students who had been sexually assaulted characterized the perpetrator as a boyfriend (31%), an immediate family member (42%), or a member of some other category (37%). In accordance with Nagy et al.’s (1994) previous study, girls’ rates of risky health behaviors were significantly higher for the abused group. When compared to non-abused girls, girls who had been sexually abused were more likely to have exhibited symptoms of mental illness. Specifically, sexually
abused adolescents were 1.5 times more likely to exhibit depressive symptoms and 1.3 times as likely to report suicidal ideation than non-abused adolescents.

A more recent study of adolescent health risk behaviors and sexual experiences provided corroborating results. In a large-scale study of 2059 Brazilians (Anteghini et al., 2001), researchers found a significant correlation between history of sexual abuse and current risky health behaviors in both male and female adolescents. Anteghini et al. (2001) assessed health risk behaviors and sexual abuse history with a measure derived from the Minnesota Adolescent Health Survey (MAHS). Specific wording of the item(s) inquiring about sexual assault was not provided. Analyses for girls, specifically, showed that a history of sexual abuse indicated an increased risk of past suicidal ideation and attempts. Unlike the adult women in Brener et al.’s (1999) study, Anteghini et al.’s (2001) regression analyses revealed no significant health-risk behaviors that were predicted by a history of sexual abuse in girls. In fact, Anteghini et al. (2001) found several relationships between health risk factors and sexual assault, none of which were significantly related in regression analyses. These lack of findings appear to indicate that, for this sample of adolescents, sexual abuse history is related to health risk behaviors, but it is not the primary contributing variable. However, it is not recommended to weigh these results heavily, or to compare them too closely to the other studies in this area, when the method of acquiring sexual assault histories is unknown.

Silverman et al. (2001), in an analysis of the leading causes of youth morbidity and mortality, assessed health behaviors of over 4000 Massachusetts high school
students. The researchers utilized the Youth Risk Behavior Survey (YRBS), developed by the Centers for Disease Control and Prevention, to assess health risk behaviors. This measure was adapted for an older population, including the addition of sexual assault items, to create the National College Health Risk Behavior Survey (NCHRBS) which was used in both Brener et al.’s (1999) study and in the current analysis. Silverman et al. (2001) inquired about sexual abuse with one added item, however, it was inclusive: “Have you ever been hurt physically or sexually by a date or someone you were going out with? This would include being shoved, slapped, hit, or forced into any sexual activity.” Respondents endorsed choices indicating physical assault, sexual assault, both, or neither. A comprehensive question with examples provided such as this is likely to glean the most accurate and complete response.

Data were collected with a random selection of Massachusetts high school students at two administrations, one in 1997, the other in 1999. Different students were randomly selected to participate at each administration. Combining the two sets of data, researchers showed that experiencing sexual dating violence was associated with suicidal ideation and attempts. Silverman et al. (2001) utilized Logistic Regression equations that showed strong associations between health risk behaviors and sexual assault. The analyses controlled for demographic and other health behavior variables that are correlated with dating violence in order to determine the specific effects of the health risk behaviors under investigation. For the data set combining subjects from 1997 and 1999,
sexual assault remained a significant predictor of suicidal ideation and attempts, even after controlling for demographic variables.

*Sexual behaviors and attitudes.* A number of studies have confirmed a connection between sexual assault and sexual risk behaviors, such as unprotected sex and early initiation of sexual intercourse (Hotte & Rafmann, 1992; Polit et al., 1990). In a community sample of predominantly African American urban women, Irwin et al. (1995) found that 14% of the women had been sexually assaulted in the past year. Women who were sexually assaulted were more likely than, otherwise similar, non-victimized women to have sexually transmitted diseases, and to engage in prostitution and sex with intravenous drug users.

In their study of high school students, Riggs et al. (1990) found that sexually abused students were 3.5 times as likely than were non-sexually abused students to be sexually active. In the large-scale Brener et al. (1999) study of college women, 12% of women who had been sexually assaulted reported having multiple sexual partners in the preceding 3 months, compared with 6% of women who had not been sexually assaulted. Additionally, victimized women were more than twice as likely to have had consensual sex before the age of 15 (21%) when compared with non-victimized women (9%). In the Logistic Regression analyses that controlled for demographic variables, risky sexual behaviors remained significant predictors of sexual assault.

Nagy et al., (1994) in the aforementioned comprehensive study of adolescents, compared non-abused girls to girls who had been sexually abused. The researchers found
that sexually abused girls were more likely than non-abused girls to report having been pregnant. In more detailed analyses with a different sample of girls that followed, Nagy et al. (1995) confirmed these results, such that sexually abused adolescents were 1.5 times more likely than non-sexually abused adolescents to have been pregnant and 2.5 times as likely to have initiated sexual intercourse at a younger age. Furthermore, Anteghini et al. (2001) in their study of Brazilian adolescents, found supporting results. A history of sexual abuse indicated an increased risk of early onset of sexual intercourse and pregnancy.

Silverman at el. (2001), in an analysis of high school students mentioned above, combined two sets of data from 1997 and 1999. The researchers showed that experiencing sexual dating violence was associated with risky sexual behaviors, including intercourse before the age of 15 and substance use before the most recent occurrence of intercourse. Analyses of the Silverman (2001) 1999 data set alone indicated a relationship between experiencing sexual dating violence and risky sexual behaviors, such as failure to use a condom at last intercourse, having multiple sexual partners, and having been pregnant. These relationships were not significant in the 1997 data alone, nor when the two data sets were combined. Logistic Regression equations for the data set combining 1997 and 1999 indicated that sexual assault remained a significant predictor of early consensual sex. In the 1999 data alone, sexual assault was predictive of having multiple sex partners and a history of pregnancy. It is unclear why a greater number of associations were found in 1999 than in 1997. It is possible that because each
variable was assessed via a single item, the measure was less reliable than other, more comprehensive measures such as the National College Health Risk Behavior Survey (NCHRBS) utilized by Brener et al. (1999). Also, the data set used in 1999 was slightly larger and offered greater statistical power.

Interestingly, the relationship between sexual abuse and sexual behaviors appears to extend to sexual attitudes and beliefs. In both Polit et al.’s (1990) and Hotte and Rafman’s (1992) examinations of adolescents, the researchers found that girls who experienced a sexual assault were more likely than non-victimized girls to have what they termed sexually permissive and sexualized attitudes. Similar attitudes were expressed by sexually abused girls in Nagy et al.’s (1994) study. Sexually abused girls were significantly more likely than sexually active, non-abused girls to endorse items such as: “It’s o.k. to have several sexual partners”. While one might argue that beliefs that endorse attitudes such as having multiple sexual partners are acceptable or even empowering, it is noted here solely because previous research has focused on it as a correlate to sexual assault.

Miller, Monson, and Norton (1995) conducted a study that supported the association between sexual abuse and specific sexual attitudes for women sexually assaulted as adolescents or adults. Gleaning data from the National Survey of Children (NSC), the researchers compared 41 women who had experienced forced sexual intercourse with 400 women who did not. At the time of the study, the women were between the ages of 18 and 22 and were reporting retrospectively on their sexual assault
experiences, and on their current beliefs and behaviors. The researchers found that women who experienced a sexual assault felt less strongly that sex was wrong for 16- to 17-year-olds than did women who had not experienced forced sexual intercourse.

Finally, in a representative national sample of college women, Koss and Dinero (1989) investigated the accuracy with which sexual assaults could be predicted by several competing hypotheses regarding sexual assault vulnerability, including sexual attitudes. Three vulnerability hypotheses were generated: vulnerability-creating traumatic experiences, social-psychological vulnerability, and vulnerability-enhancing situations. The model that most accurately discriminated between victimized and non-victimiz ed women was one that included the strongest risk variables from each hypothesis: sexual abuse history, sexual attitudes, alcohol use, and sexual activity. Women were more likely to report the experience of sexual assault if they had childhood sexual abuse histories, more liberal sexual attitudes, greater number of sexual partners, and if they used alcohol heavily.
Alcohol and drug use. A relatively large body of research focusing on health risk behaviors and sexual assault highlights excessive drinking reported by victimized women (Brener et al., 1999; Nagy et al., 1994; Thompson et al., 2002). In a retrospective study, Windle et al. (1995) investigated over 300 adult female alcoholic inpatients on variables of psychopathology and sexual experiences. Women who reported childhood sexual abuse (49%) had attempted suicide at higher rates, and were more likely to be diagnosed with antisocial personality disorder or generalized anxiety disorder than alcoholic women who had not been sexually abused.

Non-clinical populations show similar associations between health risk behaviors and substance abuse (Wechsler, Dowdall, Davenport, & Castillo, 1995). Specifically, relationships have been found between college students identified as binge drinkers and risky driving behaviors (Wechsler & Isaac, 1992); unprotected and unplanned sex (Wechsler, Davenport, Dowdall, & Moeykens, 1994); and marijuana use, smoking cigarettes, and having multiple sexual partners (Wechsler et al., 1995). Given such findings, it is not surprising to find past research has reported a correlation between substance abuse and sexual assault.

Irwin et al. (1995), in the community investigation of African American women mentioned above, found that women who had been sexually abused were more likely to be homeless, report the use of crack cocaine, and engage in Human Immuno Deficiency Virus (HIV) risk behaviors, such as intravenous (IV) drug use, than were non-victimized women. Canterbury, Grossman and Lloyd (1993), in a study of 1900 college freshmen,
found that for both males and females, those who drank two to four times per week were more likely to report being survivors of what was termed “date rape” than students who drank less or not at all. These correlations hold true for other drugs as well (Brener et al., 1999; Nagy et al., 1994; Nagy et al., 1995). For example, in a comparison of dating situations that ended in sexual assault to dates that did not, Muehlenhard and Linton (1987) discovered important situational differences. Dates that ended in sexual assaults were more likely to include heavy alcohol or drug use by one or both individuals than dates that did not result in sexual assaults.

It follows that research has found alcohol use to be a significant risk factor for experiencing a sexual assault (Dunn, Bartee, & Perko, 2003; Gidycz, Hanson, & Layman, 1995). Approximately 75% of acquaintance rapes involve alcohol consumption, either by the victim or the perpetrator or both (Koss et al., 1987). Brener et al. (1999) in their study of college women, found the use of alcohol and other drugs was significantly more prevalent among women who had been sexually assaulted (22%) than women who had not been sexually assaulted (12%). In Logistic Regression analyses that controlled for demographic variables, heavy drinking and marijuana use, which were not significant in the group comparison analyses, were predictive of sexual assault. Moreover, Koss and Dinero (1989) reported that frequent use of alcohol and other drugs was associated with more serious incidents of sexual assault and, as noted above, was one of the strongest predictors of sexual assault among college women.
The relationship between alcohol use and sexual assault extends into adolescence as well. Nagy et al. (1994), when comparing sexually abused and non-abused girls, found that those who had been sexually abused were more likely to have exhibited symptoms of substance abuse, indicated by drinking more than 5 drinks at one time in the past two weeks and using illegal drugs in the past month. In more specific analyses of a separate data set that followed, Nagy et al. (1995) confirmed these findings. Sexually abused adolescents were 1.5 times as likely as their non-abused counterparts to have abused illicit drugs. However, this study found no differences between abused and non-abused girls on alcohol use.

Silverman et al. (2001), in their comprehensive analysis of high school students, combined two sets of data from 1997 and 1999. The researchers showed that experiencing sexual dating violence was associated with cocaine use. Analyses of the Silverman (2001) 1999 data set alone indicated a relationship between experiencing sexual dating violence and binge drinking, although this relationship was not significant in 1997 alone, nor when the two data sets were combined. Logistic Regression analyses for the data set combining 1997 and 1999 revealed sexual assault as a significant predictor of cocaine use. For the adolescents assessed in 1999, sexual assault significantly predicted binge drinking.

Using data from the National Survey of Adolescents, Kilpatrick et al. (2000) found a strong association between sexual abuse and the use of alcohol. It was clear that victimized youth began using substances earlier than non-victimized youth, supporting
the notion that victimization plays a direct role in adolescent substance abuse/dependence. The researchers were unable to make strong implications for the directionality of the relationship between sexual abuse and the use of substances due to the retrospective design of their study. However, they hypothesized that abuse preceded drinking.

The retrospective studies presented by Kilpatrick et al. (2000), Brener et al. (1999), Nagy et al. (1994), Nagy et al. (1995), Anteghini et al. (2001), and Silverman et al. (2001), present methodological problems which will be discussed in further detail in a following section. However, it must be noted here that for the majority of studies examining health risk behaviors and sexual assault, participants were asked about their health risk behaviors at various time periods only after they experienced sexual assault. No analyses were performed prior to their most recent sexual assault experiences. For example, Brener et al.'s (1999) analysis shows a clear relationship between many health risk behaviors and sexual assault, yet the relationship sheds no light on the question of whether health risk behaviors place women at risk to be sexually assaulted, or whether they present as a consequence of sexual assault, as both sexual assault experiences and health risk behaviors were measured at one time. In the same vein, Nagy et al. (1994) and Nagy et al. (1995) collected data at one point in time, offering no indication of the direction of the relationship between health risk behaviors and sexual assault in adolescent girls. Finally, in both reports by Anteghini et al. (2001) and Silverman et al. (2001), data collection was performed at one point in time, limiting analyses to
retrospective reporting after girls experienced a sexual assault. Such methodologies do not offer guidance in determining the nature of the relationship between sexual assault and health risk behaviors.

In order to address some of the methodological limitations of retrospective studies, Gidycz et al. (2001), in an analysis of sexual assault and substance use, prospectively examined 372 female college students during two sessions that were placed two months apart. The researchers examined variables indicating victimization history and current alcohol use. They found that victimization in adolescence significantly predicted re-victimization during the 2-month interim period. Additionally, and in support of the theory that risk behaviors increase the probability of experiencing a sexual assault, women who were identified as drinkers at time one (drinking from less than once per month to drinking more than two times per week) were 4 times more likely to be victimized during the interim period than were non-drinkers.

However, this analysis did not account for victimization history. Taking victimization history into account, relative risk analyses revealed that for women without a history of victimization, those who were drinkers at time one were 2 times more likely than non-drinkers to be victimized over the two-month period. Among women with a history of victimization, drinkers were approximately 5 times more likely than were non-drinkers to be victimized over the interim period. While this study allowed for a better assessment of alcohol use as a risk factor for sexual assault, this investigation was limited in its scope, as it did not include other variables indicating health risk behaviors. Further,
it highlighted the complex relationship between history of victimization, alcohol use, and risk for future victimization.

_**Smoking tobacco.**_ Recent, comprehensive, health risk research has supported a substantial relationship between smoking tobacco and sexual assault (Resnick et al., 1997). In Brener et al.’s (1999) analysis of college women and their various health risk behaviors, the researchers found a significantly greater percentage of victimized women reported smoking cigarettes (39%) than non-victimized women (25%). In the Logistic Regression analyses that controlled for demographic variables, tobacco use remained a significant predictor of sexual assault.

This relationship has been confirmed elsewhere. For example, Anteghini et al. (2001), in the aforementioned analysis for girls, specifically, showed that a history of sexual abuse indicated an increased risk of smoking. Additionally, combining two sets of data on high school students, Silverman et al. (2001), showed that experiencing sexual dating violence was associated with heavy smoking. Utilizing Logistic Regression equations the researchers reported that, for the 1997 data alone, sexual dating violence was predictive of heavy smoking. This relationship was not supported for the 1999 data alone, nor when the two data sets were combined.

In a study assessing the general sexual and health behaviors of a national sample of women, Acierno, Kilpatrick, Resnick, Saunders, and Best (1996) confirmed the association between sexual assault and tobacco use. An assessment of the relationship between sexual assault and smoking tobacco revealed that 16% of the women reported
having been sexually assaulted. Statistical analyses showed that women with histories of
sexual assault were more than twice as likely to report past cigarette use and, compared to
women without assault histories, were twice as likely to be current smokers. When only
women with histories of cigarette smoking were included in analyses, and when PTSD
and depression were statistically controlled, the researchers found that women with
assault histories were 1.35 times as likely to be current smokers as were women who
were not victimized. The researchers interpreted this result as an indication that assault
may play a role in both the initiation and the maintenance of cigarette use. The authors
hypothesized that cigarette use was a coping mechanism (albeit maladaptive) that served
to ameliorate the negative arousal and negative affect that resulted from sexual assault.
They highlighted the fact that nicotine releases neurotransmitters that purportedly affect
emotional arousal. Acierno et al. (2000) confirmed the association between sexual assault
history and smoking in a national sample of female adolescents.
Other health risk behaviors. Comprehensive analyses of health risk behaviors and sexual assault have occasionally included additional measures of health risks, such as weapon carrying, risky driving, physical fighting, and maladaptive eating behaviors. Nagy et al. (1994), in an analysis that compared sexually abused and non-abused girls, reported that girls who had been sexually abused were at a greater risk of carrying a weapon than were non-abused girls. Similarly, Anteghini et al. (2001), in analyses comparing sexually abused and non-abused girls, found that a history of sexual abuse indicated an increased risk of gun-carrying.

Brener et al. (1999), in their analysis of college women, reported that victimized women were significantly more likely to drive after drinking (28%) than non-victimized women (22%). In Logistic Regression analyses that controlled for demographic variables, risky driving behaviors remained a significant predictor of sexual assault. Moreover, using data from both 1997 and 1999, Silverman et al. (2001) showed that experiencing sexual dating violence was associated with driving after drinking. Logistic Regression equations indicated that, in the 1997 data alone, sexual dating violence significantly predicted driving after drinking. This relationship was not present using the 1999 data alone, or in an analysis combining the two sets.

In addition to a correlation between sexual assault and risky driving, Brener et al. (1999) found a significant relationship between sexual assault and history of engaging in physical fighting. The researchers reported that women who had been sexually assaulted were more likely to have been in a physical fight (6%) than women who had not been
sexually assaulted (3%). In the Logistic Regression analyses, physical fighting remained a significant predictor of sexual assault.

Finally, Nagy et al. (1994), in an analysis of adolescents, found that sexually abused girls were more likely than non-abused girls to have exhibited symptoms of bulimia. However, in a subsequent, more detailed, study with different participants, Nagy et al. (1995) found no differences between abused and non-abused girls on eating disordered behaviors. The difference between the two studies’ results may be accounted for by a measurement of bulimic symptoms that relied on a limited number of items with possibly low reliability. In the initial study, reliability data were not reported.

In accordance with Nagy et al. (1994), combining two sets of data, Silverman et al. (2001) showed that experiencing sexual dating violence was associated with diet pill use. Analyses of the 1999 data set alone indicated a relationship between experiencing sexual dating violence and using dangerous weight-loss methods (aside from diet pills), although this relationship was not significant in 1997 alone, nor when the two data sets were combined. Logistic Regression analyses for the adolescents assessed in 1999 revealed that a sexual assault history predicted engagement in unhealthy weight-loss methods. Logistic Regression analyses for the 1997 data set, as well as the combined data set, failed to show similar results.

In conclusion, numerous studies have reported significant correlations between health risk behaviors and sexual assault. It is essential to note that, for the most part, the studies linking sexual assault to health risk behaviors are retrospective. Although these
studies represent an important and interesting area of research, it is difficult to utilize them to support causality. The nature of the relationship between health risk behaviors and sexual assault is yet unknown. However, a summary of the findings suggests that a relationship exists between sexual assault and suicidal ideation and attempts; sexual promiscuity and beliefs regarding sex; alcohol and drug use; smoking tobacco; and weapon carrying, driving after drinking, physical fighting, and disordered eating behaviors, such as bulimia.

Health Risk Behaviors: Cause or Consequence of Sexual Assault

As the body of research linking sexual assault and health risk behaviors has expanded, the question of the nature of the relationship has arrived at the forefront (Anteghini et al., 2001; Brener et al., 1999; Nagy et al., 1994; Nagy et al., 1995; Silverman et al., 2001). Given the retrospective designs of the majority of past investigations, it is unclear whether health risk behaviors occur before or after a sexual assault, or both before and after a sexual assault. One possibility is that sexual abuse histories predispose women to engage in risky health behaviors, suggesting that these risky behaviors are consequences of sexual assault experiences. A handful of retrospective studies and psychological theories to date can provide preliminary evidence that becoming a victim of sexual assault increases the probability of engagement in some health risk behaviors.

Several investigators conceptualize substance use as a way to cope with the stress brought on by sexual assault (Bean, 1992; Dembo et al., 1987). Kilpatrick et al. (1997)
suggested that the high levels of negative affect resulting from an assault might have led individuals to engage in behaviors, such as drinking, which served to reduce those emotions. A review of the literature by Resnick et al. (1997) concurs; describing the victims’ increased use of substances as a method to specifically reduce symptoms of fear, anxiety, and depression. Briere (1989) has coined the phrase “chemical avoidance” to describe such maladaptive coping mechanisms.

Burnam et al. (1988) offered preliminary evidence that sexual assault precedes engagement in health risk behaviors in a retrospective examination of sexual assault victims and their patterns of substance use. The researchers administered self-report questionnaires to adult victims and non-victims of physical and sexual assault, asking them to report on behaviors from the present and past. Thus, women who had experienced a sexual assault reported retrospectively on their use of drugs and alcohol before and after their sexual assault experiences. The data showed that after an assault, 16% of the victims developed alcohol abuse (versus 4% of non-victims) and that 18% reported drug abuse (versus 2% of non-victims). More recent studies continue to confirm these results (Kilpatrick et al., 1997). Although this study represents an attempt to understand the temporal relationship between sexual assault and alcohol and drug use, it remains limited by the retrospective nature of the design.

It is also possible that risky health behaviors place women at increased risk to experience sexual assaults. However, the majority of studies in support of this are retrospective in design. A number of investigations and psychological theories appear to
lend support to the possibility that engagement in substance abuse, specifically, increases the likelihood of experiencing a sexual assault.

In general, research has established alcohol as a critical element in the majority of sexual assaults. This finding lends support to the theory that substance use leads to sexual assault when the scope is limited to the moment of the assault. In other words, it suggests that when an assault occurs, it is often preceded by drinking, rather than a broader scope that might suggest that an individual who abuses alcohol is more likely to experience an assault. For example, in a community sample of sexual assault victims and perpetrators, 51% of victims and 44% of perpetrators reported using alcohol, drugs or both prior to the assault (Seifert, 1999). Moreover, in a community sample of sexual assault victims, Hindmarch and Brinkman (1999) found that 59% of the participants tested positive for drugs, alcohol or both. Of those women, nearly 21% were using more than one substance at the time of the assault.

Representing the larger scope, Kilpatrick et al. (1997) hypothesized that an increased vulnerability to assault may arise for women with substance use problems. This vulnerability may stem from impaired judgment when abusing substances, increased exposure to dangerous situations because of the lifestyle associated with abusing substances, increased likelihood that they will be targeted by perpetrators because they are vulnerable, or a greater tendency to engage in high-risk behaviors. Furthermore, Kilpatrick, Resnick, Saunders, and Best (1994) identified the personality trait of “sensation seeking”, or the tendency to engage in high-risk behaviors, as an independent
risk factor for experiencing sexual assault. In his study of adolescents, Windle (1994) concurred with the notion of sensation seeking. He noted that much of the effect of the relationship between substance abuse and sexual assault was due to the substance abusing adolescents’ increased engagement in risky behaviors, such as spending increased time in places where the potential for victimization was deemed great.

The extant literature is correlational and only provides us with the understanding that health risk behaviors and sexual assault are associated. What can be gleaned from these retrospective data is that women who have been sexually assaulted are more likely to report sexual beliefs and risk behaviors that differ from the reports of women who have not been sexually assaulted. In addition, studies show that immediately prior to sexual assault, many women were drinking or using drugs. However, retrospective data does not allow us to gain an understanding of how these behaviors and beliefs would have been reported had the women been surveyed both before and after their most recent sexual assault experiences. One prospective study that does inquire about health risk behaviors before the most recent experience of sexual assault (Gidycz et al., 2001) failed to include multiple variables of health risk. Longitudinal investigations of the relationship between sexual assault and multiple health risk behaviors are needed to make a clearer statement about the nature of their relationship.

A third possible explanation for the nature of the relationship between sexual assault and health risk behaviors is that the relationship is bidirectional. Kilpatrick et al. (1997), in a unique prospective analysis of substance use and sexual assault, presented evidence that
the relationship between sexual assault and health risk behaviors is bidirectional. Kilpatrick et al. (1997) assessed over 3000 women who participated in the National Women’s Study, a representative sample of women across the nation.

Participants’ health risk behaviors were gleaned via telephone interviews that assessed whether or not their behavior met the criteria for DSM-IV substance abuse. Sexual assault was examined in 4 items indicating forced vaginal, oral, or anal sex, or penetration by objects. On the basis of previous research findings, Kilpatrick et al. (1997) divided the women into subgroups as follows: Exclusive Alcohol Abusers (Subgroup A) met criteria for alcohol abuse but not other drug use and were compared to non-drug users or to women who both used illicit drugs and abused alcohol; Illicit Drug Users (Subgroup B) met criteria for illicit drug use and were compared to women who did not use drugs, regardless of alcohol use; and Any Substance Users-Abusers (Subgroup C) met criteria for either Subgroup A or B and were compared with non-users.

Kilpatrick et al. (1997) found that, controlling for previous sexual assault and substance use at time one, experiencing a sexual assault over the course of the two-year study was predictive of exclusive alcohol use and drug use at the two-year follow-up. Kilpatrick et al. (1997) also found that, when controlling for a history of sexual assault, drug use was a significant predictor for sexual victimization 2 years later, but that exclusive alcohol abuse was not. Like the Gidycz et al. (2001) examination, however, this study did not investigate other health risk behaviors.

Unfortunately, the research in the area of sexual assault and health risk behaviors
predominantly employed retrospective reporting. Moreover, the two prospective studies we must rely upon to generate hypotheses of directionality limited their inquiries to the relationship between substance use and sexual assault (Gidycz et al., 2001; Kilpatrick et al., 1997). The current study will broaden the focus of the extant prospective literature to include additional risk behaviors, such as suicidal ideation and attempts, sexual promiscuity, weapon carrying, and risky driving behaviors. In addition, health risk behaviors will be examined prior to and following a woman’s more recent sexual assault experience.

Methodological Limitations of Previous Studies

There is a strong need for longitudinal, prospective research designs that examine the relationship between sexual assault and health risk behaviors. As noted above, previous studies have predominantly used cross-sectional research designs that rely on retrospective reporting of sexual assault and health risk behaviors to examine the relationship between the two (Brener et al., 1999; Nagy et al., 1994; Nagy et al., 1995; Silverman et al, 2001). The inherent problem with retrospective studies is that participants’ memories or reports might be skewed by judgments received, or insight gained, in the passage of time (Briere, 1992). Due to the limitations of retrospective bias, studies utilizing such methodology cannot provide support for theories regarding the nature of the relationship between sexual assault and health risk behaviors. It is essential that future examinations utilize prospective analyses.
Additionally, the only three prospective analyses that have been performed to date limited the examination of health risk behaviors to alcohol and substance use (not including tobacco). Aforementioned retrospective data (Brener et al., 1999; Nagy et al., 1994; Nagy et al., 1995; Silverman et al, 2001) reveals multiple correlations between health risk behaviors and sexual assault that are not limited to alcohol and other drug use. Moreover, there is evidence that youth are engaging in increasingly severe risk behaviors (Stevens & Griffin, 2001) that must be examined thoroughly. It is essential that these variables be examined in a prospective manner. Without that, it is impossible to determine the true nature of their relationship to sexual assault.

More specific limitations of the previous literature in this area, both retrospective and prospective, regard the identification and definition of sexual assault. Assessment methods of sexual assault experiences have been variable and often non-specific (Resnick et al., 1991). Past research has shown that the manner in which you present women with the question of rape has a profound effect on the incidence of rapes they report as such (Acierno et al., 1997).

Earlier research on sexual assault and health risk behaviors relied upon single items to assess sexual assault experiences and defined sexual assault narrowly. Nagy et al. (1994) defined abuse narrowly as “forced intercourse” determined by the individual’s response to three questions regarding forced sex perpetrated by a date, parent or relative, or a stranger. Analyses did not take into account these separate abuse experiences. In a separate study, Nagy et al. (1995) used a measure that relied heavily on the 1994
measure, but added items regarding broader definitions of sexual abuse and items that inquired about the perpetrator. Sexual abuse was defined as: “someone touching you in a place that you did not want to be touched, or did something to you sexually that you did not want.” The latter method of inquiry is likely to result in greater, more accurate, endorsement by women and adolescents who have been assaulted.

Douglas et al. (1997) and Brener et al. (1999) used the National College Health Risk Behavior Survey that assesses sexual assault with the following single item: “During your life, have you ever been forced to have sexual intercourse against your will?”. Two additional questions inquire about age at the first and last incident of sexual abuse. In the recent study of health-risk behaviors in Brazilian adolescents (Anteghini et al., 2001), the method of measurement of sexual abuse history was not revealed. However, it might be assumed that because the instrument used drew heavily from the Minnesota Adolescent Health Survey, sexual abuse history was determined by a single item. Finally, utilizing the Youth Risk Behavior Survey (YRBS), Silverman et al. (2001) inquired about sexual abuse with one question: “Have you ever been hurt physically or sexually by a date or someone you were going out with? This would include being shoved, slapped, hit, or forced into any sexual activity.” Respondents endorsed choices indicating physical assault, sexual assault, both, or neither.

The use of a single item to determine sexual assault histories has broad implications for the corresponding research findings. First, it is unclear whether the individual has experienced childhood sexual assault or adolescent/young adulthood
sexual assault. Such differences are important to mental health outcome (Polusny & Follette, 1995) and may be important for predicting the engagement in health risk behaviors. The current analysis will incorporate measures to gain an understanding of the timing of abuse and analyses will control for childhood sexual assault experiences. Second, to exclude sexual assault experiences that cannot be defined as “forced intercourse” (as in Nagy et al., 1994) is to reject the reality of the deleterious effects on women who are sexually assaulted in other manners. Additionally, the failure to define “force” might cause teenagers to solely consider physically forced intercourse as rape, rather than behaviors that meet the legal definition for sexual assault that includes coercion and oral sex (Clauset, Lewis, & Phillips, 1999). The current analysis will incorporate a broader definition of assault that includes experiences ranging from non-contact sexual assault to rape.

Present Study

In a review of violence against women, Acierno et al. (1999) argued that the identification and treatment of risk factors for experiencing violence, such as rape, may reduce both the incidence of assault and, in turn, the long-term deleterious outcomes, such as psychopathology and personal and public monetary costs. Indeed, such deleterious outcomes are far reaching. For instance, research has shown that sexual assault victims’ health care visits increased by 18% in the year following victimization, resulting in health care costs that were 2.5 times greater for women who had been sexually assaulted than the health care costs of non-victims (Koss et al., 1991). These
costs fail to include less direct costs of sexual assault, such as pregnancy and the contraction of sexually transmitted diseases (Resnick et al., 1997). Additionally, governmental agencies can provide us with staggering figures on the loss of life and monetary costs attributed to behaviors that are associated with sexual assault, such as (a) tobacco use, the most significant contributor to mortality in the U.S killing 1 in 6 Americans yearly ($65 billion annually; Acienro et al., 1996), (b) alcohol abuse with an estimated annual mortality rate of 105,000 ($13 billion annually for direct treatment; McGinnis & Foege, 1999), (c) risky driving behaviors leading to crashes which claim 41,000 lives yearly ($150 billion annually; Clinton, 1997), (d) illicit drug use that directly and indirectly causes 39,000 deaths per year (McGinnis & Foege, 1999), and (e) mental health difficulties ($69 billion annually; Chavez, Varmus, Arons, Hyman, Bornemann, 2002).

The purpose of the current study was to determine the longitudinal relationship between risk-taking behaviors and sexual assault. Once risk behaviors are identified, and their relationship to sexual assault is understood, it is feasible that sexual assault risk-reduction programs will incorporate this information into their protocols. It is also a hope of the current researchers that such information will assist in the treatment of sexual assault victims and will reduce the revictimization of women.

It was essential that limitations of previous studies be addressed in order for the nature of the relationship between sexual assault and health risk behaviors to be understood. Longitudinal studies are needed to address the questions posed by Nagy et al.
(1994) and Brener et al. (1999) regarding whether assault precedes risk taking, engagement in health risk behaviors are a consequence of sexual assault, or whether the relationship is bidirectional. The current study relied only partially on retrospective data to glean information on previous assault experiences in childhood and adolescence. It improved upon research designs of the past by incorporating prospective data over a 6-month period. In the form of both Kilpatrick et al.’s (1997) prospective examination of substance use and sexual assault, as well as Gidycz et al.’s (2001) prospective analysis of alcohol use and sexual assault, the current study investigated substance use and its relationship to sexual assault over a 6-month period. However, the current study expanded upon the health risk behaviors examined previously to include suicidal ideation, sexual practices, cigarette smoking, physical fighting, and risky driving behavior. Most importantly, risk behaviors were assessed prior to the individual’s most recent experience of sexual assault.

In sum, there is a lack of research on health behaviors and the nature of their relationship to sexual assault (Resnick et al., 1997). The existing prospective literature limits its focus to the health risk behaviors of drug and alcohol use. Youth seem to be engaging in increasingly severe risk behaviors (Stevens & Griffin, 2001) and multiple risk behaviors beyond substance use (Brener et al., 1999). Understanding the connections between these behaviors and other factors may assist in developing appropriate intervention/prevention programs that assist individuals, as well as the public in general.
Hypotheses

Consistent with the existing literature, we expected to find a relationship between sexual assault experiences and risk taking behaviors. It was hypothesized that victimization status would have a contingency relationship with health risk behaviors, such that women who were previously victimized, when compared to women with no victimization history, would engage in health risk behaviors at a greater rate when assessed at Time 1.

Controlling for previous victimization experiences, it was also predicted that health risk behaviors at time 1 would predict the incidence of sexual assault at Time 2, and that health risk behaviors at Time 2 would predict the incidence of sexual assault at Time 3, such that greater levels of engagement in risk behaviors would lead to increased risk of experiencing a sexual assault.

Controlling for Time 1 health risk behaviors, it was expected that victimization status at Time 1 would predict health risk behaviors at Time 2, and that victimization at Time 2 would predict health risk behaviors at Time 3, such that sexual assault would increase engagement in health risk behaviors.
Method

Participants

The women in the current study were a subsample of participants from a larger study on the evaluation of a sexual assault prevention program (for a list of all surveys provided, see Table 1). Specifically, the participants in this study consisted of the 540 women in the control group of the prevention program study. Due to the combination of attrition and funding constraints, 3-month follow-up data included 429 participants, and 6-month follow-up data included only 235 participants (see Table 2). They were enrolled in psychology courses and had the choice of volunteering to participate in psychology experiments or writing a brief summary of a journal article in exchange for credit applied toward course grades. Students volunteered for participation through sign-up sheets posted on a sign-up board in the Department of Psychology building. Participants were recruited from fall 2001 through winter 2002.

Descriptive statistics revealed a largely homogenous sample of students who were primarily 18- and 19-year-old (85.4%), first-and second-year students (91.3%). Most of the women were Caucasian (93.9%). Lastly, a majority of the women were from families with high-average incomes, as approximately 70% of their parents’ households earned more than $50,000 per year (see Table 3).
Table 1

*Measures Utilized in Larger-Scale Study*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Authors</th>
<th>Measure Description</th>
<th>Number of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographics</strong></td>
<td>Gidycz et al., 2001</td>
<td>personal and family</td>
<td>19</td>
</tr>
<tr>
<td>Calahan Drinking Questionnaire</td>
<td>Calahan, Cisin, &amp; Crossley (1969)</td>
<td>past and present alcohol use</td>
<td>13</td>
</tr>
<tr>
<td>Dating Self-Protection Against Rape Scale</td>
<td>Moore &amp; Waterman (1999)</td>
<td>dating behaviors</td>
<td>15</td>
</tr>
<tr>
<td>Sexual Assertiveness Scale</td>
<td>Morokoff et al. (1997)</td>
<td>assertiveness in initiation, refusal, and prevention of disease</td>
<td>21</td>
</tr>
<tr>
<td>Self-efficacy Scale</td>
<td>Marx (1998)</td>
<td>sexual self-efficacy in ability to resist unwanted sexual experience</td>
<td>7</td>
</tr>
<tr>
<td><strong>Childhood Sexual Victimization Questionnaire</strong></td>
<td>Finkelhor (1979)</td>
<td>sexual assault prior to age 14</td>
<td>24</td>
</tr>
<tr>
<td>Sexual Experiences Survey</td>
<td>Koss &amp; Oros (1982)</td>
<td>sexual assault experiences</td>
<td>10</td>
</tr>
<tr>
<td>Sexual Experiences Inventory</td>
<td>Koss (1995)</td>
<td>descriptors of assault experience</td>
<td>32</td>
</tr>
<tr>
<td>Label</td>
<td>Gidycz et al. (2001)</td>
<td>label subject applies to experience</td>
<td>1</td>
</tr>
<tr>
<td>Rape Attribution Questionnaire</td>
<td>Frazier (1997)</td>
<td>blame self, perpetrator, society, luck</td>
<td>25</td>
</tr>
<tr>
<td>Purdue Post-Traumatic Stress Scale-R</td>
<td>Lauderbach &amp; Vrana (1989)</td>
<td>PTSD symptomatology</td>
<td>18</td>
</tr>
<tr>
<td>Cope</td>
<td>Folkman &amp; Lazarus (1988)</td>
<td>techniques used to cope with traumatic events</td>
<td>30</td>
</tr>
<tr>
<td>Traumatic Sexualization Scale</td>
<td>Matorin &amp; Lynn (1988)</td>
<td>measure of traumatic sexual experiences</td>
<td>38</td>
</tr>
<tr>
<td>Conflict Tactics Scale</td>
<td>Straus (1979)</td>
<td>functioning and problem-solving with parents and partners</td>
<td>36</td>
</tr>
<tr>
<td>Attachment</td>
<td>Gidycz et al. (2001)</td>
<td>ability to become emotionally intimate with others</td>
<td>5</td>
</tr>
<tr>
<td>Abuse</td>
<td>Gidycz et al. (2001)</td>
<td>labeling of physical, emotional, and sexual abuse as child</td>
<td>3</td>
</tr>
<tr>
<td>Law</td>
<td>Gidycz et al. (2001)</td>
<td>degree and type of law breaking</td>
<td>3</td>
</tr>
<tr>
<td>Hyper Gender Ideology Scale</td>
<td>Hamburger, Hogben, McGowen, &amp; Dawson (1996)</td>
<td>stereotypical gender role beliefs</td>
<td>19</td>
</tr>
<tr>
<td><strong>National College Health Risk Behavior Survey</strong></td>
<td>Kolbe, Kann, &amp; Collins (1993)</td>
<td>past and current health risk behaviors</td>
<td>79</td>
</tr>
<tr>
<td>Sexual Harassment Questionnaire</td>
<td>Loughlin, Kelloway, Fullager, &amp; Johnson (1996)</td>
<td>experience of sexual harassment</td>
<td>20</td>
</tr>
</tbody>
</table>

* Those used in the current study are highlighted
Table 2

*Cohort Frequencies and Rates of Return*

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Time 1</th>
<th>Time 2 Frequency/% Return</th>
<th>Time 3 Frequency/% Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>120</td>
<td>90 / 75</td>
<td>78 / 65</td>
</tr>
<tr>
<td>2</td>
<td>136</td>
<td>117 / 86</td>
<td>94 / 69</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>8 / 80</td>
<td>5 / 50</td>
</tr>
<tr>
<td>4</td>
<td>82</td>
<td>63 / 77</td>
<td>58 / 71</td>
</tr>
<tr>
<td>5</td>
<td>190</td>
<td>151 / 80</td>
<td>0*</td>
</tr>
<tr>
<td>Total Sample</td>
<td>540</td>
<td>429 / 80</td>
<td>235 / 44</td>
</tr>
</tbody>
</table>

*due to lack of funds, participants were not asked to return*
Table 3

**Participant Demographics (n = 540)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>289</td>
<td>53.5</td>
</tr>
<tr>
<td>19</td>
<td>172</td>
<td>31.9</td>
</tr>
<tr>
<td>20</td>
<td>49</td>
<td>9.1</td>
</tr>
<tr>
<td>&gt; 20</td>
<td>30</td>
<td>5.6</td>
</tr>
<tr>
<td>Year in School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Year</td>
<td>383</td>
<td>70.9</td>
</tr>
<tr>
<td>Sophomore</td>
<td>110</td>
<td>20.4</td>
</tr>
<tr>
<td>Junior</td>
<td>33</td>
<td>6.1</td>
</tr>
<tr>
<td>Senior or Grad Student</td>
<td>14</td>
<td>2.6</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>8</td>
<td>1.5</td>
</tr>
<tr>
<td>Asian American/Pacific Islander</td>
<td>11</td>
<td>2.0</td>
</tr>
<tr>
<td>Caucasian</td>
<td>507</td>
<td>93.9</td>
</tr>
<tr>
<td>Latino</td>
<td>8</td>
<td>1.5</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>1.1</td>
</tr>
<tr>
<td>Parental Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed/Disabled</td>
<td>3</td>
<td>0.6</td>
</tr>
<tr>
<td>10,000-30,000</td>
<td>29</td>
<td>5.3</td>
</tr>
<tr>
<td>31,000-50,000</td>
<td>120</td>
<td>22.2</td>
</tr>
<tr>
<td>51,000-75,000</td>
<td>142</td>
<td>26.3</td>
</tr>
<tr>
<td>76,000-100,000</td>
<td>103</td>
<td>19.1</td>
</tr>
<tr>
<td>&gt; 100,000</td>
<td>139</td>
<td>25.7</td>
</tr>
<tr>
<td>missing</td>
<td>4</td>
<td>0.7</td>
</tr>
</tbody>
</table>
Measures

Demographic Questionnaire (see Appendix B1). This is a brief, 19 item, questionnaire used to collect relevant personal information regarding basic participant characteristics such as age, ethnicity, religion, sexual orientation, marital and dating status, socioeconomic status of parents, and consensual sex history.

The Sexual Experiences Survey (SES; Koss & Oros, 1982; see Appendix B2). The Sexual Experience Survey is a 10-item, self-report survey used to assess various levels of sexual experiences, including victimization. The measure follows the Ohio Revised Code definition of rape and is widely used in sexual assault research (Koss et al., 1987). Participants respond in a “yes-no” format indicating whether they have had a variety of sexual victimization experiences. Items on this measure assess sexual assault experiences by inquiring about behavioral experiences without using the word rape. For example, "Have you ever had sexual intercourse when you didn't want to because a man threatened or used some degree of physical force (twisting your arm, holding you down etc.) to make you?"

The Sexual Experiences Survey is the most widely used instrument to screen for the experience or perpetration of a sexual assault. The internal consistency for women (alpha = .74) utilizing this instrument is very good (Koss & Gidycz, 1985). The test-retest reliability of the SES was calculated from a sample of 71 women. The mean item agreement between two administrations of the survey, two weeks apart, was 93%. In terms of validity for the women’s version, responses to the Sexual Experiences Survey
were found to be significantly correlated with responses given months later to an interviewer \((r = .73, p < .001;\) Koss & Gidycz, 1985).

For analyses, participants’ sexual assault experiences will be categorized into five levels: no victimization, sexual contact, attempted rape, sexual coercion, and rape. Sexual contact includes: unwanted fondling, kissing, or petting subsequent to verbal pressure; and the misuse of authority, force, or threat of force. Attempted rape is defined by an attempt to engage in intercourse by force, threat of force, or administration of intoxicants. Sexual coercion includes unwanted intercourse subsequent to verbal pressure or the misuse of authority. Additionally, subjects will be dichotomized into two groups, separating those who have not been victimized from those who have experienced any level of victimization.

For this study, adolescent sexual victimization will be defined as any unwanted sexual contact (ranging from fondling to intercourse) from age 14 years to the time of the present study. Adult victimization experiences will be defined as any unwanted sexual contact that occurred after Time 1 data collection. Surveys at Times 2 and 3 will inquire about a woman’s experiences “in the last 3 months”.

*National College Health Risk Behavior Survey* (NCHRBS; Kolbe, Kann, & Collins, 1993; see Appendix B3). The National College Health Risk Behavior Survey is a 96-item questionnaire developed by the Centers for Disease Control and Prevention. The current study will utilize 79 items by removing items that inquire about demographic information. The survey assesses behaviors that result in injury and illness. Specifically,
the NCHRBS inquires about risk-taking behaviors from 7 subscales: risk of injury, such as unsafe driving behavior and weapon carrying; suicidal ideation; tobacco use; alcohol use; drug use; sexual risk-taking including unsafe sex; and disordered eating behaviors (see Appendix B4).

Baylen (2001), in a study of 265 female college students, utilized the NCHRBS and combined items indicating risky alcohol, drug, and sexual behaviors to determine a total risk behavior score. The coefficient alpha attained for the total score equaled .89. Reliability data for the three individual subscales investigated were reported as such: alcohol (coefficient alpha = .64), drugs (coefficient alpha = .81), and sex (coefficient alpha = .92). The current study will calculate reliability data for the additional subscales: injury, suicidal ideation, tobacco use, and disordered eating behaviors. Further reliability and validity data of the NCHRBS appear to come indirectly from the National Youth Risk Behavior Survey, which is very similar, but not identical (Brener, Collins, Kann, Warren, & Williams, 1995; Douglas et al., 1997).

The NCHRBS was developed on the basis of the National Youth Risk Behavior Survey (YRBS; Kolbe, et al., 1993), also created by the Centers for Disease Control and Prevention. The CDC developed the Youth Risk Behavior Surveillance System in collaboration with 19 other federal agencies and 71 State and local Departments of Education. Experts in the distinct academic fields tested, such as youth drug use, were recruited to develop valid items highlighting specific goals held by those areas of research that would be addressed when the YRBS was eventually utilized in longitudinal
studies. Its focus was to glean data on youth behaviors that contributed to their most “important” health problems. Items were chosen on the basis of previous self-report measures that had shown good validity in measuring health behaviors of adolescents (Harrell, 1985, as cited in Kolbe et al., 1993). In addition, several field studies were conducted to reach adequate validity, although statistics were not made available in the original publication.

Previous analyses utilizing the YRBS have indicated adequate reliability. Brener et al. (1995) administered the YRBS questionnaire to 1,679 students in grades 7 through 12 at two testing periods placed 14 days apart. The YRBS was assessed for test-retest reliability. It was found that 72% of the items had “substantial” or higher ratings of reliability (kappas = 61-100%). No significant differences were found between the group prevalence estimates at Time 1 and Time 2.

The current study utilized individual items from each scale, in accordance with the methodology used by Brener et al. (1999) and others using similar measures to assess health risk behaviors. When possible, health risk behaviors were measured and analyzed as continuous variables within particular subscales. When distribution of the data was not normal, items were dichotomized. The following delineates the exact method of measurement for each subscale:

“Suicide” was measured by five of the six studies and included differing combinations of items assessing ideation, plan, and attempt. In accordance with
Silverman et al. (2001) and Anteghini et al. (2001), the current study examined both suicidal ideation and attempt.

“Sexual Behaviors” are addressed in the majority of the studies highlighted here. Two, in particular, assess multiple partners. Brener et al. (1999) defines “multiple partners” as 2 or more in last 3 months. Silverman et al. (2001) follows the criteria of 3 or more in last 3 months. Neither study gives a rationale for these numbers. Our distribution of data indicated that a division at 2 or more partners created the cleanest cut. These same two studies assessed alcohol or drug use at last intercourse. The current study did as well, creating a dichotomous variable.

The above mentioned studies measured “Alcohol Use” quite uniformly. Kilpatrick et al. (1999) determined whether or not participants met the criteria for substance abuse defined by the DSM-IV, while Brener et al. (1999), Silverman et al. (1999), Nagy et al. (1994), and Nagy et al. (1995) defined “binge drinking” or “episodic heavy drinking” as one instance of ingesting 5 or more drinks in a row in a given time period. The current analysis used this definition of episodic heavy drinking and measured it on a continuum of times per month, ranging from 0 days in the last 30 to 20 or more.

The studies of focus used a variety of measurements of “Drug Use”. Brener calculated drug use as the use of marijuana in the past 30 days. Nagy et al. (1994) included any illicit drug use in the previous 30 days. Kilpatrick et al. (1999) also included any illicit substance, but their defining criterion was set at 4 or more uses over a lifetime. Silverman et al. (2001) utilized the definition of lifetime cocaine use, while Nagy et al.
(1995) and Anteghini et al. (2001) defined drug users as those individuals who had used any illegal substance in their lifetimes. The current study collected data on both drug use in the past 30 days and lifetime use, and inquired about marijuana, cocaine, and other illicit substances, a category comprised of: LSD, PCP, ecstasy, mushrooms, speed, ice, and heroin.

Four of the six studies mentioned here measured “Tobacco Use”. Each study identified whether or not an individual had smoked in the past 30 days. The current study assessed smoking on a continuum, from 0 days in the last 30 to all 30 days.

“Unintentional and Intentional Injury” was measured by five of the six studies mentioned above that examined health risk behaviors and sexual assault. In accordance with Brener et al. (1999) and Nagy et al. (1995), the current study included physical fighting. We also included driving after drinking alcohol, as did Brener et al. (1999) and Silverman et al. (2001).

Half of the aforementioned studies included some analysis of “Disordered Eating Behaviors” (Nagy et al., 1994; Nagy et al., 1995; Silverman et al., 2001), all of which at least included an assessment of vomiting or taking laxatives for weight control. The current study assessed whether or not participants had engaged in such behaviors in the last 30 days.

*Child Sexual Victimization Questionnaire* (CSVQ; Finkelhor, 1979; see Appendix B5). The CSVQ is a 24-item self-report measure that assesses sexual victimization experiences before the age of 14. Respondents answer "yes" or "no" to items indicating
whether they have had sexual experiences during childhood. The items increase in severity ranging from "Another person showing his/her sex organs to you" to "Another person had intercourse with you". Participants are asked to consider the last question to which they answered “yes” and indicate their age at that time, as well as the age of the perpetrator. For the purpose of this study, any individual reporting a sexual experience before the age of 14 with a person who was at least 5 years older, and/or with a person who used force, will be considered a victim of childhood sexual assault. This definition has been used previously by other child abuse researchers and will assist in any comparison between studies (Briere & Runtz, 1988).

Concurrent validity for the Child Sexual Victimization Questionnaire was established in a study of child sexual assault among male college students (Risin & Koss, 1988). Risin and Koss (1988) asked 15 men to complete the CSVQ and then conducted personal interviews with these men about their victimization experiences. They reported that 14 of the 15 men provided the same responses to the interviewer as they had on the self-report questionnaire.

Procedure

Participants were a subsample of participants from a larger study on the evaluation of a sexual assault prevention program. Specifically, women were placed in either a sexual assault prevention program or in a control group. All of the women received multiple questionnaires gauging various beliefs, behaviors, and past experiences. The women in the current study were members of the control group of this larger study.
Various measures were utilized in the current study and many were unused. For a complete list of the questionnaires provided, please see Table 1, as noted above.

Sessions were held in classrooms in the Department of Psychology and were run in groups of participants no larger than 25. A trained female graduate or undergraduate student facilitated the group. During Session I the facilitator asked participants to read and sign the consent form (see Appendix C1), and to complete a contact form for reaching the subjects at further stages of the study (see Appendix C2). Participants handed these in to the facilitator so that their names could not be identified with their questionnaires. The facilitator informed subjects of a coding procedure to calculate unique subject numbers. To protect their identities, subjects identified themselves only with the number attained using the Subject Number Calculation Form (see Appendix C3).

Participants answered all of the questionnaires in the packet on electronically-read scantron sheets. Participants completed the following measures: a demographic questionnaire, Sexual Experiences Survey (SES), National College Health Risk Behavior Survey (NCHRBS), and the Child Sexual Victimization Questionnaire (CSVQ). After completing all questionnaires, participants were debriefed (see Appendix C4) and given credit toward their psychology classes. Participation in Session I involved approximately 2 ½ to 3 hours of subjects’ time. They received one experimental credit per hour or partial hour of participation in that Session. Participants were reminded that they would be contacted in approximately three months to complete Session II of the study.
At Session II (3-month follow-up), all participants recalculated their subject numbers and completed the Sexual Experiences Survey (SES) and the National College Health Risk Behavior Survey (NCHRBS). This session involved approximately 1 to 1 ½ hours of time. At the end of Session II, participants were debriefed and they received $20 for their participation. Participants were reminded that they would be contacted in approximately three months to complete Session III of the study.

At Session III (6-month follow-up), participants recalculated their subject numbers and completed the Sexual Experiences Survey (SES) and the National College Health Risk Behavior Survey (NCHRBS). This session involved approximately 1 to 1 ½ hours of time. At the end of Session III, participants were debriefed and they received $20 for their participation.

Analyses

Overview of Analyses

Descriptives statistics. Demographic variables were collected and means and frequencies were computed, including age, year in school, race/ethnicity, and parental income. The current analyses did not control for demographic variables, as the majority of the sample did not differ on these variables. Each participant was placed into one of five categories according to the level of sexual victimization that she experienced. The categories were subsequently collapsed to create 3 levels, and finally 2 levels. Frequency
statistics were used to determine the most robust method of scoring sexual assault experiences. These results are below.

Prevalence rates for each health risk variable were calculated by computing frequencies. Health risk behaviors were analyzed individually on the following subscales: unintentional injury (physical fighting, drinking and driving), suicidal ideation and attempts, tobacco smoking, alcohol use, drug use (lifetime illicit, marijuana, cocaine), sexual behaviors (2 or more partners in the past 3 months, drinking or using drugs prior to the most recent engagement in sexual intercourse), and disordered eating behaviors. Each variable was measured using a continuous scale (e.g. number of episodes of binge drinking in past 30 days) and using categories (e.g. binge drinking on 1 or 2 days in the past 30, 3 to 5 days in the past 30, etc.) to indicate whether or not the subject had engaged in each behavior in a given time period. Correlational analyses and descriptive statistics were utilized to reveal the strongest method of scoring the responses. The results of those preliminary analyses are below.

**Measures of association.** Correlational analyses were performed to determine the relationship between childhood sexual assault and sexual assault experiences over the age of 14, as well as the relationships between sexual assault as an adult and sexual assault in later stages of the study. Correlational analyses were also performed to gauge the association between health risk behaviors over time. Finally, correlational analyses were conducted to determine the relationship between sexual assault experiences and
engagement in health risk behaviors at each time period.

Pearson chi-square analyses were performed to determine the contingency relationships between health risk behaviors at Time 1 and sexual assault experiences since the age of 14. Additionally, we tested the hypotheses that higher levels of engagement in health risk behaviors at one time period are associated with an increased risk of experiencing an assault in the following 3-month interim period, and that experiencing a sexual assault at one time period is associated with higher levels of engagement in health risk behaviors in the following 3-month interim period. The following associations were tested: health risk behaviors at Time 1 and sexual assault status at Time 2, sexual assault status at Time 1 and health risk behaviors at Time 2, health risk behaviors at Time 2 and sexual assault status at Time 3, sexual assault status at Time 2 and health risk behaviors at Time 3.

Regression. Finally, similar to Brener et al. (1999), regression analyses were performed to describe the nature of the relationships between health risk behaviors and sexual assault. Sexual victimization status served as the criterion variable for the logistic regression analyses. For the linear regressions, health risk behaviors served as the criterion variables. The variables chosen for examination in the regression analyses were taken from the significant findings of the previously performed chi-square analyses. Health risk behaviors were entered into both the logistic and linear regression analyses in separate steps, to control for intercorrelation (Miller et al., 1995; Wechsler et al., 1994; Wechsler et al., 1995), and to glean the unique effect that each health risk behavior had
on the dependent variable. The current analysis statistically controlled for childhood victimization, as research has shown a significant correlation between childhood victimization and revictimization (Kilpatrick et al., 1997).

Results

Descriptive Data

Childhood sexual abuse. Initially, rates of childhood sexual abuse were assessed. Similar to previous research (Nagy et al., 1994), the analyses showed that approximately 7% of women experienced some form of sexual assault prior to the age of 14 (see Table 4). Four percent of the women reported experiencing “contact” sexual assault as children, which was defined as being “fondled”, having one’s sex organs “touched or stroked”, or touching someone else’s sex organs at his request (the abuser was at least 5 years older than the child). Two percent reported attempted rape or rape.

Sexual assault. At Time 1, each participant was placed into one of five categories according to the level of sexual victimization that she had experienced since the age of 14. These categories were collapsed, producing a measure with 3 categories, and a measure with 2 categories. Frequency statistics were used to determine the most robust
Table 4

*Prevalence of Child Sexual Assault* (n = 540)

<table>
<thead>
<tr>
<th>Degree of Assault</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>504 (93)</td>
</tr>
<tr>
<td>Noncontact</td>
<td>4 (1)</td>
</tr>
<tr>
<td>Contact</td>
<td>22 (4)</td>
</tr>
<tr>
<td>Attempted Rape</td>
<td>5 (1)</td>
</tr>
<tr>
<td>Rape</td>
<td>5 (1)</td>
</tr>
</tbody>
</table>

*Assault that occurred before the age of 14
method of scoring sexual assault experiences. Frequency statistics revealed that the 3-
level and 5-level measurements of sexual assault produced extremely low cell sizes in
many instances. Therefore, the following analyses utilize a dichotomous variable for
sexual assault experiences, separating women who have not been sexually assaulted to
any degree, from women who have experienced some level of sexual assault.

Rates of sexual assault after the age of 14 and before the initial study phase (at
approximately 18- and 19-years-old) were similar to rates of adult sexual assault
presented in previous studies (Gidycz et al., 1997; Gidycz et al., 1998; Philgren, Gidycz,
& Lynn, 1993). At Time 1, approximately 39% of the women reported some form of
sexual assault experience, and approximately 19% experienced attempted rape or rape
(see Table 5). Over the course of the first 3 months of the study (Phase 1), and between
the 3- and 6-month follow-up periods (Phase 2), rates of sexual assault were similar to
previous studies (Gidycz et al., 1998) and slightly larger than others (Fisher et al., 2000).
In the current analysis, approximately 15% of the women reported some form of sexual
assault experience over the course of 3 months, and approximately 6% experienced
attempted rape or rape. Finally, when sexual assault was measured between the 3- and 6-
month follow-up periods, results revealed that approximately 15% of the women
experienced some form of sexual assault experience, and approximately 6% experienced
attempted rape or rape.
### Table 5

*Prevalence of Sexual Assault Experiences over Course of Study*

<table>
<thead>
<tr>
<th>Degree of Assault</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time 1</td>
</tr>
<tr>
<td>No Sexual Assault</td>
<td>326 (61)</td>
</tr>
<tr>
<td>Contact Assault</td>
<td>80 (15)</td>
</tr>
<tr>
<td>Coercion</td>
<td>26 (5)</td>
</tr>
<tr>
<td>Attempted Rape</td>
<td>56 (10)</td>
</tr>
<tr>
<td>Rape</td>
<td>50 (9)</td>
</tr>
<tr>
<td>Total</td>
<td>538 (100)</td>
</tr>
</tbody>
</table>
Health risk behaviors. Each health risk behavior was measured using a continuous score (e.g. number of episodes of binge drinking in past 30 days) and using categories (e.g. binge drinking on 1 or 2 days in the past 30, 3 to 5 days in the past 30, etc.), indicating whether or not the subject had engaged in each behavior in a given time period. Preliminary correlation analyses revealed the categorical scores to be more strongly associated with sexual assault and with health risk behaviors at alternative time periods, than were the continuous measurements of the same variables. Therefore, the continuous measurements were dropped and each variable was measured categorically. Additionally, descriptive statistics of the categorical health risk behavior variables revealed small cell sizes in a majority of instances. Therefore, many categories were collapsed, yielding 9 dichotomous variables and 3 categorical variables with multiple levels (see Table 6). Dichotomous scoring was used for: physical fighting, driving after drinking, illicit drug use, cocaine use, having 2 or more sexual partners, using alcohol or drugs at last engagement in sexual intercourse, suicidal ideation, suicide attempt, and disordered eating behaviors. Binge drinking was measured with 5 categories, from no binge drinking in the past 30 days, to binge drinking on 10 to 30 days. Marijuana use was measured categorically with 4 levels, from zero times smoked in the past 30 days, to 10 to 100 or more times smoked. Lastly, Smoking tobacco was scored using 3 categories ranging from no smoking in the past 30 days to smoking on 10 to 30 days.
### Table 6

*Health Risk Behavior Variables, Survey Items, and Details of Scoring*

<table>
<thead>
<tr>
<th>Health Risk Behavior</th>
<th>Questionnaire Item</th>
<th>Questionnaire Responses</th>
<th>Scoring</th>
</tr>
</thead>
</table>
| Engaged in physical fight | During the past 12 months, how many times were you in a physical fight? | 0 times  
1 time  
2 or 3 times  
4 or 5 times  
*6 or 7 times*  
8 or 9 times  
10 or more times | Yes/No |
| Drove after drinking alcohol | During the past 30 days, how many times did you drive a car or other vehicle when you had been drinking alcohol? | 0 times  
1 time  
2 or 3 times  
4 or 5 times  
6 or more times | Yes/No |
| Binge drinking | During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours? | 0 days  
1 or 2 days  
3 to 5 days  
6 to 9 days  
10 to 19 days  
20 or more days | 0 days  
1 or 2 days  
3 to 5 days  
6 to 9 days  
10 to 30 days |
<table>
<thead>
<tr>
<th>Health Risk Behavior</th>
<th>Questionnaire Item</th>
<th>Questionnaire Responses</th>
<th>Scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illicit drug use</td>
<td>During your life, how many times have you:</td>
<td>Multiple choice options varied, but ranged from 0 to 100 or more times</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>- Used marijuana</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Used any form of cocaine</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Used crack or freebase forms of cocaine</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Sniffed glue, or breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Taken steroid pills or shots without a doctor’s prescription</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Used LSD, PCP, ecstasy, mushrooms, speed, ice, or heroin</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Used a needle to inject any illegal drug</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marijuana use</td>
<td>During the past 30 days, how many times did you use marijuana?</td>
<td>0 times</td>
<td>0 times</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 or 2 times</td>
<td>1 or 2 times</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 to 9 times</td>
<td>3 to 9 times</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 to 19 times</td>
<td>10 to 100 or more times</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 to 39 times</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>40 to 99 times</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 or more times</td>
<td></td>
</tr>
<tr>
<td>Cocaine use</td>
<td>During your life, how many times have you used any form of cocaine including powder, crack, or freebase?</td>
<td>0 times</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 or 2 times</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 to 9 times</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 to 19 times</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>40 to 99 times</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 or more times</td>
<td></td>
</tr>
<tr>
<td>Health Risk Behavior</td>
<td>Questionnaire Item</td>
<td>Questionnaire Responses</td>
<td>Scoring</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>----------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Smoked tobacco</td>
<td>During the past 30 days, on how many did you smoke cigarettes?</td>
<td>0 days</td>
<td>0 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 or 2 days</td>
<td>1 to 9 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 to 5 days</td>
<td>10 to 30 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 to 9 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 to 30 days</td>
<td></td>
</tr>
<tr>
<td>2 or more sexual partners</td>
<td>During the past 3 months, with how many males have you had sexual intercourse?</td>
<td>I have never had sexual intercourse with a male</td>
<td>1 male</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I have had sexual intercourse with a male but not past 3 months</td>
<td>2 or more males</td>
</tr>
<tr>
<td>Alcohol/Drug use last intercourse</td>
<td>Did you drink alcohol or use drugs before you had sexual intercourse the last time?</td>
<td>Yes</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Suicidal ideation</td>
<td>During the past 12 months, did you ever seriously consider attempting suicide?</td>
<td>Yes</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Health Risk Behavior</td>
<td>Questionnaire Item</td>
<td>Questionnaire Responses</td>
<td>Scoring</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Suicide attempt</td>
<td>During the past 12 months, how many times did you attempt suicide?</td>
<td>0 times</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 time</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 or 3 times</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 or 5 times</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 or more times</td>
<td></td>
</tr>
<tr>
<td>Purged/Used laxatives</td>
<td>During the past 30 days, did you vomit or take laxatives to lose weight or keep from gaining weight?</td>
<td>Yes</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
Rates of engagement in all of the health risk behaviors were calculated (see Table 7). The health risk behavior figures highlight that 69% of the women surveyed engaged in binge drinking within the previous month, and that 58% endorsed some type of illicit drug use in their lifetimes. Conversely, only 7% of the women engaged in a physical fight in the year before the study, and only 4% reported having ever used cocaine. The rates of
Table 7

Frequencies and Percentages of Participants Engaging in Time 1 Health Risk Behaviors, by Whether They Experienced Time 1 Sexual Assault

<table>
<thead>
<tr>
<th>Health Risk Behavior (n)</th>
<th>Sexual Assault History</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes (Frequency %)</td>
</tr>
<tr>
<td>Engaged in physical fight(^a) (529)</td>
<td>22 (11)</td>
</tr>
<tr>
<td>Drove after drinking alcohol(^b) (529)</td>
<td>51 (24)</td>
</tr>
<tr>
<td>Binge drinking(^c) (533)</td>
<td>155 (74)</td>
</tr>
<tr>
<td>1 or 2 days</td>
<td>40 (19)</td>
</tr>
<tr>
<td>3 to 5 days</td>
<td>37 (18)</td>
</tr>
<tr>
<td>6 to 9 days</td>
<td>45 (22)</td>
</tr>
<tr>
<td>10 to 30 days</td>
<td>33 (16)</td>
</tr>
<tr>
<td>Illicit drug use(^d) (534)</td>
<td>155 (74)</td>
</tr>
<tr>
<td>Marijuana use(^b) (536)</td>
<td>91 (43)</td>
</tr>
<tr>
<td>1 or 2 times</td>
<td>48 (23)</td>
</tr>
<tr>
<td>3 to 9 times</td>
<td>19 (9)</td>
</tr>
<tr>
<td>10 to 100 or more times</td>
<td>24 (12)</td>
</tr>
<tr>
<td>Cocaine use(^e) (514)</td>
<td>14 (7)</td>
</tr>
<tr>
<td>Smoked tobacco(^b) (534)</td>
<td>117 (58)</td>
</tr>
<tr>
<td>1 to 9 days</td>
<td>53 (26)</td>
</tr>
<tr>
<td>10 to 30 days</td>
<td>64 (32)</td>
</tr>
<tr>
<td>2 or more sexual partners(^f) (532)</td>
<td>25 (12)</td>
</tr>
<tr>
<td>Alcohol/Drug use last intercourse (378)</td>
<td>65 (38)</td>
</tr>
<tr>
<td>Suicidal ideation(^a) (534)</td>
<td>44 (21)</td>
</tr>
<tr>
<td>Suicide attempt(^a) (534)</td>
<td>14 (7)</td>
</tr>
<tr>
<td>Purged/Used laxatives(^b) (534)</td>
<td>50 (24)</td>
</tr>
</tbody>
</table>

\(^a\) One or more times during the past 12 months. \(^b\) One or more times during the past 30 days. \(^c\) Drank 5 or more drinks of alcohol on at least 1 occasion on 1 or more of the past 30 days. \(^d\) Used marijuana, cocaine, crack, inhalants, steroids, hallucinogens, or injected illicit drugs on 1 or more occasions over lifetime. \(^e\) One or more occasions over lifetime. \(^f\) During past 3 months.
engagement in health risk behaviors at the beginning of the study were also calculated for victimized and non-victimized women separately. In following with the hypotheses of the current study, each health risk behavior measured was endorsed more often by women who were sexual assault survivors than by those who were not (see Table 8). See below for a more in depth discussion of this analysis and its results.

Measures of Association

Correlational analyses. Correlational analyses were performed to determine the relationship between child sexual assault and sexual assault experiences over the age of 14, as well as the relationships between sexual assault as an adult and sexual assault in later stages of the study. In accordance with previous research (Kilpatrick et al., 1997), child sexual assault was strongly correlated with sexual assault as an adult and adult sexual assault was correlated with assaults at later stages of the study (see Table 9). Specifically, child sexual assault was positively correlated with sexual assault at Time 1 ($r(538) = .195, p < .01$) and at the 3-month follow-up ($r(429) = .142, p < .01$), such that increased rates of child sexual assault were related to increased rates of sexual assault at Time 1 and at the 3-month follow-up. Child sexual assault was not significantly correlated with sexual assault at the 6-month follow-up. Additionally, sexual assault at Time 1 was strongly correlated with sexual assault at the 3- and 6-month follow-ups ($r(428) = .253, p < .01; r(236) = .302, p < .01$, respectively), such that greater experiences of sexual assault at Time 1 were related to greater experiences of sexual assault at the 3- and 6-month follow-ups.

Correlational analyses were also performed to gauge the association between health risk behaviors over time. Again, significant positive correlations were found (see
### Table 8

**Chi-Square Values, Number of Cases in Each Category, and p Values for the Association between Time 1 Health Risk Behaviors and Time 1 Sexual Assault Experiences**

<table>
<thead>
<tr>
<th>Health Risk Behavior</th>
<th>$\chi^2$</th>
<th>n</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engaged in physical fight$^a$</td>
<td>6.90</td>
<td>529</td>
<td>.009**</td>
</tr>
<tr>
<td>Drove after drinking alcohol$^b$</td>
<td>6.16</td>
<td>533</td>
<td>.013*</td>
</tr>
<tr>
<td>Binge drinking$^c$</td>
<td>13.86</td>
<td>531</td>
<td>.008**</td>
</tr>
<tr>
<td>Illicit drug use$^d$</td>
<td>36.98</td>
<td>533</td>
<td>.000**</td>
</tr>
<tr>
<td>Marijuana use$^b$</td>
<td>33.63</td>
<td>525</td>
<td>.000**</td>
</tr>
<tr>
<td>Cocaine use$^e$</td>
<td>9.64</td>
<td>506</td>
<td>.002**</td>
</tr>
<tr>
<td>Smoked tobacco$^b$</td>
<td>13.97</td>
<td>524</td>
<td>.001**</td>
</tr>
<tr>
<td>2 or more sexual partners$^f$</td>
<td>6.36</td>
<td>530</td>
<td>.012*</td>
</tr>
<tr>
<td>Alcohol/Drug use last intercourse</td>
<td>5.53</td>
<td>376</td>
<td>.019*</td>
</tr>
<tr>
<td>Suicidal ideation$^a$</td>
<td>10.64</td>
<td>531</td>
<td>.001**</td>
</tr>
<tr>
<td>Suicide attempt$^a$</td>
<td>0.33</td>
<td>531</td>
<td>.568</td>
</tr>
<tr>
<td>Purged/Used laxatives$^b$</td>
<td>.043</td>
<td>533</td>
<td>.837</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

$^a$ One or more times during the past 12 months. $^b$ One or more times during the past 30 days. $^c$ Drank 5 or more drinks of alcohol on at least 1 occasion on 1 or more of the past 30 days. $^d$ Used marijuana, cocaine, crack, inhalants, steroids, hallucinogens, or injected illicit drugs on 1 or more occasions over lifetime. $^e$ One or more occasions over lifetime. $^f$ During past 3 months.
Table 9

Pearson Correlation Matrix of Relationship between Child and Adult Sexual Assault Experiences

<table>
<thead>
<tr>
<th></th>
<th>Child Sexual Assault</th>
<th>Sexual Assault Time 1</th>
<th>Sexual Assault Time 2</th>
<th>Sexual Assault Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Sexual Assault</td>
<td>.</td>
<td>.195**</td>
<td>.142**</td>
<td>.068</td>
</tr>
<tr>
<td>Sexual Assault Time 1</td>
<td>.</td>
<td>.253**</td>
<td>.302**</td>
<td></td>
</tr>
<tr>
<td>Sexual Assault Time 2</td>
<td></td>
<td>.</td>
<td>.284**</td>
<td></td>
</tr>
<tr>
<td>Sexual Assault Time 3</td>
<td></td>
<td></td>
<td>.</td>
<td></td>
</tr>
</tbody>
</table>

Note. N’s range from 214 (Time 3) to 538 (Time 1)
Appendix D). For example, women who endorsed smoking at Time 1 were more likely to report engaging in smoking at Time 2 ($r(415) = .779, p < .01$) and at Time 3 ($r(225) = .820, p < .01$). Additionally, women who reported binge drinking in the past 30 days at Time 1 were more likely to report binge drinking at Time 2 ($r(394) = .653, p < .01$) and at Time 3 ($r(213) = .572, p < .01$). In fact, greater engagement in all of the health risk behaviors measured at Time 1 were significantly associated with greater levels of engagement in those behaviors at Times 2 and 3.

Correlational analyses were also conducted to determine the relationship between sexual assault and all of the health risk behaviors at each time period (see Appendix E). Results indicated significant positive correlations between the variables. For example, Marijuana use at Time 3 was positively correlated with physical fighting ($r(232) = .173, p < .01$), driving after drinking ($r(233) = .366, p < .01$), binge drinking ($r(228) = .335, p < .01$), illicit drug use ($r(233) = .481, p < .01$), cocaine use ($r(228) = .322, p < .01$), smoking tobacco ($r(230) = .535, p < .01$), and having 2 or more sexual partners ($r(233) = .222, p < .01$). Due to such high levels of intercorrelation, child sexual assault, previous health risk behaviors, and previous sexual assault experiences were controlled in the following regression analyses.

**Chi-Square analyses.** To test our first hypothesis, Pearson chi-square analyses were performed to determine the contingency relationship between rates of health risk behaviors at Time 1 for the women who were and were not assaulted since the age of 14 (see Table 8, as noted above). Results indicated that women who had experienced sexual assault were approximately twice as likely to have considered suicide in the past year (21%) than were non-victimized women (11%; $\chi^2 (1,534) = 10.64, p < .01$). However, the
difference in suicide attempts in the past year was not associated with sexual assault experiences (7% vs. 6%, respectively; $\chi^2 (1,534) = 0.33, p = .568$).

Women who had experienced sexual assault were more likely than women who were not assaulted to report having used alcohol or other drugs at the time of their most recent engagement in sexual intercourse ($\chi^2 (1,376) = 5.53, p < .05$). Specifically, 38% of women who were victimized used substances before sex, versus 27% of non-victimized women. Number of sexual partners in the previous 3-month interval was significantly associated with victimization status. Women with histories of victimization reported having 2 or more sexual partners at approximately twice the rate (12%) as did non-victimized women (6%; $\chi^2 (1,532) = 6.36, p < .05$).

Engagement in binge drinking in the past month was significantly associated with sexual assault status ($\chi^2 (4,531) = 13.86, p < .01$). Specifically, 74% of women who had been assaulted reported binge drinking, compared to 66% of the women who were not assaulted. Rates of illicit drug use were significantly associated with sexual assault experiences ($\chi^2 (1,533) = 36.98, p < .01$). Victimized women reported illicit drug use over their lifetimes at approximately 1.5 times the rate of non-victimized women (74.2% vs. 47.5%, respectively). Marijuana use in the past month was also associated with victimization status. Victimized women endorsed smoking marijuana at over twice the rate of their non-victimized counterparts ($\chi^2 (3,525) = 33.63, p < .01$; 43% vs. 20%, respectively). It follows that lifetime cocaine use was significantly associated with sexual assault experiences. Victimized women used cocaine at a higher rate than did non-victimized women (7% vs. 2%; $\chi^2 (1,506) = 9.64, p < .01$). A significant contingency relationship was also revealed between tobacco smoking in the past month and sexual
assault experiences. Women who had experienced sexual assault reported smoking at a greater rate (58%) than did non-victimized women (41%; $\chi^2(2,524) = 13.97, p < .01$).

Engaging in physical fights was associated with experiencing sexual assault. Women who were sexually assaulted were more likely to have engaged in a physical fight in the past year (11%) than were non-victimized women (5%; $\chi^2(1,529) = 6.90, p < .01$). Additionally, a contingency relationship was found between rates of driving after drinking and victimization status ($\chi^2(1,533) = 6.16, p < .05$; 24% vs. 16%, respectively). Finally, no significant association was found between eating disordered behaviors and sexual assault experiences.

**Health Risk Behaviors Associated with Future Sexual Assault**

**Phase 1.** To test our second hypothesis, chi-square analyses were performed to assess any association between rates of engagement in health risk behaviors at Time 1 and sexual assault experiences reported at the 3-month follow-up (see Tables 10 and 11 for frequency data and chi-square analyses, respectively). The analyses revealed a significant association between sexual assault and only one health risk behavior measured: suicidal ideation. Sexual assault experiences at Time 2 were associated with suicidal ideation reported at the initiation of the study ($\chi^2(1,422) = 6.77, p < .01$).

To assess our second hypothesis further, a Logistic Regression analysis was performed to determine the nature of the relationship between health risk behaviors at the initiation of the study and sexual assault experiences that were reported at the 3-month follow-up (see Table 12). Suicidal ideation was the health risk variable included, as it was the only significant finding in the chi-square analysis. The regression analysis was insignificant, such that the odds of reporting suicidal ideation at the initiation of the study
Table 10

*Frequencies and Percentages of Participants Engaging in Time 1 Health Risk Behaviors, by Whether They Experienced Time 2 Sexual Assault*

<table>
<thead>
<tr>
<th>Health Risk Behavior (n)</th>
<th>Sexual Assault History</th>
<th>Frequency (%)</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engaged in physical fight(^a) (421)</td>
<td>Yes</td>
<td>7(11)</td>
<td>22(6)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drove after drinking alcohol(^b) (424)</td>
<td>Yes</td>
<td>14 (22)</td>
<td>61 (17)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Binge drinking(^c) (394)</td>
<td>Yes</td>
<td>44 (73)</td>
<td>249 (75)</td>
</tr>
<tr>
<td>1 or 2 days</td>
<td>No</td>
<td>15 (25)</td>
<td>80 (24)</td>
</tr>
<tr>
<td>3 to 5 days</td>
<td></td>
<td>11 (18)</td>
<td>57 (17)</td>
</tr>
<tr>
<td>6 to 9 days</td>
<td></td>
<td>13 (22)</td>
<td>76 (23)</td>
</tr>
<tr>
<td>10 to 30 days</td>
<td></td>
<td>5 (8)</td>
<td>36 (11)</td>
</tr>
<tr>
<td>Illicit drug use(^d) (424)</td>
<td>Yes</td>
<td>43 (67)</td>
<td>209 (58)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marijuana use(^b) (417)</td>
<td>Yes</td>
<td>21 (33)</td>
<td>109 (31)</td>
</tr>
<tr>
<td>1 or 2 times</td>
<td>No</td>
<td>13 (21)</td>
<td>62 (18)</td>
</tr>
<tr>
<td>3 to 9 times</td>
<td></td>
<td>6 (10)</td>
<td>21 (6)</td>
</tr>
<tr>
<td>10 to 100 or more times</td>
<td></td>
<td>2 (3)</td>
<td>26 (7)</td>
</tr>
<tr>
<td>Cocaine use(^e) (402)</td>
<td>Yes</td>
<td>1 (2)</td>
<td>13 (4)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoked tobacco(^b) (416)</td>
<td>Yes</td>
<td>34 (55)</td>
<td>163 (46)</td>
</tr>
<tr>
<td>1 to 9 days</td>
<td>No</td>
<td>17 (27)</td>
<td>78 (22)</td>
</tr>
<tr>
<td>10 to 30 days</td>
<td></td>
<td>17 (27)</td>
<td>85 (24)</td>
</tr>
<tr>
<td>2 or more sexual partners(^f) (303)</td>
<td>Yes</td>
<td>8 (15)</td>
<td>28 (11)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol/Drug use last intercourse (302)</td>
<td>Yes</td>
<td>18 (35)</td>
<td>81 (32)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suicidal ideation(^a) (422)</td>
<td>Yes</td>
<td>16 (25)</td>
<td>46 (13)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suicide attempt(^a) (422)</td>
<td>Yes</td>
<td>2 (3)</td>
<td>25 (7)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purged/Used laxatives(^b) (424)</td>
<td>Yes</td>
<td>13 (20)</td>
<td>84 (23)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) One or more times during the past 12 months. \(^b\) One or more times during the past 30 days. \(^c\) Drank 5 or more drinks of alcohol on at least 1 occasion on 1 or more of the past 30 days. \(^d\) Used marijuana, cocaine, crack, inhalants, steroids, hallucinogens, or injected illicit drugs on 1 or more occasions over lifetime. \(^e\) One or more occasions over lifetime. \(^f\) During past 3 months.
Table 11

Chi-Square Values, Number of Cases in Each Category, and p Values for the Association between Time 1 Health Risk Behaviors and Time 2 Sexual Assault Experiences

<table>
<thead>
<tr>
<th>Health Risk Behavior</th>
<th>$\chi^2$</th>
<th>n</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engaged in physical fight$^a$</td>
<td>2.06</td>
<td>421</td>
<td>.151</td>
</tr>
<tr>
<td>Drove after drinking alcohol$^b$</td>
<td>0.91</td>
<td>424</td>
<td>.341</td>
</tr>
<tr>
<td>Binge drinking$^c$</td>
<td>0.40</td>
<td>422</td>
<td>.983</td>
</tr>
<tr>
<td>Illicit drug use$^d$</td>
<td>1.88</td>
<td>424</td>
<td>.170</td>
</tr>
<tr>
<td>Marijuana use$^b$</td>
<td>2.79</td>
<td>417</td>
<td>.425</td>
</tr>
<tr>
<td>Cocaine use$^e$</td>
<td>0.73</td>
<td>402</td>
<td>.394</td>
</tr>
<tr>
<td>Smoked tobacco$^b$</td>
<td>1.70</td>
<td>416</td>
<td>.428</td>
</tr>
<tr>
<td>2 or more sexual partners$^f$</td>
<td>1.52</td>
<td>422</td>
<td>.217</td>
</tr>
<tr>
<td>Alcohol/Drug use last intercourse</td>
<td>0.10</td>
<td>302</td>
<td>.757</td>
</tr>
<tr>
<td>Suicidal ideation$^a$</td>
<td>6.77</td>
<td>422</td>
<td>.009**</td>
</tr>
<tr>
<td>Suicide attempt$^a$</td>
<td>1.29</td>
<td>422</td>
<td>.257</td>
</tr>
<tr>
<td>Purged/Used laxatives$^b$</td>
<td>0.28</td>
<td>424</td>
<td>.596</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).

$^a$ One or more times during the past 12 months. $^b$ One or more times during the past 30 days. $^c$ Drank 5 or more drinks of alcohol on at least 1 occasion on 1 or more of the past 30 days. $^d$ Used marijuana, cocaine, crack, inhalants, steroids, hallucinogens, or injected illicit drugs on 1 or more occasions over lifetime. $^e$ One or more occasions over lifetime. $^f$ During past 3 months.
Table 12

*Logistic Regression Coefficients, p Values, and Odds Ratios for the Relationship between Time 1 Health Risk Behaviors and Time 2 Sexual Assault Experiences, Controlling for Child Sexual Assault Experiences and Time 1 Sexual Assault Experiences*

<table>
<thead>
<tr>
<th>Health Risk Behavior</th>
<th>β</th>
<th>p</th>
<th>OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicidal ideation^a</td>
<td>0.52</td>
<td>.137</td>
<td>1.67</td>
</tr>
</tbody>
</table>

^a One or more times during the past 12 months.
were not significantly greater for those who were sexually assaulted at the 3-month follow-up (OR = 1.67, \( p = .137 \)).

**Phase 2.** Chi-Square analyses were also performed to determine any association between rates of engagement in health risk behaviors within the first 3 months of the study and sexual assault experiences at the 6-month follow-up (see Tables 13 and 14 for frequency data and chi-square analyses, respectively). The analyses revealed significant associations between sexual assault and having 2 or more sexual partners, and sexual assault and drinking or using drugs prior to the most recent engagement in intercourse. Time 2 reports of having 2 or more sexual partners over the past 3 months were associated with higher levels of sexual assault experiences reported at Time 3 (\( \chi^2 (1,215) = 4.23, p < .05 \)). Additionally, sexual assault experiences at Time 3 were associated with drug or alcohol use prior to the most recent engagement in sexual intercourse, measured at Time 2 (\( \chi^2 (1,155) = 12.24, p < .01 \)).

A Logistic Regression analysis was performed to determine the nature of the relationship between health risk behaviors at the 3-month follow-up and sexual assault experiences reported at the 6-month follow-up (see Table 15). The odds ratio was not significant for women who reported 2 or more sexual partners at the 3-month follow-up. However, the use of alcohol or drugs prior to a woman’s most recent engagement in sexual intercourse was a significant predictor of sexual assault. The odds of women who reported being sexually assaulted at the 6-month follow-up were approximately 3 times greater for those who also reported at the 3-month follow-up that they used alcohol or drugs prior to their most recent engagements in sexual intercourse (OR = 3.23, \( p < .05 \)).
<table>
<thead>
<tr>
<th>Health Risk Behavior (n)</th>
<th>Sexual Assault History</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Engaged in physical fight (^a) (215)</td>
<td>1 (3)</td>
<td>3 (2)</td>
<td></td>
</tr>
<tr>
<td>Drove after drinking alcohol (^b) (216)</td>
<td>11 (32)</td>
<td>44 (24)</td>
<td></td>
</tr>
<tr>
<td>Binge drinking (^c) (206)</td>
<td>27 (82)</td>
<td>131 (76)</td>
<td></td>
</tr>
<tr>
<td>1 or 2 days</td>
<td>3 (9)</td>
<td>41 (24)</td>
<td></td>
</tr>
<tr>
<td>3 to 5 days</td>
<td>7 (21)</td>
<td>31 (18)</td>
<td></td>
</tr>
<tr>
<td>6 to 9 days</td>
<td>12 (36)</td>
<td>34 (20)</td>
<td></td>
</tr>
<tr>
<td>10 to 30 days</td>
<td>5 (15)</td>
<td>25 (15)</td>
<td></td>
</tr>
<tr>
<td>Illicit drug use (^d) (216)</td>
<td>25 (74)</td>
<td>111 (61)</td>
<td></td>
</tr>
<tr>
<td>Marijuana use (^b) (214)</td>
<td>13 (39)</td>
<td>52 (29)</td>
<td></td>
</tr>
<tr>
<td>1 or 2 times</td>
<td>2 (6)</td>
<td>23 (13)</td>
<td></td>
</tr>
<tr>
<td>3 to 9 times</td>
<td>6 (18)</td>
<td>14 (8)</td>
<td></td>
</tr>
<tr>
<td>10 to 100 or more times</td>
<td>5 (15)</td>
<td>15 (8)</td>
<td></td>
</tr>
<tr>
<td>Cocaine use (^e) (211)</td>
<td>1 (3)</td>
<td>9 (5)</td>
<td></td>
</tr>
<tr>
<td>Smoked tobacco (^b) (212)</td>
<td>17 (50)</td>
<td>73 (41)</td>
<td></td>
</tr>
<tr>
<td>1 to 9 days</td>
<td>8 (24)</td>
<td>30 (17)</td>
<td></td>
</tr>
<tr>
<td>10 to 30 days</td>
<td>9 (27)</td>
<td>43 (24)</td>
<td></td>
</tr>
<tr>
<td>2 or more sexual partners (^f) (158)</td>
<td>6 (21)</td>
<td>13 (10)</td>
<td></td>
</tr>
<tr>
<td>Alcohol/Drug use last intercourse (155)</td>
<td>16 (59)</td>
<td>32 (25)</td>
<td></td>
</tr>
<tr>
<td>Suicidal ideation (^a) (215)</td>
<td>1 (3)</td>
<td>19 (10)</td>
<td></td>
</tr>
<tr>
<td>Suicide attempt (^a) (216)</td>
<td>1 (3)</td>
<td>12 (7)</td>
<td></td>
</tr>
<tr>
<td>Purged/Used laxatives (^b) (214)</td>
<td>6 (18)</td>
<td>46 (25)</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) One or more times during the past 12 months. \(^b\) One or more times during the past 30 days. \(^c\) Drank 5 or more drinks of alcohol on at least 1 occasion on 1 or more of the past 30 days. \(^d\) Used marijuana, cocaine, crack, inhalants, steroids, hallucinogens, or injected illicit drugs on 1 or more occasions over lifetime. \(^e\) One or more occasions over lifetime. \(^f\) During past 3 months.
Table 14

*Chi-Square Values, Number of Cases in Each Category, and p Values for the Association between Time 2 Health Risk Behaviors and Time 3 Sexual Assault Experiences*

<table>
<thead>
<tr>
<th>Health Risk Behavior</th>
<th>$\chi^2$</th>
<th>n</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engaged in physical fight$^a$</td>
<td>.258</td>
<td>215</td>
<td>.611</td>
</tr>
<tr>
<td>Drove after drinking alcohol$^b$</td>
<td>1.01</td>
<td>216</td>
<td>.315</td>
</tr>
<tr>
<td>Binge drinking$^c$</td>
<td>6.78</td>
<td>212</td>
<td>.148</td>
</tr>
<tr>
<td>Illicit drug use$^d$</td>
<td>1.93</td>
<td>216</td>
<td>.165</td>
</tr>
<tr>
<td>Marijuana use$^b$</td>
<td>6.18</td>
<td>214</td>
<td>.103</td>
</tr>
<tr>
<td>Cocaine use$^e$</td>
<td>0.29</td>
<td>211</td>
<td>.590</td>
</tr>
<tr>
<td>Smoked tobacco$^b$</td>
<td>1.17</td>
<td>212</td>
<td>.556</td>
</tr>
<tr>
<td>2 or more sexual partners$^f$</td>
<td>4.23</td>
<td>215</td>
<td>.040*</td>
</tr>
<tr>
<td>Alcohol/Drug use last intercourse</td>
<td>12.24</td>
<td>155</td>
<td>.000**</td>
</tr>
<tr>
<td>Suicidal ideation$^a$</td>
<td>1.94</td>
<td>215</td>
<td>.164</td>
</tr>
<tr>
<td>Suicide attempt$^a$</td>
<td>0.68</td>
<td>216</td>
<td>.411</td>
</tr>
<tr>
<td>Purged/Used laxatives$^b$</td>
<td>0.79</td>
<td>214</td>
<td>.373</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

$^a$ One or more times during the past 12 months. $^b$ One or more times during the past 30 days. $^c$ Drank 5 or more drinks of alcohol on at least 1 occasion on 1 or more of the past 30 days. $^d$ Used marijuana, cocaine, crack, inhalants, steroids, hallucinogens, or injected illicit drugs on 1 or more occasions over lifetime. $^e$ One or more occasions over lifetime. $^f$ During past 3 months.
Table 15

*Logistic Regression Coefficients, p Values, and Odds Ratios for the Relationship between Time 2 Health Risk Behaviors and Time 3 Sexual Assault Experiences, Controlling for Child Sexual Assault Experiences and Times 1 and 2 Sexual Assault Experiences*

<table>
<thead>
<tr>
<th>Health Risk Behavior</th>
<th>β</th>
<th>p</th>
<th>OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol/Drug use last intercourse</td>
<td>1.17</td>
<td>.015*</td>
<td>3.23</td>
</tr>
<tr>
<td>2 or more sexual partners(^a)</td>
<td>0.30</td>
<td>.635</td>
<td>1.34</td>
</tr>
</tbody>
</table>

\(^a\)Correlation is significant at the 0.05 level (2-tailed).

\(^a\)During past 3 months.
Sexual Assault History Associated with Future Health Risk Behaviors

Phase 1. In order to assess our third hypothesis, chi-square analyses were conducted to determine the contingency relationship between sexual assault experiences reported at the initiation of the study and engagement in health risk behaviors at the 3-month follow-up (see Tables 16 and 17 for frequency data and chi-square analyses, respectively). The analyses revealed significant associations between victimization status and drug or alcohol use prior to the most recent engagement in sexual intercourse, number of sexual partners, illicit drug use, marijuana use, cocaine use, and tobacco use.

No significant associations were found between sexual assault and suicidal ideation or sexual assault and suicide attempt. Time 1 experience of sexual assault was associated with Time 2 rates of drug or alcohol use prior to the most recent engagement in sexual intercourse ($\chi^2 (1,318) = 7.53, p < .01$). Additionally, a significant association was revealed between sexual assault experience reported at the initiation of the study and the number of sexual partners in the past 3 months, reported at Time 2 ($\chi^2 (1,427) = 7.69, p < .01$). No significant association was determined between experience of sexual assault reported at the initiation of the study and rates of binge drinking at the 3-month follow-up. A significant association between Time 1 sexual assault and lifetime rates of illicit drug use was found ($\chi^2 (1,431) = 15.25, p < .01$). Additionally, significant contingency relationships were determined between sexual assault reported at Time 1 and marijuana use in the past 30 days, reported at Time 2 ($\chi^2 (3,428) = 10.27, p < .05$) and Time 1 sexual assault experiences and lifetime cocaine use, reported at the 3-month follow-up ($\chi^2 (1,419) = 7.34, p < .01$).
Table 16

*Frequencies and Percentages of Participants Engaging in Time 2 Health Risk Behaviors, by Whether They Experienced Time 1 Sexual Assault*

<table>
<thead>
<tr>
<th>Health Risk Behavior (n)</th>
<th>Sexual Assault History</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Frequency (%)</td>
</tr>
<tr>
<td>Engaged in physical fight(^a) (427)</td>
<td>7 (4)</td>
</tr>
<tr>
<td>Drove after drinking alcohol(^b) (431)</td>
<td>46 (26)</td>
</tr>
<tr>
<td>Binge drinking(^c) (407)</td>
<td>135 (80)</td>
</tr>
<tr>
<td>1 or 2 days</td>
<td>29 (17)</td>
</tr>
<tr>
<td>3 to 5 days</td>
<td>41 (24)</td>
</tr>
<tr>
<td>6 to 9 days</td>
<td>38 (22)</td>
</tr>
<tr>
<td>10 to 30 days</td>
<td>27 (16)</td>
</tr>
<tr>
<td>Illicit drug use(^d) (431)</td>
<td>129 (74)</td>
</tr>
<tr>
<td>Marijuana use(^b) (428)</td>
<td>66 (38)</td>
</tr>
<tr>
<td>1 or 2 times</td>
<td>27 (16)</td>
</tr>
<tr>
<td>3 to 9 times</td>
<td>17 (10)</td>
</tr>
<tr>
<td>10 to 100 or more times</td>
<td>22 (13)</td>
</tr>
<tr>
<td>Cocaine use(^e) (419)</td>
<td>15 (9)</td>
</tr>
<tr>
<td>Smoked tobacco(^b) (426)</td>
<td>102 (59)</td>
</tr>
<tr>
<td>1 to 9 days</td>
<td>53 (31)</td>
</tr>
<tr>
<td>10 to 30 days</td>
<td>49 (28)</td>
</tr>
<tr>
<td>2 or more sexual partners(^f) (321)</td>
<td>25 (17)</td>
</tr>
<tr>
<td>Alcohol/Drug use last intercourse (318)</td>
<td>59 (41)</td>
</tr>
<tr>
<td>Suicidal ideation(^a) (429)</td>
<td>16 (9)</td>
</tr>
<tr>
<td>Suicide attempt(^a) (431)</td>
<td>9 (5)</td>
</tr>
<tr>
<td>Purged/Used laxatives(^b) (429)</td>
<td>50 (29)</td>
</tr>
</tbody>
</table>

\(^a\) One or more times during the past 12 months. \(^b\) One or more times during the past 30 days. \(^c\) Drank 5 or more drinks of alcohol on at least 1 occasion on 1 or more of the past 30 days. \(^d\) Used marijuana, cocaine, crack, inhalants, steroids, hallucinogens, or injected illicit drugs on 1 or more occasions over lifetime. \(^e\) One or more occasions over lifetime. \(^f\) During past 3 months.
Table 17

Chi-Square Values, Number of Cases in Each Category, and p Values for the Association between Time 1 Sexual Assault Experiences and Time 2 Health Risk Behaviors

<table>
<thead>
<tr>
<th>Health Risk Behavior</th>
<th>$\chi^2$</th>
<th>n</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engaged in physical fight&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.45</td>
<td>427</td>
<td>.118</td>
</tr>
<tr>
<td>Drove after drinking alcohol&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.07</td>
<td>431</td>
<td>.790</td>
</tr>
<tr>
<td>Binge drinking&lt;sup&gt;c&lt;/sup&gt;</td>
<td>9.21</td>
<td>415</td>
<td>.056</td>
</tr>
<tr>
<td>Illicit drug use&lt;sup&gt;d&lt;/sup&gt;</td>
<td>15.25</td>
<td>431</td>
<td>.000*</td>
</tr>
<tr>
<td>Marijuana use&lt;sup&gt;b&lt;/sup&gt;</td>
<td>10.27</td>
<td>428</td>
<td>.016*</td>
</tr>
<tr>
<td>Cocaine use&lt;sup&gt;e&lt;/sup&gt;</td>
<td>7.34</td>
<td>419</td>
<td>.007*</td>
</tr>
<tr>
<td>Smoked tobacco&lt;sup&gt;b&lt;/sup&gt;</td>
<td>24.18</td>
<td>426</td>
<td>.000**</td>
</tr>
<tr>
<td>2 or more sexual partners&lt;sup&gt;f&lt;/sup&gt;</td>
<td>7.69</td>
<td>427</td>
<td>.006*</td>
</tr>
<tr>
<td>Alcohol/Drug use last intercourse</td>
<td>7.53</td>
<td>318</td>
<td>.006*</td>
</tr>
<tr>
<td>Suicidal ideation&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.25</td>
<td>429</td>
<td>.620</td>
</tr>
<tr>
<td>Suicide attempt&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.003</td>
<td>431</td>
<td>.958</td>
</tr>
<tr>
<td>Purged/Used laxatives&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.47</td>
<td>429</td>
<td>.225</td>
</tr>
</tbody>
</table>

<sup>a</sup> Correlation is significant at the 0.05 level (2-tailed).
<sup>b</sup> Correlation is significant at the 0.01 level (2-tailed).
<sup>a</sup> One or more times during the past 12 months. <sup>b</sup>One or more times during the past 30 days. <sup>c</sup>Drank 5 or more drinks of alcohol on at least 1 occasion on 1 or more of the past 30 days. <sup>d</sup>Used marijuana, cocaine, crack, inhalants, steroids, hallucinogens, or injected illicit drugs on 1 or more occasions over lifetime. <sup>e</sup>One or more occasions over lifetime. <sup>f</sup>During past 3 months.
The results indicated a significant association between sexual assault reported at the initiation of the study and tobacco use at Time 2 ($\chi^2 (2,426) = 24.18, p < .01$). The association between sexual assault experiences and other health risk behaviors, including engaging in a physical fight, using alcohol and driving, and disordered eating behaviors were not significant.

To complete the assessment of our third hypothesis, Linear Regression analyses were performed to determine the nature of the relationship between sexual assault experiences reported at Time 1 and health risk behaviors at the 3-month follow-up (see Table 18). The analyses revealed that experiencing a sexual assault between the ages of 14 and approximately 18 or 19 at the initiation of the study was a significant predictor of smoking tobacco at the 3-month follow-up ($b = .137, t (3,414) = 2.59, p < .05$). In contrast to the results of the chi-square analyses, victimization status was not a significant predictor of lifetime illicit drug use, marijuana use in the past 30 days, lifetime cocaine use, use of alcohol or drugs prior to the most recent engagement in sexual intercourse, or having 2 or more sexual partners in the past 3 months.

**Phase 2.** Chi-Square analyses were also conducted to determine the contingency relationship between sexual assault experiences within the first 3 months of the study and engagement in health risk behaviors at the 6-month follow-up (see Tables 19 and 20 for frequency data and chi-square analyses, respectively). The analyses failed to reveal significant associations. No regression analysis was conducted due to the insignificant chi-square findings.
Table 18

Linear Regression Coefficients and p Values for the Relationship between Time 1 Sexual Assault Experiences and Time 2 Health Risk Behaviors, Controlling for Child Sexual Assault Experiences and Time 1 Health Risk Behaviors

<table>
<thead>
<tr>
<th>Health Risk Behavior</th>
<th>Exp(B)</th>
<th>n</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illicit drug use&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.012</td>
<td>425</td>
<td>.717</td>
</tr>
<tr>
<td>Marijuana use&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.023</td>
<td>416</td>
<td>.516</td>
</tr>
<tr>
<td>Cocaine use&lt;sup&gt;c&lt;/sup&gt;</td>
<td>.041</td>
<td>394</td>
<td>.285</td>
</tr>
<tr>
<td>Smoked tobacco&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.081</td>
<td>414</td>
<td>.010*</td>
</tr>
<tr>
<td>2 or more sexual partners&lt;sup&gt;d&lt;/sup&gt;</td>
<td>.090</td>
<td>419</td>
<td>.067</td>
</tr>
<tr>
<td>Alcohol/Drug use at last intercourse</td>
<td>.086</td>
<td>288</td>
<td>.126</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).

<sup>a</sup> Used marijuana, cocaine, crack, inhalants, steroids, hallucinogens, or injected illicit drugs on 1 or more occasions over lifetime.  
<sup>b</sup> One or more times during the past 30 days.  
<sup>c</sup> One or more occasions over lifetime.  
<sup>d</sup> During past 3 months.
Table 19

*Frequencies and Percentages of Participants Engaging in Time 3 Health Risk Behaviors, by Whether They Experienced Time 2 Sexual Assault*

<table>
<thead>
<tr>
<th>Health Risk Behavior (n)</th>
<th>Sexual Assault History</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes (Frequency &amp; %)</td>
</tr>
<tr>
<td>Engaged in physical fight (213)</td>
<td>2 (6)</td>
</tr>
<tr>
<td>Drove after drinking alcohol (214)</td>
<td>14 (42)</td>
</tr>
<tr>
<td>Binge drinking (205)</td>
<td>24 (77)</td>
</tr>
<tr>
<td>1 or 2 days</td>
<td>3 (10)</td>
</tr>
<tr>
<td>3 to 5 days</td>
<td>8 (26)</td>
</tr>
<tr>
<td>6 to 9 days</td>
<td>10 (32)</td>
</tr>
<tr>
<td>10 to 30 days</td>
<td>3 (10)</td>
</tr>
<tr>
<td>Illicit drug use (214)</td>
<td>23 (70)</td>
</tr>
<tr>
<td>Marijuana use (212)</td>
<td>14 (42)</td>
</tr>
<tr>
<td>1 or 2 times</td>
<td>6 (18)</td>
</tr>
<tr>
<td>3 to 9 times</td>
<td>4 (12)</td>
</tr>
<tr>
<td>10 to 100 or more times</td>
<td>4 (12)</td>
</tr>
<tr>
<td>Cocaine use (209)</td>
<td>4 (12)</td>
</tr>
<tr>
<td>Smoked tobacco (210)</td>
<td>17 (55)</td>
</tr>
<tr>
<td>1 to 9 days</td>
<td>8 (26)</td>
</tr>
<tr>
<td>10 to 30 days</td>
<td>9 (29)</td>
</tr>
<tr>
<td>2 or more sexual partners (162)</td>
<td>5 (19)</td>
</tr>
<tr>
<td>Alcohol/Drug use last intercourse (160)</td>
<td>11 (41)</td>
</tr>
<tr>
<td>Suicidal ideation (212)</td>
<td>6 (19)</td>
</tr>
<tr>
<td>Suicide attempt (213)</td>
<td>3 (9)</td>
</tr>
<tr>
<td>Purged/Used laxatives (210)</td>
<td>9 (28)</td>
</tr>
</tbody>
</table>

*a One or more times during the past 12 months. ^b One or more times during the past 30 days. ^c Drank 5 or more drinks of alcohol on at least 1 occasion on 1 or more of the past 30 days. ^d Used marijuana, cocaine, crack, inhalants, steroids, hallucinogens, or injected illicit drugs on 1 or more occasions over lifetime. ^e One or more occasions over lifetime. ^f During past 3 months.
Table 20

Chi-Square Values, Number of Cases in Each Category, and p Values for the Association between Time 2 Sexual Assault Experiences and Time 3 Health Risk Behaviors

<table>
<thead>
<tr>
<th>Health Risk Behavior</th>
<th>$\chi^2$</th>
<th>n</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engaged in physical fight$^a$</td>
<td>1.50</td>
<td>213</td>
<td>.221</td>
</tr>
<tr>
<td>Drove after drinking alcohol$^b$</td>
<td>2.92</td>
<td>214</td>
<td>.088</td>
</tr>
<tr>
<td>Binge drinking$^c$</td>
<td>4.86</td>
<td>210</td>
<td>.302</td>
</tr>
<tr>
<td>Illicit drug use$^d$</td>
<td>1.73</td>
<td>214</td>
<td>.188</td>
</tr>
<tr>
<td>Marijuana use$^b$</td>
<td>5.04</td>
<td>212</td>
<td>.169</td>
</tr>
<tr>
<td>Cocaine use$^e$</td>
<td>2.95</td>
<td>209</td>
<td>.086</td>
</tr>
<tr>
<td>smoked tobacco$^b$</td>
<td>0.77</td>
<td>210</td>
<td>.681</td>
</tr>
<tr>
<td>2 or more sexual partners$^f$</td>
<td>1.26</td>
<td>214</td>
<td>.262</td>
</tr>
<tr>
<td>Alcohol/Drug use last intercourse</td>
<td>0.58</td>
<td>160</td>
<td>.445</td>
</tr>
<tr>
<td>Suicidal ideation$^a$</td>
<td>3.30</td>
<td>212</td>
<td>.069</td>
</tr>
<tr>
<td>Suicide attempt$^a$</td>
<td>0.70</td>
<td>213</td>
<td>.402</td>
</tr>
<tr>
<td>Purged/Used laxatives$^b$</td>
<td>0.00</td>
<td>210</td>
<td>.997</td>
</tr>
</tbody>
</table>

$^a$ One or more times during the past 12 months. $^b$ One or more times during the past 30 days. $^c$ Drank 5 or more drinks of alcohol on at least 1 occasion on 1 or more of the past 30 days. $^d$ Used marijuana, cocaine, crack, inhalants, steroids, hallucinogens, or injected illicit drugs on 1 or more occasions over lifetime. $^e$ One or more occasions over lifetime. $^f$ During past 3 months.
Discussion

Overall, this study replicated previous findings that a strong association exists between the experience of sexual assault and engagement in health risk behaviors. Yet the hypotheses that one experience or behavior uniquely predicts the other was unfounded by the current analyses. The nature of the relationship between sexual assault and health risk behaviors remains complex.

We found that in a largely homogenous sample of college women, sexual assault is occurring at alarming rates. Approximately 10% of the women reported being raped between the age of 14 and approximately 18 or 19, prior to the onset of the study. An additional 30% reported experiencing some form of sexual assault prior to the onset of the study. These figures are similar to previous findings (Gidycz et al., 1998), including those found by Brener et al. (1999), in their analysis of a nationally representative group of college women. The current study also revealed staggering rates of engagement in selected health risk behaviors. An extremely large proportion of the sample reported binge drinking in the past month (69%), as well as illicit drug use in their lifetimes (58%), and marijuana use in the past 30 days (30%). Almost half of the study sample had smoked tobacco in the past 30 days (48%) and nearly 20% had driven after drinking.

Among women who were sexually assaulted, rates of these behaviors were consistently significantly greater than rates for non-victimized women, and, overall, were higher than the rates reported by victimized women in Brener et al.’s (1999) analysis. Thus, the current study’s first hypothesis, that rates of health risk behaviors at Time 1 would be associated with sexual assault histories, was strongly confirmed. In accordance with several previous analyses, Pearson chi-square analyses indicated significant
associations between sexual assault and health risk behaviors, such as drinking alcohol, using illicit drugs, and engaging in risky sexual behaviors.

Specifically, women who had experienced sexual assault were approximately twice as likely to have considered suicide in the past year (21%) than were non-victimized women (11%). Five of the six previous examinations of health risk behaviors and sexual assault included suicidal ideation. Similar results were reported in each of these investigations (Brener et al., 1999; Silverman et al., 2001; Nagy et al., 1994; Nagy et al., 1995; Anteghini et al., 2001). However, in disagreement with previous findings, the current study did not find an association between sexual assault status and rates of reported suicide attempts in the past year. This finding was in contrast to the three previous studies that examined sexual assault and suicide attempts where each found that women with experiences of sexual assault were more likely to have attempted suicide than women without sexual assault histories. However, in previous analyses and in the current analysis, cell sizes for suicide attempt were quite small and may have resulted in misleading findings. For example, Anteghini et al. (2001) reported that 9 previously victimized women had attempted suicide in the past year, compared to 14 at Time 1 in the current analysis, and much smaller numbers as the current study progressed.

In the current analysis, sexual assault status was associated with having used alcohol or other drugs at the time of a woman’s most recent engagement in sexual intercourse, as well as with a greater number of sexual partners. These results support previous findings (Brener et al., 1999; Silverman et al., 2001). The current study also confirmed the links reported in previous studies between sexual assault and alcohol and
other drug use (Brener et al., 1999; Kilpatrick et al., 1997; Silverman et al., 2001; Nagy et al., 1994; Nagy et al., 1995). In our analysis, sexual assault status was associated with binge drinking, where women who had experienced sexual assault were more likely than non-victimized women to engage in binge drinking in the past month (74% vs. 66%, respectively). Additionally, victimized women reported lifetime illicit drug use at approximately 1.5 times the rate of non-victimized women. Victimized women also endorsed smoking marijuana at over twice the rate of their non-victimized counterparts. Finally, women who experienced sexual assault reported lifetime cocaine use at a significantly higher rate than did women who were not assaulted. A contingency relationship was revealed between sexual assault and tobacco smoking as well. This finding is in accordance with each of the three previous examinations of sexual assault and tobacco smoking (Brener et al., 1999; Silverman et al., 2001; Anteghini et al., 2001).

In the current study, sexual assault was associated with an increased likelihood of engaging in physical fights. This finding confirms that of Brener et al.’s study (1999), who reported a similar relationship. Additionally, the current study found an association between sexual victimization and the use of alcohol before driving. This finding is also documented in previous studies (Brener et al., 1999; Silverman et al., 2001). Finally, no contingency relationship was determined between sexual assault and eating disordered behaviors. The results of previous studies that examined sexual assault and disordered eating behaviors have been mixed. Our results concur with those of Nagy et al., 1995, but differ from those of Silverman et al. (2001) and Nagy et al. (1994). It is possible that the construct measuring disordered eating behaviors was weak, given that it relied on a single
item that was relatively vague. It is also possible that the relationship between sexual assault and disordered eating is more complex or more tenuous than hypothesized.

Health Risk Behaviors Associated with Future Sexual Assault

The hypothesis that rates of engagement in health risk behaviors at one time period would be associated with, and would predict, sexual assault experiences reported at a later time period was not strongly supported. Chi-Square analyses revealed a contingency relationship between Time 1 health risk behaviors and Time 2 victimization status on only one measure: suicidal ideation. A logistic regression analysis, performed to determine the nature of this relationship, was non-significant. It follows that a similarly weak relationship was found between Time 2 health risk behaviors and Time 3 sexual assault experiences. Although chi-square analyses did reveal contingency relationships between sexual assault status and the use of drugs or alcohol at the most recent engagement in sexual intercourse, and sexual assault status and number of sexual partners, logistic regression analyses showed significance only for the use of drugs or alcohol prior to the most recent engagement in sexual intercourse.

The temporal relationship between health risk behaviors and sexual assault experiences was weaker than expected. Retrospective studies of the past have focused exclusively on the engagement in substance use and the increased likelihood of experiencing a sexual assault. Specifically, research has established that alcohol use is a critical element in the majority of sexual assaults (Hindmarch & Brinkman, 1999; Seifert, 1999), especially in the moment of assault. The current analysis supported this finding partially, reporting that the odds of using alcohol or drugs prior to the most recent engagement in sexual intercourse at the 3-month follow-up were 3.8 times greater for
those who were sexually assaulted at the 6-month-follow-up. However, this relationship was not supported in phase 1 during the first 3 months of the study, suggesting a weaker relationship overall.

More generally, Kilpatrick et al. (1997) hypothesized that women with substance abuse problems may be more vulnerable to sexual assault. They reported that, when controlling for a history of sexual assault, drug use was a significant predictor for sexual victimization 2 years later. Our results did not confirm this finding. It is possible that our longitudinal design simply did not cover a long enough period of time for robust findings such as those of Kilpatrick et al. (1997). In sum, the current study did not provide strong support for the theory of Kilpatrick et al. (1994) and Windle (1994), stating that the personality trait of “sensation seeking” is an independent risk factor for experiencing sexual assault, at least where individual health risk behaviors were concerned.

Sexual Assault History Associated with Future Health Risks

The hypothesis that rates of sexual assault experiences reported at one time period would be associated with the engagement in health risk behaviors at a later time period was supported to some degree, but the predictive nature of this relationship was not confirmed. Chi-Square analyses revealed contingency relationships between sexual assault at the initiation of the study and 3-month reports of drug or alcohol use prior to the most recent engagement in sexual intercourse, number of sexual partners, illicit drug use, marijuana use, cocaine use, and smoking tobacco. However, linear regression analyses, performed to determine the nature of these relationships, were primarily non-significant. The analyses revealed that, of the six health risk behaviors examined, the
experience of sexual assault reported at the initiation of the study predicted only smoking tobacco at the 3-month follow-up.

Even weaker findings were revealed for the contingency and predictive relationships between Time 2 sexual assault experiences and Time 3 health risk behaviors. The chi-square analyses did not result in any significant findings. The lack of significant relationships overall was unexpected. These results are in contrast to previous reports. In a retrospective examination of sexual assault victims and their patterns of substance use, Burnam et al. (1988) offered preliminary evidence that sexual assault preceded engagement in health risk behaviors. Women who had experienced a sexual assault appeared to increase their likelihood of later drug and alcohol abuse. More recent studies, such as Kilpatrick et al. (1997) have confirmed these results. However, the current study, utilizing a prospective design similar, although shorter in time-span, to Kilpatrick et al.’s (1997), did not replicate these findings. This is in contrast to theoretical models of Resnick et al. (1997) and Briere (1989) that substance use results after the occurrence of sexual assault as a method of coping, or avoiding strong affect and traumatic memories.

In sum, the current analysis highlighted a strong relationship between health risk behaviors and sexual assault. At the same time, the prospective portion of the study designed to determine the direction of the relationship failed to indicate significance. There was more evidence for the association between sexual assault at one time period and engagement in health risk behaviors at a later period, than for the relationship between engaging in health risk behaviors at one time period and experiencing sexual
assault at a later period. However, no compelling evidence was found for a temporal or predictive relationship.

One possible reason for the weakness of our findings is that the intercorrelation of the health risk behaviors did not allow for any individual health risk behavior, in the presence of the other health risk behaviors, to reach significance. Future research might consider health risk variables as a group of related behaviors that suggest a “sensation seeking” personality trait (Kilpatrick et al., 1994). It is probable that a score indicating a tendency to engage in multiple high-risk behaviors would serve as an independent risk factor for experiencing sexual assault.

The lack of strength in our results also suggests that additional variables mediate the relationship between health risk behaviors and sexual assault. For instance, many previous studies have shown a link between mental health and history of sexual assault (Acierno et al., 1997; Burnam et al., 1988; Resnick et al., 1997; Thompson et al., 2002), and between mental health and health risk behaviors (Polusney & Follette, 1995; Thompson et al., 2002). An additionally important aspect of functioning that is not addressed here, and that may mediate the relationship between sexual assault and health risk behaviors is that of the individual’s experience of, and functioning within, her social sphere. We have an intuitive understanding that the systems under which women operate, their social contexts, cultures, families, degree of connectedness and support all impact mental health and behavior. This relationship is supported in the empirical literature (Grauerholz, 2000). Furthermore, environmental factors have been shown to be related to sexual revictimization (Messman-Moore & Long, 2002; Grauerholz, 2000). For example, in a small-scale study of treatment seeking women with sexual assault histories,
researchers showed that sexual revictimization was associated with interpersonal relatedness, such as social functioning, as well as with assertiveness and nurturance (Classen et al., 2001). It follows, then, that the relationship between social variables, mental health, health risk behaviors, and sexual assault warrants future study.

**Limitations and Directions for Future Research**

There are several important limitations to this study. First, the sample of participants was quite homogenous. The nonrepresentative nature of this group of White, middle to upper class, college women restricts the understanding of how the issues investigated may differ across age, race/ethnicity, and socio-economic status. The future study of a diverse group of women will not only allow for increased understanding, but will help to serve all women through more generalizable, inclusive, treatment and prevention programs aimed at both sexual assault and health risk behaviors. Treatment and prevention programs that highlight specific cultural needs are lacking (Bohn, 2003).

Unfortunately, due to financial constraints, the current investigation did not include 6-month follow-up data from the largest cohort. This resulted in a smaller sample size overall and reduction of power for the very important longitudinal analyses of this study. Similarly, the limitations of a 6-month follow-up time period were clear. A longer period of time allowed between follow-up sessions would have been greatly beneficial. Information gleaned from a longer-term study would be highly useful clinically, and it might indicate increased significance, such as in Kilpatrick et al.’s study (1997) that included a 2-year follow-up. Additionally, due to small cell sizes, the informative nature of a sexual assault score indicating 5 levels of victimization had to be collapsed into 2 levels. Future examinations of sexual assault and health risk behaviors would benefit
greatly from large-scale designs.

Another limitation of this study involves the reliance on retrospective reporting for sexual assault experiences and health risk behaviors in adolescence. Retrospective reporting risks being skewed by judgments received, or insight gained, in the passage of time (Briere, 1992). Prospective examinations are the only method available for identifying the sequential nature of the relationship between sexual assault and health risk behaviors. Future research should incorporate data from younger women in a prospective analysis, as the current investigation shows that many women have experienced sexual assault and multiple health risks prior to their late teens and early twenties.

The current study did not uncover all of the possible mediating factors linking sexual assault and health risks. As mentioned above, future analyses should incorporate an examination of mental health and social/environmental issues in the study of health risk behaviors and sexual assault. Unfortunately, the study of these important variables was beyond the scope of the current analysis. Their inclusion in future research is highly warranted.

The association between sexual assault and engaging in health risk behaviors is striking. Clinicians, school staff, nurses, and doctors working to treat victims of sexual assault, or to prevent victimization and revictimization, must incorporate into their treatment protocols a focus on associated health risk behaviors. Likewise, programs aimed at the treatment or prevention of health risk behaviors, such as drinking or using illicit drugs, must address their association with sexual assault experiences.

Initiatives such as the United State Government’s Healthy People 2010 project, where individuals, groups, and organizations are encouraged to integrate national health
goals (such as improving quality of life) into current programs, is a perfect venue in which to begin implementing the current study’s findings. The strength of our data provides ample evidence that such prevention and treatment efforts must reach young adolescents and women of all ages. It is our hope that programs focused on the relationship between health risk behaviors and sexual assault will not only reduce the incidence of sexual assault and engagement in health risk behaviors, but that it will also reduce the revictimization of women.
References


and female-to-male intimate partner violence as measured by the National


Prevalence, drinking style, time trends, and associated problems. *Journal of the
American Medical Association, 267*, 2929-2931.

and behavioral consequences of binge drinking in college: A national survey of
students at 140 campuses. *Journal of the American Medical Association, 272*,
1672-1677.


associated mental disorders among alcoholic inpatients. *American Journal of
Psychiatry, 152*, 1322-1328.

issues, future directions, and the potential efficacy of interventions with women.
*Clinical Psychology Review, 19*, 739-770.
Appendix A

Table A1

Summary of Studies Reporting on Sexual Assault Indicating Specific Health Risk Behaviors Examined

<table>
<thead>
<tr>
<th></th>
<th>Injury</th>
<th>Suicidal Ideation &amp; Attempts</th>
<th>Alcohol Use</th>
<th>Illicit Drug Use</th>
<th>Tobacco Use</th>
<th>Disordered Eating Behaviors</th>
<th>Sexual Behavior</th>
<th>Population Studied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brener et al. (1999)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Primarily ages 18 to 24</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N = 4609</td>
</tr>
<tr>
<td>Kilpatrick et al. (1997)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>National Women’s Study</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(over 18 years of age)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N = 3006</td>
</tr>
<tr>
<td>Silverman et al. (2001)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>9th – 12th grade females</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N = 4163</td>
</tr>
<tr>
<td>Nagy et al. (1994)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>8th &amp; 10th grade females</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N = 1690</td>
</tr>
<tr>
<td>Nagy et al. (1995)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>8th &amp; 10th grade females</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N = 3124</td>
</tr>
<tr>
<td>Anteghini et al. (2001)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>8th &amp; 10th grade females</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N = 1132</td>
</tr>
</tbody>
</table>
Table A2

*Studies Reporting on Sexual Assault and Health Risk Behaviors: Summary of Findings*

<table>
<thead>
<tr>
<th>Authors</th>
<th>Health Risk Measure</th>
<th>Sexual Assault Measure</th>
<th>Summary of Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brener et al. (1999)</td>
<td>National College Health Risk Behavior Survey (NCHRBS)</td>
<td>NCHRBS</td>
<td>One-time data collection. Odds ratios showed women who had been raped were more likely than non-victimized women to report physical fighting, driving after drinking, suicidal ideation, smoking, multiple sexual partners, and substance use before last intercourse. Regression analyses confirmed relationships, in addition to those between sexual assault, and episodic heavy drinking and marijuana use.</td>
</tr>
<tr>
<td>Kilpatrick et al. (1997)</td>
<td>approximately 12 items indicating DSM-IV criteria for substance abuse</td>
<td>4 items indicating forced vaginal, oral, or anal sex, or penetration by objects</td>
<td>Longitudinal. Hierarchical Logistic Regression analyses showed that experiencing a sexual assault over the course of the study was predictive of alcohol and drug use at the 2-year follow-up. Initial drug use was a significant predictor for sexual assault 2 years later. Exclusive alcohol abuse was not.</td>
</tr>
<tr>
<td>Silverman et al. (2001)</td>
<td>Youth Risk Behavior Survey (YRBS)</td>
<td>YRBS plus single item indicating forced sexual activity</td>
<td>One-time data collection. Logistic Regression analyses for combined 1997 &amp; 1999 data showed that sexual abuse was predicted by driving after drinking, suicidal ideation and attempts, cocaine use, smoking, disordered eating behaviors, early-onset sexual intercourse, multiple sexual partners, and substance use before last intercourse.</td>
</tr>
<tr>
<td>Nagy et al. (1994)</td>
<td>National Adolescent Student Health Survey (NASHS)</td>
<td>3 items indicating forced intercourse by date, relative, and stranger</td>
<td>One-time data collection. Chi-Square analyses showed that sexually abused adolescents were more likely than non-abused to report weapon carrying, suicidal ideation &amp; attempts, illicit drug use, disordered eating behaviors, and pregnancy.</td>
</tr>
</tbody>
</table>
Table A2 (continued)

<table>
<thead>
<tr>
<th>Authors</th>
<th>Health Risk Measure</th>
<th>Sexual Assault Measure</th>
<th>Summary of Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nagy et al. (1995)</td>
<td>Derived from NASHS</td>
<td>2 items indicating unwanted sexual contact and forced intercourse</td>
<td>One-time data collection. Odds Ratios showed that sexually abused adolescents were more likely than non-abused to report suicidal ideation, illicit drug use, early-onset sexual intercourse, and past pregnancy.</td>
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<tr>
<td>Anteghini et al. (2001)</td>
<td>Derived from the Minnesota Adolescent Health Survey</td>
<td>Unknown</td>
<td>One-time data collection. Significant bivariate associations between history of sexual abuse and gun-carrying, suicidal ideation and attempts, smoking, early-onset sexual intercourse, and pregnancy. Regression analyses non-significant.</td>
</tr>
</tbody>
</table>
Demographic Questionnaire

1. What is your age?
   A. 18
   B. 19
   C. 20
   D. 21
   E. 22
   F. 23
   G. 24
   H. 25
   I. 26 or older

2. What is your current year in school?
   A. First year
   B. Sophomore
   C. Junior
   D. Senior
   E. Graduate
   F. Other

3. What is your ethnicity?
   A. Caucasian, Nonhispanic
   B. African American
   C. Asian or Pacific Islander
   D. Latino
   E. American Indian or Alaska Native
   F. Other

4. What is your religion?
   A. Catholic (Christian)
   B. Protestant (Christian)
   C. Jewish
   D. Nondenominational
   E. None
   F. Muslim
   G. Other

5. What is your sexual orientation?
   A. Heterosexual
   B. Homosexual
   C. Bisexual
6. What is your current marital status?
   A. Never married
   B. Co-habitating
   C. Married
   D. Divorced
   E. Widowed

7. My father’s occupation is:
   A. Executive, major professional
   B. Manager, minor professional
   C. Administrator, owner of small business, semi-professionsl
   D. Clerical or sales worker
   E. Skilled worker
   F. Semi-skilled worker
   G. Unskilled worker
   H. Unemployed
   I. Homemaker
   J. don’t know

8. My mother’s occupation is:
   A. Executive, major professional
   B. Manager, minor professional
   C. Administrator, owner of small business, semi-professionsl
   D. Clerical or sales worker
   E. Skilled worker
   F. Semi-skilled worker
   G. Unskilled worker
   H. Unemployed
   I. Homemaker
   J. don’t know

9. My father’s education is:
   A. Graduate or professional degree
   B. Partial graduate training
   C. College graduate
   D. Partial college training
   E. High School Graduate (technical or training school)
   F. Partical High School (10th-12th grade)
   G. Partial junior high school (7th or 9th grade)
   H. Elementary school (6th grade or lower)
   I. don’t know
10. My mother’s education is:
   A. Graduate or professional degree
   B. Partial graduate training
   C. College graduate
   D. Partial college training
   E. High School Graduate (technical or training school)
   F. Partial High School (10th-12th grade)
   G. Partial junior high school (7th or 9th grade)
   H. Elementary school (6th grade or lower)
   I. don’t know

11. What is your current dating status?
   A. I do not date.
   B. I date casually.
   C. I am involved in a long-term monogamous relationship.
   D. I am engaged.
   E. I am married.

12. Are you currently involved in an exclusive romantic/dating relationship or marriage?
   A. Yes
   B. No

13. Have you ever taken a self-defense course?
   A. Yes
   B. No

14. Are you currently taking a self-defense course?
   A. Yes
   B. No

15. Have you ever participated in a sexual assault prevention program?
   A. Yes
   B. No

16. Have you ever willingly had sexual intercourse?
   A. Yes
   B. No
17. How old were you when you first willingly had sexual intercourse?
   A. I have never willingly had sexual intercourse
   B. 13 years or younger
   C. 14
   D. 15
   E. 16
   F. 17
   G. 18
   H. 19 or older

18. How many consensual (not forced) sex partners have you had?
   A. 0
   B. 1 or 2
   C. 3 or 4
   D. 5 or 6
   E. 7 or 8
   F. 9 or 10
   G. 11 or more

19. Approximately what is your parents' yearly income?
   A. unemployed or disabled
   B. 10,000 – 20,000
   C. 21,000 – 30,000
   D. 31,000 – 40,000
   E. 41,000 – 50,000
   F. 51,000 – 75,000
   G. 76,000 – 100,000
   H. 100,001- over
Appendix B2

Sexual Experiences Survey (SES; time 1)

Please answer the following questions about your sexual experiences from age 14 on. Have you had any of these experiences from the age of 14 on?

1. Have you ever given in to sex play (fondling, kissing, or petting, but not intercourse) when you didn't want to because you were overwhelmed by a man's continual arguments and pressure? (From age 14 on)
   a. No    b. Yes

2. Have you had sex play (fondling, kissing, or petting, but not intercourse) when you didn't want to because a man used his authority (boss, teacher, camp counselor, supervisor) to make you? (From age 14 on)
   a. No    b. Yes

3. Have you had sex play (fondling, kissing, or petting, but not intercourse) when you didn't want to because a man threatened or used some degree of physical force (twisting your arm, holding you down, etc.) (From age 14 on)
   a. No    b. Yes

4. Have you had a man attempt sexual intercourse (get on top of you, attempt to insert his penis) when you didn't want to by threatening or using some degree of force (twisting your arm, holding you down, etc.) but intercourse did not occur? (From age 14 on)
   a. No    b. Yes

5. Have you had a man attempt sexual intercourse (get on top of you, attempt to insert his penis) when you didn't want to by giving you alcohol or drugs, to prevent you from resisting, but intercourse did not occur? (From age 14 on)
   a. No    b. Yes

6. Have you given in to sexual intercourse when you didn't want to because you were overwhelmed by a man's continual arguments and pressure? (From age 14 on)
   a. No    b. Yes

7. Have you had sexual intercourse when you didn't want to because a man used his position of authority (boss, teacher, counselor, supervisor)? (From age 14 on)
   a. No    b. Yes

8. Have you had sexual intercourse when you didn't want to because a man gave you alcohol or drugs to prevent you from resisting? (From age 14 on)
   a. No    b. Yes
9. Have you had sexual intercourse when you didn't want to because a man threatened or used some degree of physical force (twisting your arm, holding you down, etc.) to make you? (From age 14 on)
   a. No    b. Yes

10. Have you had sexual acts (anal or oral intercourse or penetration by objects other than the penis) when you didn't want to because a man threatened or used some degree of physical force (twisting your arm, holding you down, etc.) to make you? (From age 14 on)
    a. No    b. Yes
Sexual Experiences Survey (SES; times 2 & 3)

Please answer the following questions about your sexual experiences in the last 3 months.

Have you had any of these experiences in the last 3 months?

1. Have you ever given in to sex play (fondling, kissing, or petting, but not intercourse) when you didn't want to because you were overwhelmed by a man's continual arguments and pressure? (in the last 3 months)
   a. No  b. Yes

2. Have you had sex play (fondling, kissing, or petting, but not intercourse) when you didn't want to because a man used his authority (boss, teacher, camp counselor, supervisor) to make you? (in the last 3 months)
   a. No  b. Yes

3. Have you had sex play (fondling, kissing, or petting, but not intercourse) when you didn't want to because a man threatened or used some degree of physical force (twisting your arm, holding you down, etc.) (in the last 3 months)
   a. No  b. Yes

4. Have you had a man attempt sexual intercourse (get on top of you, attempt to insert his penis) when you didn't want to by threatening or using some degree of force (twisting your arm, holding you down, etc.) but intercourse did not occur? (in the last 3 months)
   a. No  b. Yes

5. Have you had a man attempt sexual intercourse (get on top of you, attempt to insert his penis) when you didn't want to by giving you alcohol or drugs, to prevent you from resisting, but intercourse did not occur? (in the last 3 months)
   a. No  b. Yes

6. Have you given in to sexual intercourse when you didn't want to because you were overwhelmed by a man's continual arguments and pressure? (in the last 3 months)
   a. No  b. Yes

7. Have you had sexual intercourse when you didn't want to because a man used his position of authority (boss, teacher, counselor, supervisor)? (in the last 3 months)
   a. No  b. Yes

8. Have you had sexual intercourse when you didn't want to because a man gave you alcohol or drugs to prevent you from resisting? (in the last 3 months)
   a. No  b. Yes
9. Have you had sexual intercourse when you didn't want to because a man threatened or used some degree of physical force (twisting your arm, holding you down, etc.) to make you? (in the last 3 months)
   a. No    b. Yes

10. Have you had sexual acts (anal or oral intercourse or penetration by objects other than the penis) when you didn't want to because a man threatened or used some degree of physical force (twisting your arm, holding you down, etc.) to make you? (in the last 3 months)
    a. No    b. Yes
National College Health Risk Behavior Survey (NCHRBS; time 1)

Please answer the following question about your health behavior.

1. How often do you wear a seat belt when riding in a car driven by someone else?
   A. Never
   B. Rarely
   C. Sometimes
   D. Most of the time
   E. Always

2. How often do you wear a seat belt when driving a car?
   A. I do not drive a car
   B. Never wear a seat belt
   C. Rarely wear a seat belt
   D. Sometimes wear a seat belt
   E. Most of the time wear a seat belt
   F. Always wear a seat belt

3. During the past 12 months, how many times did you ride a motorcycle?
   A. 0 times
   B. 1 to 10 times
   C. 11 to 20 times
   D. 21 to 39 times
   E. 40 or more times

4. When you rode a motorcycle during the past 12 months, how often did you wear a helmet?
   A. I did not ride a motorcycle during the past 12 months
   B. Never wore a helmet
   C. Rarely wore a helmet
   D. Sometimes wore a helmet
   E. Most of the time wore a helmet
   F. Always wore a helmet

5. During the past 12 months, how many times did you ride a bicycle?
   A. 0 times
   B. 1 to 10 times
   C. 11 to 20 times
   D. 21 to 39 times
   E. 40 or more times
6. When you rode a bicycle during the past 12 months, how often did you wear a helmet?
   A. I did not ride a bicycle during the past 12 months
   B. Never wore a helmet
   C. Rarely wore a helmet
   D. Sometimes wore a helmet
   E. Most of the time wore a helmet
   F. Always wore a helmet

7. During the past 12 months, how many times did you go boating or swimming?
   A. 0 times
   B. 1 to 10 times
   C. 11 to 20 times
   D. 21 to 39 times
   E. 40 or more times

8. When you went boating or swimming during the past 12 months, how often did you drink alcohol?
   A. I did not go boating or swimming in the past 12 months
   B. Never drank alcohol
   C. Rarely drank alcohol
   D. Sometimes drank alcohol
   E. Most of the time drank alcohol
   F. Always drank alcohol

9. During the past 30 days, how many times did you ride in a car or other vehicle driven by someone who had been drinking alcohol?
   A. 0 times
   B. 1 time
   C. 2 or 3 times
   D. 4 or 5 times
   E. 6 or more times

10. During the past 30 days, how many times did you drive a car or other vehicle when you had been drinking alcohol?
    A. 0 times
    B. 1 time
    C. 2 or 3 times
    D. 4 or 5 times
    E. 6 or more times
11. During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club? Do not count carrying a weapon as part of your job.
   A. 0 days
   B. 1 day
   C. 2 or 3 days
   D. 4 or 5 days
   E. 6 or more days

12. During the past 30 days, on how many days did you carry a gun? Do not count carrying a gun as part of your job.
   A. 0 days
   B. 1 day
   C. 2 or 3 days
   D. 4 or 5 days
   E. 6 or more days

13. During the past 12 months, how many times were you in a physical fight?
   A. 0 times (skip to question 16)
   B. 1 time
   C. 2 or 3 times
   D. 4 or 5 times
   E. 6 or 7 times
   F. 8 or 9 times
   G. 10

14. During the past 12 months, with whom did you fight? (select all that apply)
   A. A total stranger
   B. A friend or someone I know
   C. A boyfriend, girlfriend, or date
   D. My spouse or domestic partner
   E. A parent, brother, sister, or other family member
   F. Other

15. During the past 12 months, how many times were you in a physical fight in which you were injured and had to be treated by a doctor or nurse?
   A. 0 times
   B. 1 time
   C. 2 or 3 times
   D. 4 or 5 times
   E. 6 or more times
Sometimes people feel so depressed and hopeless about the future that they may consider attempting suicide, that is, taking some action to end their own life. The next four questions ask about suicide.

16. During the past 12 months, did you ever seriously consider attempting suicide?
   A. yes
   B. no

17. During the past 12 months, did you make a plan about how you would attempt suicide?
   A. yes
   B. no

18. During the past 12 months, how many times did you attempt suicide?
   A. 0 times
   B. 1 time
   C. 2 or 3 times
   D. 4 or 5 times
   E. 6 or more times

19. If you attempted suicide during the past 12 months, did any attempt result in an injury, poisoning, or overdose that had to be treated by a doctor or nurse?
   A. I did not attempt suicide during the past 12 months
   B. yes
   C. no

The next eight questions ask about tobacco use.

20. Have you ever tried cigarette smoking, even one or two puffs?
   A. yes
   B. no - SKIP TO QUESTION 27

21. How old were you when you smoked a whole cigarette for the first time?
   A. I have never smoked a whole cigarette
   B. 12 years old or younger
   C. 13 or 14 years old
   D. 15 or 16 years old
   E. 17 or 18 years old
   F. 19 or 20 years old
   G. 21 to 24 years old
   H. 25 years old or older
22. During the past 30 days, on how many did you smoke cigarettes?
   A. 0 days
   B. 1 or 2 days
   C. 3 to 5 days
   D. 6 to 9 days
   E. 10 to 19 days
   F. 20 to 29 days
   G. all 30 days

23. During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day?
   A. I did not smoke cigarettes during the last 30 days
   B. Less than 1 cigarette per day
   C. 2 to 5 cigarettes per day
   D. 6 to 10 cigarettes per day
   E. 11 to 20 cigarettes per day
   F. More than 20 cigarettes per day

24. Have you ever smoked cigarettes regularly, that is, at least one cigarette every day for 30 days?
   A. yes
   B. no

25. How old were you when you first started smoking cigarettes regularly (at least one cigarette every day for 30 days)?
   A. I have never smoked cigarettes
   B. 12 years old or younger
   C. 13 or 14 years old
   D. 15 or 16 years old
   E. 17 or 18 years old
   F. 19 or 20 years old
   G. 21 to 24 years old
   H. 25 years old or older

26. Have you tried to quit smoking cigarettes?
   A. yes
   B. no
27. During the past 30 days, on how many days did you use chewing tobacco or snuff, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, or Copenhagen?
   A. 0 days
   B. 1 or 2 days
   C. 3 to 5 days
   D. 6 to 9 days
   E. 10 to 19 days
   F. 20 to 29 days
   G. all 30 days

The next three questions ask about drinking alcohol. This includes beer, wine, wine coolers, and liquor, such as rum, gin, vodka, or whiskey. For these questions, drinking alcohol does not include drinking a few sips of wine for religious purposes.

28. How old were you when you had your first drink of alcohol other than a few sips?
   A. I have never had a drink of alcohol other than a few sips – SKIP TO QUESTION 31
   B. 12 years old or younger
   C. 13 or 14 years old
   D. 15 or 16 years old
   E. 17 or 18 years old
   F. 19 or 20 years old
   G. 21 to 24 years old
   H. 25 years old or older

29. During the past 30 days, on how many days did you have at least one drink of alcohol?
   A. 0 days
   B. 1 or 2 days
   C. 3 to 5 days
   D. 6 to 9 days
   E. 10 to 19 days
   F. 20 to 29 days
   G. all 30 days

30. During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?
   A. 0 days
   B. 1 or 2 days
   C. 3 to 5 days
   D. 6 to 9 days
   E. 10 to 19 days
   F. 20 or more days
The next three questions ask about marijuana use.

31. During your life, how many times have you used marijuana?
   A. 0 times – SKIP TO QUESTION 34
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   G. 100 or more times

32. How old were you when you tried marijuana for the first time?
   A. 12 years old or younger
   B. 13 or 14 years old
   C. 15 or 16 years old
   D. 17 or 18 years old
   E. 19 or 20 years old
   F. 21 to 24 years old
   G. 25 years old or older

33. During the past 30 days, how many times did you use marijuana?
   A. 0 times
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   H. 100 or more times

The next 10 questions ask about cocaine and other drug use.

34. During your life, how many times have you used any form of cocaine including powder, crack, or freebase?
   A. 0 times – SKIP TO QUESTION 38
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   G. 100 or more times
35. How old were you when you tried any form of cocaine, including powder, crack, or freebase, for the first time?
   A. 12 years old or younger
   B. 13 or 14 years old
   C. 15 or 16 years old
   D. 17 or 18 years old
   E. 19 or 20 years old
   F. 21 to 24 years old
   G. 25 years old or older

36. During the past 30 days, how many times did you use any form of cocaine, including powder, crack, or freebase?
   A. 0 times
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   G. 100 or more times

37. During your life, how many times have you used the crack or freebase forms of cocaine?
   A. 0 times
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   G. 100 or more times

38. During your life, how many times have you sniffed glue, or breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high?
   A. 0 times
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   G. 100 or more times
39. During your life, how many times have you taken steroid pills or shots without a doctor’s prescription?
   A. 0 times
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   G. 100 or more times

40. During your life, how many times have you used any other type of illegal drug, such as, LSD, PCP, ecstasy, mushrooms, speed, ice, or heroin?
   A. 0 times
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   G. 100 or more times

41. During the past 30 days, how many times have you used any other type of illegal drug, such as, LSD, PCP, ecstasy, mushrooms, speed, ice, or heroin?
   A. 0 times
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   G. 100 or more times

42. During the past 30 days, how many times have you used any illegal drug in combination with drinking alcohol?
   A. 0 times
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 or more times
43. During your life, how many times have you used a needle to inject any illegal drug into your body?
   A. 0 times
   B. 1 time
   C. 2 or more times

The next 15 questions ask about sexual behavior. For the purpose of this survey, sexual intercourse is defined as vaginal intercourse, anal intercourse, or oral/genital sex.

44. How old were you when you had sexual intercourse for the first time?
   A. I have never had sexual intercourse – SKIP TO QUESTION 55
   B. 12 years old or younger
   C. 13 or 14 years old
   D. 15 or 16 years old
   E. 17 or 18 years old
   F. 19 or 20 years old
   G. 21 to 24 years old
   H. 25 years old or older

45. During your life, with how many females have you had sexual intercourse?
   A. I have never had sexual intercourse with a female
   B. 1 female
   C. 2 females
   D. 3 females
   E. 4 females
   F. 5 females
   G. 6 or more females

46. During the past 3 months, with how many females have you had sexual intercourse?
   A. I have never had sexual intercourse with a female
   B. I have had sexual intercourse with a female, but not during the past 3 months
   C. 1 female
   D. 2 females
   E. 3 females
   F. 4 females
   G. 5 females
   H. 6 or more females
47. During your life, with how many males have you had sexual intercourse?
   A. I have never had sexual intercourse with a male
   B. 1 male
   C. 2 males
   D. 3 males
   E. 4 males
   F. 5 males
   G. 6 or more males

48. During the past 3 months, with how many males have you had sexual intercourse?
   A. I have never had sexual intercourse with a male
   B. I have had sexual intercourse with a male, but not during the past 3 months
   C. 1 male
   D. 2 males
   E. 3 males
   F. 4 males
   G. 5 males
   H. 6 or more males

49. During the past 30 days, how many times did you have sexual intercourse?
   A. 0 times
   B. 1 time
   C. 2 or 3 times
   D. 4 to 9 times
   E. 10 to 19 times
   F. 20 or more times

50. During the past 30 days, how often did you or your partner use a condom?
   A. I have not had sexual intercourse during the past 30 days
   B. Never used a condom
   C. Rarely used a condom
   D. Sometimes used a condom
   E. Most of the time used a condom
   F. Always used a condom

51. The last time you had sexual intercourse, did you or your partner use a condom?
   A. yes
   B. no

52. Did you drink alcohol or use drugs before you had sexual intercourse the last time?
   A. yes
   B. no
53. The last time you had sexual intercourse, what method did you or your partner use to prevent pregnancy? (select all that apply)
   A. no method was used to prevent pregnancy
   B. Birth control pills
   C. Condoms
   D. Withdraw
   E. Some other method
   F. Not sure

54. How many times have you been pregnant or gotten someone pregnant?
   A. 0 times
   B. 1 time
   C. 2 or more times
   D. Not sure

55. During your life, have you ever been forced to have sexual intercourse against your will?
   A. yes
   B. no - SKIP TO QUESTION 58

56. How old were you the first time you were force to have sexual intercourse against your will?
   A. 4 years old or younger
   B. 5 to 12 years old
   C. 13 or 14 years old
   D. 15 or 16 years old
   E. 17 or 18 years old
   F. 19 or 20 years old
   G. 21 to 24 years old
   H. 25 years old or older

57. How old were you the last time you were forced to have sexual intercourse against your will?
   A. 4 years old or younger
   B. 5 to 12 years old
   C. 13 or 14 years old
   D. 15 or 16 years old
   E. 17 or 18 years old
   F. 19 or 20 years old
   G. 21 to 24 years old
   H. 25 years old or older
58. Have you ever had your blood tested for the AIDS virus/HIV infection?
   A. yes
   B. no
   C. not sure

The next eight questions ask about body weight.

59. How do you describe your weight?
   A. Very underweight
   B. Slightly underweight
   C. About the right weight
   D. Slightly overweight
   E. Very overweight

60. Which of the following are you trying to do about your weight?
   A. Lose weight
   B. Gain weight
   C. Stay about the same
   D. I am not trying to do anything about my weight

61. During the past 30 days, did you diet to lose weight or to keep from gaining weight?
   A. yes
   B. no

62. During the past 30 days, did you exercise to lose weight or to keep from gaining weight?
   A. yes
   B. no

63. During the past 30 days, did you vomit or take laxatives to lose weight or to keep from gaining weight?
   A. yes
   B. no

64. During the past 30 days, did you take diet pills to lose weight or to keep from gaining weight?
   A. yes
   B. no
The next seven questions ask about food you ate yesterday. Think about all meals and
snacks you ate yesterday from the time you got up until you went to bed. Be sure to
include food you ate at home, on campus, at restaurants, or anywhere else.

65. Yesterday, how many times did you eat fruit?
   A. 0 times  
   B. 1 time   
   C. 2 times  
   D. 3 or more times

66. Yesterday, how many times did you drink fruit juice?
   A. 0 times  
   B. 1 time   
   C. 2 times  
   D. 3 or more times

67. Yesterday, how many times did you eat green salad?
   A. 0 times  
   B. 1 time   
   C. 2 times  
   D. 3 or more times

68. Yesterday, how many times did you eat cooked vegetables?
   A. 0 times  
   B. 1 time   
   C. 2 times  
   D. 3 or more times

69. Yesterday, how many times did you eat hamburger, hot dogs, or sausage?
   A. 0 times  
   B. 1 time   
   C. 2 times  
   D. 3 or more times

70. Yesterday, how many times did you eat French fries or potato chips?
   A. 0 times  
   B. 1 time   
   C. 2 times  
   D. 3 or more times

71. Yesterday, how many times did you eat cookies, doughnuts, pie, or cake?
   A. 0 times  
   B. 1 time   
   C. 2 times  
   D. 3 or more times
72. On how many of the past 7 days did you exercise or participate in sports activities for at least 20 minutes that made you sweat and breathe hard, such as, basketball, jogging, swimming laps, tennis, fast bicycling, or similar aerobic activities?
   A. 0 days
   B. 1 day
   C. 2 days
   D. 3 days
   E. 4 days
   F. 5 days
   G. 6 days
   H. 7 days

73. On how many of the past 7 days did you do stretching exercises, such as toe touching, knee bending, or leg stretching?
   A. 0 days
   B. 1 day
   C. 2 days
   D. 3 days
   E. 4 days
   F. 5 days
   G. 6 days
   H. 7 days

74. push-ups, sit-ups, or weight lifting?
   A. 0 days
   B. 1 day
   C. 2 days
   D. 3 days
   E. 4 days
   F. 5 days
   G. 6 days
   H. 7 days

75. On how many of the past 7 days did you walk or bicycle for at least 30 minutes at a time? (include walking or bicycling to or from class or work)
   A. 0 days
   B. 1 day
   C. 2 days
   D. 3 days
   E. 4 days
   F. 5 days
   G. 6 days
   H. 7 days
76. During this school year, have you been enrolled in a physical education class?
   A. yes
   B. no

77. During this school year, on how many college sports teams (intramural or extramural) did you participate?
   A. 0 teams
   B. 1 team
   C. 2 teams
   D. 3 or more teams

The next questions ask about AIDS education and health information.

78. Have you ever been taught about AIDS or HIV infection in your college classes?
   A. yes
   B. no
   C. not sure

79. During this school year, did you receive information about avoiding AIDS or HIV infection on your college campus?
   A. Yes
   B. No
   C. Not sure
National College Health Risk Behavior Survey (NCHRBS; times 2 & 3)

Please answer the following question about your health behavior during the past 3 months.

1. How often do you wear a seat belt when riding in a car driven by someone else?
   A. Never
   B. Rarely
   C. Sometimes
   D. Most of the time
   E. Always

2. How often do you wear a seat belt when driving a car?
   A. I do not drive a car
   B. Never wear a seat belt
   C. Rarely wear a seat belt
   D. Sometimes wear a seat belt
   E. Most of the time wear a seat belt
   F. Always wear a seat belt

3. During the past 3 months, how many times did you ride a motorcycle?
   A. 0 times
   B. 1 to 10 times
   C. 11 to 20 times
   D. 21 to 39 times
   E. 40 or more times

4. When you rode a motorcycle during the past 3 months, how often did you wear a helmet?
   A. I did not ride a motorcycle during the past 3 months
   B. Never wore a helmet
   C. Rarely wore a helmet
   D. Sometimes wore a helmet
   E. Most of the time wore a helmet
   F. Always wore a helmet

5. During the past 3 months, how many times did you ride a bicycle?
   A. 0 times
   B. 1 to 10 times
   C. 11 to 20 times
   D. 21 to 39 times
   E. 40 or more times
6. When you rode a bicycle during the past 3 months, how often did you wear a helmet?
   A. I did not ride a bicycle during the past 3 months
   B. Never wore a helmet
   C. Rarely wore a helmet
   D. Sometimes wore a helmet
   E. Most of the time wore a helmet
   F. Always wore a helmet

7. During the past 3 months, how many times did you go boating or swimming?
   A. 0 times
   B. 1 to 10 times
   C. 11 to 20 times
   D. 21 to 39 times
   E. 40 or more times

8. When you went boating or swimming during the past 3 months, how often did you drink alcohol?
   A. I did not go boating or swimming in the past 3 months
   B. Never drank alcohol
   C. Rarely drank alcohol
   D. Sometimes drank alcohol
   E. Most of the time drank alcohol
   F. Always drank alcohol

9. During the past 30 days, how many times did you ride in a car or other vehicle driven by someone who had been drinking alcohol?
   A. 0 times
   B. 1 time
   C. 2 or 3 times
   D. 4 or 5 times
   E. 6 or more times

10. During the past 30 days, how many times did you drive a car or other vehicle when you had been drinking alcohol?
    A. 0 times
    B. 1 time
    C. 2 or 3 times
    D. 4 or 5 times
    E. 6 or more times
11. During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club? Do not count carrying a weapon as part of your job.
   A. 0 days  
   B. 1 day  
   C. 2 or 3 days  
   D. 4 or 5 days  
   E. 6 or more days

12. During the past 30 days, on how many days did you carry a gun? Do not count carrying a gun as part of your job.
   A. 0 days  
   B. 1 day  
   C. 2 or 3 days  
   D. 4 or 5 days  
   E. 6 or more days

13. During the past 3 months, how many times were you in a physical fight?
   A. 0 times (skip to question 16)  
   B. 1 time  
   C. 2 or 3 times  
   D. 4 or 5 times  
   E. 6 or 7 times  
   F. 8 or 9 times  
   G. 10

14. During the past 3 months, with whom did you fight? (select all that apply)
   A. A total stranger  
   B. A friend or someone I know  
   C. A boyfriend, girlfriend, or date  
   D. My spouse or domestic partner  
   E. A parent, brother, sister, or other family member  
   F. Other

15. During the past 3 months, how many times were you in a physical fight in which you were injured and had to be treated by a doctor or nurse?
   A. 0 times  
   B. 1 time  
   C. 2 or 3 times  
   D. 4 or 5 times  
   E. 6 or more times
Sometimes people feel so depressed and hopeless about the future that they may consider attempting suicide, that is, taking some action to end their own life. The next four questions ask about suicide.

16. During the past 3 months, did you ever seriously consider attempting suicide?
   A. yes
   B. no

17. During the past 3 months, did you make a plan about how you would attempt suicide?
   A. yes
   B. no

18. During the past 3 months, how many times did you attempt suicide?
   A. 0 times
   B. 1 time
   C. 2 or 3 times
   D. 4 or 5 times
   E. 6 or more times

19. If you attempted suicide during the past 3 months, did any attempt result in an injury, poisoning, or overdose that had to be treated by a doctor or nurse?
   A. I did not attempt suicide during the past 3 months
   B. yes
   C. no

The next eight questions ask about tobacco use.

20. Have you ever tried cigarette smoking, even one or two puffs?
   A. yes
   B. no - SKIP TO QUESTION 27

21. How old were you when you smoked a whole cigarette for the first time?
   A. I have never smoked a whole cigarette
   B. 12 years old or younger
   C. 13 or 14 years old
   D. 15 or 16 years old
   E. 17 or 18 years old
   F. 19 or 20 years old
   G. 21 to 24 years old
   H. 25 years old or older
22. During the past 30 days, on how many did you smoke cigarettes?
   A. 0 days
   B. 1 or 2 days
   C. 3 to 5 days
   D. 6 to 9 days
   E. 10 to 19 days
   F. 20 to 29 days
   G. all 30 days

23. During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day?
   A. I did not smoke cigarettes during the last 30 days
   B. Less than 1 cigarette per day
   C. 2 to 5 cigarettes per day
   D. 6 to 10 cigarettes per day
   E. 11 to 20 cigarettes per day
   F. More than 20 cigarettes per day

24. Have you ever smoked cigarettes regularly, that is, at least one cigarette every day for 30 days?
   A. yes
   B. no

25. How old were you when you first started smoking cigarettes regularly (at least one cigarette every day for 30 days)?
   A. I have never smoked cigarettes
   B. 12 years old or younger
   C. 13 or 14 years old
   D. 15 or 16 years old
   E. 17 or 18 years old
   F. 19 or 20 years old
   G. 21 to 24 years old
   H. 25 years old or older

26. Have you tried to quit smoking cigarettes?
   A. yes
   B. no
27. During the past 30 days, on how many days did you use chewing tobacco or snuff, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, or Copenhagen?
   A. 0 days
   B. 1 or 2 days
   C. 3 to 5 days
   D. 6 to 9 days
   E. 10 to 19 days
   F. 20 to 29 days
   G. all 30 days

The next three questions ask about drinking alcohol. This includes beer, wine, wine coolers, and liquor, such as rum, gin, vodka, or whiskey. For these questions, drinking alcohol does not include drinking a few sips of wine for religious purposes.

28. How old were you when you had your first drink of alcohol other than a few sips?
   A. I have never had a drink of alcohol other than a few sips – SKIP TO QUESTION 31
   B. 12 years old or younger
   C. 13 or 14 years old
   D. 15 or 16 years old
   E. 17 or 18 years old
   F. 19 or 20 years old
   G. 21 to 24 years old
   H. 25 years old or older

29. During the past 30 days, on how many days did you have at least one drink of alcohol?
   A. 0 days
   B. 1 or 2 days
   C. 3 to 5 days
   D. 6 to 9 days
   E. 10 to 19 days
   F. 20 to 29 days
   G. all 30 days

30. During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?
   A. 0 days
   B. 1 or 2 days
   C. 3 to 5 days
   D. 6 to 9 days
   E. 10 to 19 days
   F. 20 or more days
The next three questions ask about marijuana use.

31. During your life, how many times have you used marijuana?
   A. 0 times – SKIP TO QUESTION 34
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   G. 100 or more times

32. How old were you when you tried marijuana for the first time?
   A. 12 years old or younger
   B. 13 or 14 years old
   C. 15 or 16 years old
   D. 17 or 18 years old
   E. 19 or 20 years old
   F. 21 to 24 years old
   G. 25 years old or older

33. During the past 30 days, how many times did you use marijuana?
   A. 0 times
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   H. 100 or more times

The next 10 questions ask about cocaine and other drug use.

34. During your life, how many times have you used any form of cocaine including powder, crack, or freebase?
   A. 0 times – SKIP TO QUESTION 38
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   G. 100 or more times
35. How old were you when you tried any form of cocaine, including powder, crack, or freebase, for the first time?
   A. 12 years old or younger
   B. 13 or 14 years old
   C. 15 or 16 years old
   D. 17 or 18 years old
   E. 19 or 20 years old
   F. 21 to 24 years old
   G. 25 years old or older

36. During the past 30 days, how many times did you use any form of cocaine, including powder, crack, or freebase?
   A. 0 times
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   G. 100 or more times

37. During your life, how many times have you used the crack or freebase forms of cocaine?
   A. 0 times
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   G. 100 or more times

38. During your life, how many times have you sniffed glue, or breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high?
   A. 0 times
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   G. 100 or more times
39. During your life, how many times have you taken steroid pills or shots without a doctor’s prescription?
   A. 0 times
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   G. 100 or more times

40. During your life, how many times have you used any other type of illegal drug, such as, LSD, PCP, ecstasy, mushrooms, speed, ice, or heroin?
   A. 0 times
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   G. 100 or more times

41. During the past 30 days, how many times have you used any other type of illegal drug, such as, LSD, PCP, ecstasy, mushrooms, speed, ice, or heroin?
   A. 0 times
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 to 99 times
   G. 100 or more times

42. During the past 30 days, how many times have you used any illegal drug in combination with drinking alcohol?
   A. 0 times
   B. 1 or 2 times
   C. 3 to 9 times
   D. 10 to 19 times
   E. 20 to 39 times
   F. 40 or more times

43. During your life, how many times have you used a needle to inject any illegal drug into your body?
   A. 0 times
   B. 1 time
   C. 2 or more times
The next 15 questions ask about sexual behavior. For the purpose of this survey, sexual intercourse is defined as vaginal intercourse, anal intercourse, or oral/genital sex.

44. How old were you when you had sexual intercourse for the first time?
   A. I have never had sexual intercourse – SKIP TO QUESTION 55
   B. 12 years old or younger
   C. 13 or 14 years old
   D. 15 or 16 years old
   E. 17 or 18 years old
   F. 19 or 20 years old
   G. 21 to 24 years old
   H. 25 years old or older

45. During your life, with how many females have you had sexual intercourse?
   A. I have never had sexual intercourse with a female
   B. 1 female
   C. 2 females
   D. 3 females
   E. 4 females
   F. 5 females
   G. 6 or more females

46. During the past 3 months, with how many females have you had sexual intercourse?
   A. I have never had sexual intercourse with a female
   B. I have had sexual intercourse with a female, but not during the past 3 months
   C. 1 female
   D. 2 females
   E. 3 females
   F. 4 females
   G. 5 females
   H. 6 or more females

47. During your life, with how many males have you had sexual intercourse?
   A. I have never had sexual intercourse with a male
   B. 1 male
   C. 2 males
   D. 3 males
   E. 4 males
   F. 5 males
   G. 6 or more males
48. During the past 3 months, with how many males have you had sexual intercourse?
   A. I have never had sexual intercourse with a male
   B. I have had sexual intercourse with a male, but not during the past 3 months
   C. 1 male
   D. 2 males
   E. 3 males
   F. 4 males
   G. 5 males
   H. 6 or more males

49. During the past 30 days, how many times did you have sexual intercourse?
   A. 0 times
   B. 1 time
   C. 2 or 3 times
   D. 4 to 9 times
   E. 10 to 19 times
   F. 20 or more times

50. During the past 30 days, how often did you or your partner use a condom?
   A. I have not had sexual intercourse during the past 30 days
   B. Never used a condom
   C. Rarely used a condom
   D. Sometimes used a condom
   E. Most of the time used a condom
   F. Always used a condom

51. The last time you had sexual intercourse, did you or your partner use a condom?
   A. yes
   B. no

52. Did you drink alcohol or use drugs before you had sexual intercourse the last time?
   A. yes
   B. no

53. The last time you had sexual intercourse, what method did you or your partner use to prevent pregnancy? (select all that apply)
   A. no method was used to prevent pregnancy
   B. Birth control pills
   C. Condoms
   D. Withdraw
   E. Some other method
   F. Not sure
54. How many times have you been pregnant or gotten someone pregnant?
   A. 0 times
   B. 1 time
   C. 2 or more times
   D. Not sure

55. During your life, have you ever been forced to have sexual intercourse against your will?
   A. yes
   B. no - SKIP TO QUESTION 58

56. How old were you the first time you were forced to have sexual intercourse against your will?
   A. 4 years old or younger
   B. 5 to 12 years old
   C. 13 or 14 years old
   D. 15 or 16 years old
   E. 17 or 18 years old
   F. 19 or 20 years old
   G. 21 to 24 years old
   H. 25 years old or older

57. How old were you the last time you were forced to have sexual intercourse against your will?
   A. 4 years old or younger
   B. 5 to 12 years old
   C. 13 or 14 years old
   D. 15 or 16 years old
   E. 17 or 18 years old
   F. 19 or 20 years old
   G. 21 to 24 years old
   H. 25 years old or older

58. Have you ever had your blood tested for the AIDS virus/HIV infection?
   A. yes
   B. no
   C. not sure

The next eight questions ask about body weight.
59. How do you describe your weight?
   A. Very underweight
   B. Slightly underweight
   C. About the right weight
   D. Slightly overweight
   E. Very overweight
60. Which of the following are you trying to do about your weight?
   A. Lose weight
   B. Gain weight
   C. Stay about the same
   D. I am not trying to do anything about my weight

61. During the past 30 days, did you diet to lose weight or to keep from gaining weight?
   A. yes
   B. no

62. During the past 30 days, did you exercise to lose weight or to keep from gaining weight?
   A. yes
   B. no

63. During the past 30 days, did you vomit or take laxatives to lose weight or to keep from gaining weight?
   A. yes
   B. no

64. During the past 30 days, did you take diet pills to lose weight or to keep from gaining weight?
   A. yes
   B. no

The next seven questions ask about food you ate yesterday. Think about all meals and snacks you ate yesterday from the time you got up until you went to bed. Be sure to include food you ate at home, on campus, at restaurants, or anywhere else.

65. Yesterday, how many times did you eat fruit?
   A. 0 times
   B. 1 time
   C. 2 times
   D. 3 or more times

66. Yesterday, how many times did you drink fruit juice?
   A. 0 times
   B. 1 time
   C. 2 times
   D. 3 or more times
67. Yesterday, how many times did you eat green salad?
   A. 0 times
   B. 1 time
   C. 2 times
   D. 3 or more times

68. Yesterday, how many times did you eat cooked vegetables?
   A. 0 times
   B. 1 time
   C. 2 times
   D. 3 or more times

69. Yesterday, how many times did you eat hamburger, hot dogs, or sausage?
   A. 0 times
   B. 1 time
   C. 2 times
   D. 3 or more times

70. Yesterday, how many times did you eat French fries or potato chips?
   A. 0 times
   B. 1 time
   C. 2 times
   D. 3 or more times

71. Yesterday, how many times did you eat cookies, doughnuts, pie, or cake?
   A. 0 times
   B. 1 time
   C. 2 times
   D. 3 or more times

72. On how many of the past 7 days did you exercise or participate in sports activities for at least 20 minutes that made you sweat and breathe hard, such as, basketball, jogging, swimming laps, tennis, fast bicycling, or similar aerobic activities?
   A. 0 days
   B. 1 day
   C. 2 days
   D. 3 days
   E. 4 days
   F. 5 days
   G. 6 days
   H. 7 days
73. On how many of the past 7 days did you do stretching exercises, such as toe touching, knee bending, or leg stretching?
   A. 0 days
   B. 1 day
   C. 2 days
   D. 3 days
   E. 4 days
   F. 5 days
   G. 6 days
   H. 7 days

74. push-ups, sit-ups, or weight lifting?
   A. 0 days
   B. 1 day
   C. 2 days
   D. 3 days
   E. 4 days
   F. 5 days
   G. 6 days
   H. 7 days

75. On how many of the past 7 days did you walk or bicycle for at least 30 minutes at a time? (include walking or bicycling to or from class or work)
   A. 0 days
   B. 1 day
   C. 2 days
   D. 3 days
   E. 4 days
   F. 5 days
   G. 6 days
   H. 7 days

76. During this school year, have you been enrolled in a physical education class?
   A. yes
   B. no

77. During this school year, on how many college sports teams (intramural or extramural) did you participate?
   A. 0 teams
   B. 1 team
   C. 2 teams
   D. 3 or more teams
The next questions ask about AIDS education and health information.

78. Have you ever been taught about AIDS or HIV infection in your college classes?
   A. yes
   B. no
   C. not sure

79. During this school year, did you receive information about avoiding AIDS or HIV infection on your college campus?
   A. Yes
   B. No
   C. Not sure
Appendix B4

National College Health Risk Behavior Survey Scoring

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<th>Unintentional and Intentional Injury</th>
<th>Drugs</th>
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<td>Indicating Frequency of:</td>
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<td>lifetime marijuana use</td>
</tr>
<tr>
<td>wearing seat belt when car passenger</td>
<td>recent marijuana use</td>
</tr>
<tr>
<td>wearing helmet when driving motorcycle</td>
<td>lifetime cocaine use</td>
</tr>
<tr>
<td>wearing helmet when riding bicycle</td>
<td>recent cocaine use</td>
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<tr>
<td>drinking alcohol while riding in boat</td>
<td>lifetime crack cocaine use</td>
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<tr>
<td>riding in car with driver who had been drinking alcohol</td>
<td>lifetime inhalants use</td>
</tr>
<tr>
<td>driving a car after drinking alcohol</td>
<td>lifetime steroids use</td>
</tr>
<tr>
<td>carrying a weapon</td>
<td>lifetime other illegal drugs use</td>
</tr>
<tr>
<td>carrying a gun</td>
<td>recent other illegal drugs use</td>
</tr>
<tr>
<td>engaging in physical fight</td>
<td>recent combo of illegal drugs and alcohol</td>
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<tr>
<td>engaging in physical fight resulting in injury</td>
<td>lifetime injected illegal drug use</td>
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<td>frequency of smoking cigarettes</td>
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<tr>
<td>frequency of suicide attempts</td>
<td>number of cigarettes smoked</td>
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<td>“regular” cigarette smoking</td>
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<td>frequency of using chewing tobacco</td>
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<td></td>
<td>recent number of female partners</td>
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<td>recent frequency of condom use</td>
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<td>condom use at last intercourse</td>
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<tr>
<td>recent diet pill use</td>
<td>drinking alcohol/using drugs prior to last intercourse</td>
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Appendix B5

Child Sexual Victimization Questionnaire (CSVQ)

Many people have sexual experiences as children either with friends or with people older than themselves. The following questions ask about any experiences you may have had before the age of 14.

Answer no or yes to whether or not you have had each of these experiences before age 14.

Then answer the questions below each experience referring to the most significant time you had the experience.

FOR EACH ITEM, PLEASE FILL IN THE APPROPRIATE CIRCLE ON YOUR SCANTRON SHEET.

1. Another person showed his/her sex organs to you.
   A. No
   B. Yes

2. Approximately how much older than you was the other person? [If more than one person was involved, how much older was the oldest person?]
   A. I did not have this experience before age 14
   B. The person was younger than me or about my same age
   C. The person was 1-4 years older than me
   D. The person was 5-9 years older than me
   E. The person was 10 or more years older than me

3. What is the main reason you participated?
   A. I did not have this experience before age 14
   B. Curiosity, it felt good, it made me feel loved or secure
   C. Other person used his/her authority
   D. Other person gave me gifts, money, candy, etc.
   E. Other person threatened to hurt or punish me
   F. Other person used physical force

4. Someone older than you requested you to do something sexual.
   A. No
   B. Yes
5. Approximately how much older than you was the other person? [If more than one person was involved, how much older was the oldest person?]
   A. I did not have this experience before age 14
   B. The person was younger than me or about my same age
   C. The person was 1-4 years older than me
   D. The person was 5-9 years older than me
   E. The person was 10 or more years older than me

6. What is the main reason you participated?
   A. I did not have this experience before age 14
   B. Curiosity, it felt good, it made me feel loved or secure
   C. Other person used his/her authority
   D. Other person gave me gifts, money, candy, etc.
   E. Other person threatened to hurt or punish me
   F. Other person used physical force

7. You showed your sex organs to another person at his/her request.
   A. No
   B. Yes

8. Approximately how much older than you was the other person? [If more than one person was involved, how much older was the oldest person?]
   A. I did not have this experience before age 14
   B. The person was younger than me or about my same age
   C. The person was 1-4 years older than me
   D. The person was 5-9 years older than me
   E. The person was 10 or more years older than me

9. What is the main reason you participated?
   A. I did not have this experience before age 14
   B. Curiosity, it felt good, it made me feel loved or secure
   C. Other person used his/her authority
   D. Other person gave me gifts, money, candy, etc.
   E. Other person threatened to hurt or punish me
   F. Other person used physical force

10. Another person fondled you in a sexual way.
    A. No
    B. Yes
11. Approximately how much older than you was the other person? [If more than one person was involved, how much older was the oldest person?]
   A. I did not have this experience before age 14
   B. The person was younger than me or about my same age
   C. The person was 1-4 years older than me
   D. The person was 5-9 years older than me
   E. The person was 10 or more years older than me

12. What is the main reason you participated?
   A. I did not have this experience before age 14
   B. Curiosity, it felt good, it made me feel loved or secure
   C. Other person used his/her authority
   D. Other person gave me gifts, money, candy, etc.
   E. Other person threatened to hurt or punish me
   F. Other person used physical force

13. Another person touched or stroked your sex organs.
   A. No
   B. Yes

14. Approximately how much older than you was the other person? [If more than one person was involved, how much older was the oldest person?]
   A. I did not have this experience before age 14
   B. The person was younger than me or about my same age
   C. The person was 1-4 years older than me
   D. The person was 5-9 years older than me
   E. The person was 10 or more years older than me

15. What is the main reason you participated?
   A. I did not have this experience before age 14
   B. Curiosity, it felt good, it made me feel loved or secure
   C. Other person used his/her authority
   D. Other person gave me gifts, money, candy, etc.
   E. Other person threatened to hurt or punish me
   F. Other person used physical force

16. You touched or stroked another person's sex organs at his/her request.
   A. No
   B. Yes
17. Approximately how much older than you was the other person? [If more than one person was involved, how much older was the oldest person?]
   A. I did not have this experience before age 14
   B. The person was younger than me or about my same age
   C. The person was 1-4 years older than me
   D. The person was 5-9 years older than me
   E. The person was 10 or more years older than me

18. What is the main reason you participated?
   A. I did not have this experience before age 14
   B. Curiosity, it felt good, it made me feel loved or secure
   C. Other person used his/her authority
   D. Other person gave me gifts, money, candy, etc.
   E. Other person threatened to hurt or punish me
   F. Other person used physical force

19. Another person attempted intercourse (Got on top of you, attempted to insert penis but penetration did not occur).
   A. No
   B. Yes

20. Approximately how much older than you was the other person? [If more than one person was involved, how much older was the oldest person?]
   A. I did not have this experience before age 14
   B. The person was younger than me or about my same age
   C. The person was 1-4 years older than me
   D. The person was 5-9 years older than me
   E. The person was 10 or more years older than me

21. What is the main reason you participated?
   A. I did not have this experience before age 14
   B. Curiosity, it felt good, it made me feel loved or secure
   C. Other person used his/her authority
   D. Other person gave me gifts, money, candy, etc.
   E. Other person threatened to hurt or punish me
   F. Other person used physical force

22. Another person had intercourse (oral or anal) with you, (any amount of penetration -- ejaculation not necessary)
   A. No
   B. Yes
23. Approximately how much older than you was the other person? [If more than one person was involved, how much older was the oldest person?]
   A. I did not have this experience before age 14
   B. The person was younger than me or about my same age
   C. The person was 1-4 years older than me
   D. The person was 5-9 years older than me
   E. The person was 10 or more years older than me

24. What is the main reason you participated?
   A. I did not have this experience before age 14
   B. Curiosity, it felt good, it made me feel loved or secure
   C. Other person used his/her authority
   D. Other person gave me gifts, money, candy, etc.
   E. Other person threatened to hurt or punish me
   F. Other person used physical force
Consent Form

Ohio University Human Consent Form
Title: Sexual Experiences in College Women
Principal Investigator: Dr. Christine A. Gidycz
Department: Psychology
Phone: 593-1092

I. Federal and university regulations require us to obtain signed consent for participation in research involving human participants. After reading the statement in II below, please indicate your consent by signing this form.

II. I agree to participate in the research study titled “Sexual Experiences in College Women,” which is being supervised by Christine A. Gidycz, Ph.D. of the Department of Psychology at Ohio University. I understand that my participation is entirely voluntary; I can withdraw my consent or stop responding at any time.

III. Statement of Procedure
1. The purpose of these procedures is to examine the utility of a program to prevent unwanted sexual experiences of women university students and to examine the maintenance of these effects over time.

2. In participating in this experiment, you will be randomly assigned to one of two experimental conditions, a no-intervention control group or an intervention group. Participants assigned to the intervention group will participate in a prevention program for two, two-hour sessions. The first session will involve a risk reduction program that will consist of viewing videotapes about dating behaviors and subsequent group discussions and you will be asked to fill out questionnaires concerning sexual experiences and dating behaviors. In the second session, you will participate in a self-defense class that will consist of verbal assertive responses and the demonstration of escape techniques. The self-defense component will be conducted by Cheryl Cesta who is a well-known expert in self-defense, however the session will not contain any physical contact for participants. For your participation in the first two parts of the study, you will be given four credit points toward your research requirement for your psychology class. The program group will be asked to return for a three-month and a six month follow-up. At the three month follow-up you will be asked about whether you have been able to utilize the program information over the past three months asked to fill out surveys and will be paid $30. At the six-month follow-up you will fill our surveys and will be paid $20.
3. If assigned to the control group, your participation will require one two-hour session and you will receive two credits toward your research requirements for your psychology class. You will be asked to fill out questionnaires concerning sexual experiences and dating behaviors. Additionally, the control group will be asked to return for a three-month and a six-month follow-up which are approximately two hours each and will be asked to fill out surveys. Control group participants will receive $20 for each follow-up.

4. All questionnaires will be identified only by numerical codes that will be calculated by the participants and only you will know your subject number. However, there will be a master list of names and phone numbers kept in a locked file cabinet and only accessible by the principal investigator. This master list of names will not contain subject numbers and will be destroyed following the completion of the project (approximately 1 year). Any information you provide to the experimenters will be kept confidential. However, the principle investigator is required to notify proper individuals in the event that information regarding future plans for injury to self or others is disclosed by participants to the investigator or group leader. Participants should also be aware that sensitive information including sexual issues will be discussed during the intervention sessions. However, no participant is required to talk. All information discussed during the sessions is not discussed with others outside the intervention sessions.

5. The primary risk associated with the procedure is transient anxiety associated with perceived competence and threats of disclosure of anonymity. There is also a risk that participants may experience discomfort in discussing, personal or private information. However, any disclosure is completely voluntary. Every effort will be made by the researcher to protect the confidentiality of each individual concerning verbal and written information. Confidentiality will be protected by the private calculation of a personal subject number. You will be asked to recalculate this number each time you participate. All raw data will be kept in a locked file cabinet. These procedures are implemented in order to protect your rights and privacy.

6. Potential benefits for participation include lowered risk of future sexual victimization. Participation in the intervention may help you to avoid sexual assault, including rape; however, participation cannot guarantee this result. As a research participant, you will be exposed to the conduct of scientific psychological research and may gain insight into your own adjustment and life experiences.

7. Some sessions will be videotaped to insure the integrity and consistency of the program. If a session is taped, the camera will be focused on only the group leader and never on any participants. The videotapes will be viewed only by the research administrators and destroyed at the completion of the project.
8. I agree that I have read this consent form and that all known risks have been explained to my satisfaction. I agree to participate as a subject in the research described herein. My participation is given voluntarily and without coercion or undue influence and I know that I may discontinue participation at any time without penalty or loss of benefits. I have been informed that no compensation is available from Ohio University and its employees for any injury resulting from my participation in this research.

9. If you have any questions regarding your rights as a research participant, please contact Carol Blum, Associate Vice President for Research, Ohio University, (740) 593-0370.

I certify that I am at least 18 years of age.

Signature_________________________________

Print_____________________________________

Date_____________________________________
Appendix C2

Contact Form

This is a multi-part study. Therefore, we will call you back for a three-month and a six-month follow up and you will be paid $20 for your participation. Because students move or change their phone numbers, we would like a way to reach you if your number changes. If we lost contact, we will first attempt to reach you by e-mail. The phone number of a parent or relative that is sure to know your new number would be preferable. If we call, we would simply say that we were calling from O.U. about an experiment that you participated in. We would not give any specifics about the study.

Your Name___________________________________
Your current phone_____________________________
Your current e-mail_____________________________
Your home address____________________________________
____________________________________

Contact Name_________________________________
Contact Phone_________________________________

Contact Name_________________________________
Contact Phone_________________________________
Appendix C3

Subject Number Calculation Form

Please write down the **last 4 digits**
of your social security number:

______  ______  ______  ______

Record the **month** and **day** of your birthdate.
Add this **4 digit** figure to your SS # above.
If the month or day is only 1 digit, please put a ‘0’
in the first space. For example, if you were born on
January 1, you should record it as ‘01/01’:

+______ ______/ ______ ______
              M      M      D    D

=______ ______ ______ ______ ______

Add the number of letters in your mother's **FULL**
**FIRST** name. Do not use nicknames. For example, if
your mother's first name is Christine, but she goes by
the nickname Chris, you should record it as ‘09’, the
number of letters in CHRISTINE.:

+ ______

______ ______ ______ ______ ______

Please put this sheet back in the manila envelope provided. Fill out all questionnaires on
the scantron sheets.

If you have any questions, please ask the experimenter.
Debriefing Information (times 1 & 2)

Thank you for your participation in this study. The study’s objective is to examine women’s personal and social life events, including psychological, physical, and sexual experiences. Your participation will help us understand how past and current experiences are related to each other and to a variety of social, relationship, and attitude factors. The responses to these questions will be compared with other students who have similar and differing life events. As a reminder, your answers will be kept strictly confidential.

This is a multi-part study. Thus, you will be asked to return to participate in further sessions at a later date. You will be asked to schedule today for your next session and will be called back for other sessions.

If you have any questions, please feel free to ask the survey administrator. If you would like further information, here are some suggested places to contact:

1) Hudson Health Counseling Center (CPS): Phone: 593-1616  
   Campus agency that can give further assistance or information.
2) Tri-County Community Mental Health Center: Phone: 592-3091  
   Community agency that can provide assistance or information
3) Careline: 24 hour crisis hotline: Phone: 593-3344
4) Sexual Assault Nurse Examiners Program: Hudson Health Center: Phone: 593-1660
5) Project Supervisor: Christine A. Gidycz, Ph.D. email: cgidycz@ohiou.edu  
   231 Porter Hall 
   (593-1092)
Coercive sexual behavior in dating relationships among college students is a serious problem. A national survey of college students indicated that 54 percent of college women report having experienced some form of unwanted sexual experiences, while 25 percent of college men admit to having engaged in coercive sexual behavior. Additionally, an estimated 15 percent of women reported experiences which meet the legal definition of rape (Koss, Gidycz, & Wisniewski, 1987).

Research has found that victimization early in life (in childhood or adolescence) is a risk factor for adult victimization. Also, it had been found that women with a history of adult victimization may be 2 to 20 times more likely to be re-victimized, depending on the period of time elapsed between sexual assault experiences. In a study of risk factors for victimization in dating relationships, it was found that the best predictor of a sexual victimization in college was a pre-college sexual victimization.

As a result of the high numbers of women affected by sexual assault, researchers have tried to develop programs for preventing such experiences. Past results show that these programs are effective in preventing future sexual assaults among women with no history of sexual victimization.

The purpose of this project is to examine the utility of a program to prevent the sexual victimization of women and to examine the maintenance of these effects over time. Some participants in this project have participated in the program while others have been just followed over time to learn about their experiences. It is also the purpose of this project to further examine the risk factors associated with future victimization. Women’s responses to the study’s questionnaires will be examined to identify important factors for the prevention of sexual assault in women with previous assault experiences.

If you feel discomfort or concern, you are encourage to contact the following resources:

**Hudson Health Counseling Center (CPS):** Phone: 593-1616
Campus agency that can give further assistance or information.

**Tri-County Community Mental Health Center:** Phone: 592-3091
Community agency that can provide assistance or information
Careline: 24 hour crisis hotline: Phone: 593-3344

**Sexual Assault Nurse Examiners Program:** Hudson Health Center: Phone: 593-1660

**Project Supervisor:** Christine A. Gidycz, Ph.D. email: cgidycz@ohiou.edu
231 Porter Hall (593-1092)
Appendix D

Table D1

*Correlation between Physical Fighting Scores across Time Periods*

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
<td>.</td>
<td>.000**</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 2</td>
<td>.</td>
<td>.</td>
<td>.006**</td>
</tr>
<tr>
<td>Time 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N’s range from 214 (Time 3) to 531 (Time 1)
**Correlation is significant at the 0.01 level (2-tailed)**

Table D2

*Correlation between Driving after Drinking Scores across Time Periods*

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
<td>.</td>
<td>.000**</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 2</td>
<td>.</td>
<td>.</td>
<td>.006**</td>
</tr>
<tr>
<td>Time 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N’s range from 216 (Time 3) to 535 (Time 1)
**Correlation is significant at the 0.01 level (2-tailed)**

Table D3

*Correlation between Binge Drinking Scores across Time Periods*

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
<td>.</td>
<td>.000**</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 2</td>
<td>.</td>
<td>.</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N’s range from 203 (Time 3) to 500 (Time 1)
**Correlation is significant at the 0.01 level (2-tailed)**

Table D4

*Correlation between Illicit Drug Use Scores across Time Periods*

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
<td>.</td>
<td>.000**</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 2</td>
<td>.</td>
<td>.</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N’s range from 216 (Time 3) to 535 (Time 1)
**Correlation is significant at the 0.01 level (2-tailed)**
**Correlation between Marijuana Use Scores across Time Periods**

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
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<td>.000**</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 2</td>
<td></td>
<td>.000**</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N’s range from 212 (Time 3) to 527 (Time 1)
** Correlation is significant at the 0.01 level (2-tailed)

**Correlation between Cocaine Use Scores across Time Periods**

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
<td>.</td>
<td>.000**</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 2</td>
<td></td>
<td>.000**</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N’s range from 206 (Time 3) to 508 (Time 1)
** Correlation is significant at the 0.01 level (2-tailed)

**Correlation between Smoked Tobacco Scores across Time Periods**

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
<td>.</td>
<td>.000**</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 2</td>
<td></td>
<td>.000**</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N’s range from 208 (Time 3) to 525 (Time 1)
** Correlation is significant at the 0.01 level (2-tailed)

**Correlation between Number Sexual Partners across Time Periods**

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
<td>.</td>
<td>.002**</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 2</td>
<td></td>
<td>.002**</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N’s range from 151 (Time 3) to 377 (Time 1)
** Correlation is significant at the 0.01 level (2-tailed)
Table D9

*Correlation between Drug or Alcohol Use Prior to Most Recent Engagement in Sexual Intercourse across Time Periods*

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
<td>.</td>
<td>.000**</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 2</td>
<td>.</td>
<td>.</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N’s range from 148 (Time 3) to 377 (Time 1)
** Correlation is significant at the 0.01 level (2-tailed)

Table D10

*Correlation between Suicidal Ideation Scores across Time Periods*

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
<td>.</td>
<td>.000**</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 2</td>
<td>.024**</td>
<td>.</td>
<td>.024**</td>
</tr>
<tr>
<td>Time 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N’s range from 213 (Time 3) to 533 (Time 1)
** Correlation is significant at the 0.01 level (2-tailed)

Table D11

*Correlation between Suicide Attempt Scores across Time Periods*

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
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<td>.000**</td>
<td>.021*</td>
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<tr>
<td>Time 2</td>
<td>.</td>
<td>.798</td>
<td></td>
</tr>
<tr>
<td>Time 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N’s range from 215 (Time 3) to 533 (Time 1)
* Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

Table D12

*Correlation between Disordered Eating Behavior Scores across Time Periods*

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
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<td>.000**</td>
<td>.000**</td>
</tr>
<tr>
<td>Time 2</td>
<td>.</td>
<td>.000**</td>
<td></td>
</tr>
<tr>
<td>Time 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N’s range from 210 (Time 3) to 535 (Time 1)
** Correlation is significant at the 0.01 level (2-tailed)
### Appendix E

**Table E1**

*Pearson Correlation Matrix of Time 1 Sexual Assault Experience and Time 1 Health Risk Behaviors*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sexual assault</th>
<th>Fight</th>
<th>Drove drank</th>
<th>Binge drank</th>
<th>Illicit drug</th>
<th>Marijuana</th>
<th>Cocaine</th>
<th>Smoke tobacco</th>
<th>2 partners</th>
<th>Alc/drug last sex</th>
<th>Suicidal ideation</th>
<th>Suicide attempt</th>
<th>Purge/ laxatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexual Assault</td>
<td></td>
<td>.</td>
<td>.114**</td>
<td>.107*</td>
<td>.144**</td>
<td>.263**</td>
<td>.238**</td>
<td>.138**</td>
<td>.161**</td>
<td>.110**</td>
<td>.121*</td>
<td>.142**</td>
<td>.025</td>
</tr>
<tr>
<td>Fight</td>
<td></td>
<td>.054</td>
<td>.086*</td>
<td>.099*</td>
<td>.051</td>
<td>.151**</td>
<td>.074</td>
<td>.108*</td>
<td>.015</td>
<td>.112*</td>
<td>.086*</td>
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<td>.025</td>
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<tr>
<td>Drove drank</td>
<td></td>
<td></td>
<td>.239**</td>
<td>.195**</td>
<td>.284**</td>
<td>.188**</td>
<td>.251**</td>
<td>.148**</td>
<td>.157**</td>
<td>.034</td>
<td>-.004</td>
<td>-.025</td>
<td>-.025</td>
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<tr>
<td>Binge drank</td>
<td></td>
<td>.</td>
<td>.378**</td>
<td>.279**</td>
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<td>.148**</td>
<td>.093*</td>
<td>.077</td>
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<td>.093*</td>
<td>.077</td>
<td>.016</td>
<td>.016</td>
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<td>.148**</td>
<td>.093*</td>
<td>.077</td>
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<td>.016</td>
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</tr>
</tbody>
</table>

Note. N’s range from 371 to 538

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)
Table E2

*Pearson Correlation Matrix of Time 2 Sexual Assault Experience and Time 2 Health Risk Behaviors*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sexual assault</th>
<th>Fight</th>
<th>Drove drank</th>
<th>Binge drank</th>
<th>Illicit drug</th>
<th>Marijuana</th>
<th>Cocaine</th>
<th>Smoke tobacco</th>
<th>2 partners</th>
<th>Alc/drug last sex</th>
<th>Suicidal ideation</th>
<th>Suicide attempt</th>
<th>Purge/laxative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexual Assault</td>
<td>.</td>
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<td>.036</td>
<td>.080</td>
<td>.052</td>
<td>.059</td>
<td>-.040</td>
<td>.012</td>
<td>.108*</td>
<td>.067</td>
<td>-.009</td>
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<td>-.004</td>
<td>-.059</td>
<td>-.080</td>
<td>-.035</td>
<td>.029</td>
<td>-.003</td>
<td>-.080</td>
<td>.059</td>
<td>.034</td>
<td>.040</td>
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</tr>
<tr>
<td>Drove drank</td>
<td>.</td>
<td>.309**</td>
<td>.210**</td>
<td>.271**</td>
<td>.180**</td>
<td>.294**</td>
<td>.085</td>
<td>.111*</td>
<td>.052</td>
<td>.032</td>
<td>.038</td>
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<tr>
<td>Binge drank</td>
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<td>.269**</td>
<td>.106*</td>
<td>.361**</td>
<td>.165**</td>
<td>.279**</td>
<td>.050</td>
<td>.006</td>
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<td>.185**</td>
<td>.033</td>
<td>.003</td>
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<td>.060</td>
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<tr>
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<td>.179**</td>
<td>.103*</td>
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<tr>
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<tr>
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Note. N’s range from 310 to 430

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)
### Table E3

*Pearson Correlation Matrix of Time 3 Sexual Assault Experience and Time 3 Health Risk Behaviors*

<table>
<thead>
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<th>Variable</th>
<th>Sexual assault</th>
<th>Fight</th>
<th>Drove drank</th>
<th>Binge drank</th>
<th>Illicit drug</th>
<th>Marijuana</th>
<th>Cocaine</th>
<th>Smoke tobacco</th>
<th>2 partners</th>
<th>Alc/drug last sex</th>
<th>Suicidal ideation</th>
<th>Suicide attempt</th>
<th>Purge/ laxatives</th>
</tr>
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*Note. N’s range from 310 to 430*

*Correlation is significant at the 0.05 level (2-tailed)*

**Correlation is significant at the 0.01 level (2-tailed)