

# Mental Health Needs of Crime Victims: Epidemiology and Outcomes<sup>1</sup>

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This paper reviews epidemiological estimates of criminal victimization derived largely from nationally based studies in the United States. Origins of conflicting rates and prevalences are explained in terms of varying methodology. Risk factors for victimization, including age, race, gender, and disability, are also outlined, and derived from both national and geographically limited U.S.-based studies. Finally, mental health outcomes of violence are documented, with conclusions drawing on both national and regionally specific studies. These outcomes focus on posttraumatic stress disorder, but also include depression, substance abuse, and panic.

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**KEY WORDS:** PTSD; assault; victim; mental health.

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In the field of public health, epidemiology refers to the study of diseases or health-related problems in the general population. This paper examines the scope and mental health impact of crime from an epidemiological

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<sup>1</sup>This paper draws heavily from several recent publications that D.G.K. authored, co-authored, or helped prepare:

Acerno, R., Kilpatrick, D. G., & Resnick, H. S. (1999). Posttraumatic stress disorder: Prevalence, risk factors and comorbidity relative to criminal victimization. In P. Saigh & D. Bremner (Eds.), *Posttraumatic stress disorder: A comprehensive approach to research and treatment* (pp. 44–68). New York: Allyn & Bacon.

Kilpatrick, D. G. (1999a). Mental health needs. In G. Coleman, M. Gaboury, M. Murray, & A. Seymour (Eds.), *1999 national victim assistance academy training text* (pp. 6.1–6.20). Washington, DC: U.S. Department of Justice.

Kilpatrick, D. G. (1999b). Sexual assault. In G. Coleman, M. Gaboury, M. Murray, & A. Seymour (Eds.), *1999 national victim assistance academy training text* (pp. 6.1–6.20). Washington, DC: U.S. Department of Justice.

U.S. Department of Justice, Office for Victims of Crime. (1997). The mental health community. In *New directions from the field: Victim's rights and services for the 21st century* (pp. 219–247). Washington, DC: Author.

Hanson, R. F., Kilpatrick, D. G., Falsetti, S. A., Resnick, H. S., & Weaver, T. (1995). Violent crime and mental health. In J. R. Freedy & S. E. Hobfoll (Eds.), *Traumatic stress: From theory to practice* (pp. 129–161). New York: Plenum.

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perspective. Specifically, we describe various ways crime is measured, limitations of these measurement methods, and estimates of crime generated by each method. Special emphasis is placed on methods that generate national U.S. crime estimates. However, particularly well-conducted studies that focus on a more limited geographic region in the United States are also covered. In general, the paper focuses on violent crimes (e.g., criminal homicide, alcohol-related vehicular homicide, sexual assault, aggravated assault, and robbery), although property crimes will be discussed when relevant. To the extent possible, the paper examines the epidemiology of crimes occurring across the lifespan, irrespective of whether crimes are perpetrated by strangers, acquaintances, or romantic partners. With respect to mental health consequences, the paper focuses primarily on posttraumatic stress disorder (PTSD) because it is the most consistently documented consequence. However, other consequences will be addressed, as will the impact of crime on covictims.

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## Measures of Criminal Victimization

As noted elsewhere (Acierno, Kilpatrick, & Resnick, 1999; Hanson, Kilpatrick, Falsetti, & Resnick, 1995; Reiss & Roth, 1993; Rosenberg & Fenley, 1991), there are several different ways to measure criminal victimization, and obtaining an accurate measurement of crimes such as sexual assault and rape is particularly challenging (Crowell & Burgess, 1996; Kilpatrick, 1983; Kilpatrick, Resnick, Saunders, & Best, 1998a). Estimates of criminal victimization differ because the sources that produce these estimates use different samples, different definitions of the crimes they are attempting to measure, different time frames of measurement, and different units of analysis in reporting statistics.

Prior to reviewing major data sources, it is useful to consider a few key distinctions. First, there is a difference between crime *cases* and crime *victims*. A single crime victim who is victimized more than once generates more than one crime case. Second, there is a difference between the prevalence of persons victimized by crime and the incidence of crime cases. The former refers to the proportion of the population that has been victimized at least once in a specified time period. The lifetime prevalence of criminal victimization is defined as the proportion of the population that has ever been a crime victim. The past year prevalence is the proportion of the population that was victimized during the past year. Incidence of crime estimates are generally based on the number of crime cases occurring in a given period of time and are usually expressed as victimization rates. That is, victimization rates are defined as the number of crime cases occurring in a given period per some specified number of people. Third, there is a difference between crime estimates based on cases reported to law enforcement versus unreported cases.

## Data Sources

Measures of criminal victimizations are derived from two basic types of sources: official government sources and studies conducted by private researchers, many of which have been funded by grants from federal agencies. The following list comprises the major U.S. sources cited in this paper: Uniform Crime Reports (Federal Bureau of Investigation [FBI]); National Crime Victimization Survey (NCVS; Bureau of Justice Statistics); National Survivor of Homicide Study (National Institute of Justice); National Women's Study (NWS; National Institute of Justice); National Survey of Adolescents (NSA; National Institutes of Health); National Comorbidity Survey (National Institutes of Health); and National

Violence Against Women (NVAW) Survey (National Institute of Justice/Centers for Disease Control and Prevention).

The two major governmental sources are the FBI Uniform Crime Reports (UCR) and the National Crime Victimization Survey (NCVS). UCR provides data on an annual basis about the number of crimes that are reported to law enforcement in major jurisdictions throughout the United States.

Obviously, UCR only records crimes that are reported to law enforcement, and there is some judgment used by local police agencies that participate in UCR as to whether they think an incident was actually a crime or not. Also, the UCR crime classification rules only record the most serious crime involved in a given case (e.g., a case involving rape, robbery, and aggravated assault as a part of the same incident would be classified as a rape). Simple assaults (i.e., physical attacks by persons without weapons or which do not produce physical injuries) are not included in UCR, nor are burglaries committed against organizations. These limitations of UCR are discussed in greater detail by Reiss and Roth (1993). Another limitation in UCR data and other data that rely on local police department recording practices (e.g., needs analyses for local victim service agencies) is inconsistency in violence definition and recording. For example, precise definitions of rape might vary tremendously from one department to the next.

The other major governmental data source NCVS is designed to gather information about unreported as well as reported crimes that did not result in fatal injuries (e.g., criminal homicides are not included). Using victimization survey methodology NCVS interviews all members aged 12 and older of approximately 50,000 households about crimes that each person experienced in the past months since the last time they were interviewed. This bounded interview procedure only counts crimes that are disclosed by NCVS respondents between two interviews, but the victimization data are aggregated over two 6-month periods to produce annual estimates. Types of crimes covered are personal crimes and property crimes. Personal crimes include crimes of violence (i.e., rape/sexual assault, robbery, and assault) and personal theft. Property crimes include household burglary, motor vehicle theft, and theft.

NCVS is not without limitations. First, it does not measure crimes that are experienced by children under the age of 12. Second, some experts have argued that the NCVS screening questions are less effective than those used in some other studies in detecting intimate partner violence (Crowell & Burgess, 1996; Hanson et al., 1995;

Kilpatrick et al., 1998a; Kilpatrick, Resnick, Saunders, & Best, 1998b). Third, like all victimization surveys, NCVS cannot record crimes unless victims disclose them to the interviewer. Unfortunately, there is ample evidence that approximately one third of victims who have recently reported crimes to police do not disclose them to victimization survey interviewers (see Reiss & Roth, 1993, for a discussion of this issue). Fourth, NCVS does not count series incidents (e.g., multiple crimes of a similar type committed by the same offender) in its crime totals (Reiss & Roth, 1993). This has the net effect of substantially reducing the estimated number of crimes as well as victimization rates.

Another limitation of both UCR and NCVS is that they only provide information about crimes that occurred during 1-year periods. Such information about recent crimes is important and necessary but not sufficient for developing estimates of the number of crime victims with potential mental health consequences of their victimization. Because many crime-related mental health problems are persistent, it is important to know the number of people who have ever experienced a criminal victimization — not just those who have experienced a recent one. The following projects by private researchers provide epidemiological data on lifetime criminal victimization experiences using national U.S. probability sampling frames. Additional studies with more geographically limited frames are also covered to more fully characterize the current state of knowledge in the field.

The National Survivor of Homicide Victims Study (NSHVS), funded by the National Institute of Justice, screened a national probability sample of 12,500 households to determine the lifetime prevalence of having suffered the loss of a family member or close friend to criminal homicide or alcohol-related vehicular homicide (Amick-McMullan, Kilpatrick, & Resnick, 1991).

NWS was a longitudinal survey of a large ( $N = 4,008$ ) national household probability sample of U.S. adult women who were assessed at baseline and at 1- and 2-year follow-ups. Funded by the National Institute on Drug Abuse, NWS measured rape (behaviorally defined for this paper as unwanted, forced, or coerced vaginal or anal penetration), other types of sexual assault (defined for this chapter as unwanted, coerced, or forced touching, without penetration, of another person's genitalia, breasts, or anus), aggravated assault, and the deaths of family members or close friends due to criminal homicide or alcohol-related vehicular homicide. Lifetime prevalence of these types of victimizations was measured at Time 1, and estimates of new cases of these victimizations were obtained at the 1- and 2-year follow-up assessments. The NWS also

measured several types of mental health problems: PTSD, major depression, alcohol and drug use, thoughts of suicide and suicide attempts, and substance use/abuse problems. More details about the NWS methodology are provided in the literature (Kilpatrick, Edmunds, & Seymour, 1992; Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997; Kilpatrick et al., 1998a; Kilpatrick et al., 1998b; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993).

The NVAW Survey, funded by the National Institute of Justice and the Centers for Disease Control, used methods similar to those of NWS to interview 8,000 adult women and 8,005 adult men (Tjaden & Thoennes, 1998a, 1998b). The NVAW survey gathered information from a national probability sample and inquired about the lifetime prevalence of stalking, sexual assault and rape, and physical assault. Unlike NWS, NVAW was not longitudinal.

NSA funded by the National Institute of Justice conducted interviews with a national probability household sample of 12- to 17-year-old male and female adolescents ( $N = 4,023$ ). NSA measured the lifetime prevalence of sexual assault, physical assault, physically abusive punishment, and witnessed violence. The latter type of victimization would not be defined as criminal victimization per se, although the acts witnessed would be. In addition to these types of victimization, NSA measured several types of mental health problems including PTSD, major depression, thoughts of suicide, suicide attempts, alcohol and drug use, substance abuse/dependence, and delinquent behavior. The NSA methodology is described in greater detail elsewhere (Kilpatrick et al., 2000).

Another major research project, the National Comorbidity Survey (NCS), was not designed to measure criminal victimization but did gather information on the types of traumatic events that were associated with PTSD symptoms (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Participants in NCS were 2,812 men and 3,065 women aged 15–54 years old. A strength of NCS is that it also measured a wide variety of mental health problems. A weakness is that NCS did not use state-of-art screening questions for criminal victimization experiences.

Several other studies provide some information about the epidemiology of some types of criminal victimization and mental health consequences, using college students (Koss, Gidycz, & Wisniewski, 1987), HMO patients (Breslau, Davis, Andreski, & Petersen, 1991), and local community residents (Burnam et al., 1988; Boudreaux, Kilpatrick, Resnick, Best, & Saunders, 1998; Norris, 1992; Norris & Kaniasty, 1992).

### Past Year Criminal Victimization

The latest UCR statistics for 1997 indicate that 13.1 million index crimes were reported to participating law enforcement agencies. Of these, 1.6 million were violent crimes including 18,210 murders, 96,120 rapes, 497,950 robberies, and 1,022,490 aggravated assaults. As previously noted, UCR also provides data on crime rates (i.e., the number of crimes per 100,000 people). The crime rate for index crimes was 4,922.7, for violent crimes 610.8, for murder 6.8, for rape 36.0, for robbery 186.1, and for aggravated assault 382.0. Violent crime rates measured by UCR peaked in 1991 at 758.1 violent crimes per 100,000 people. The violent crime rate for 1997 is the lowest since 1987. Hate crimes are another class of violent crime recently mandated for study by the Hate Crimes Statistics Act of 1990. Hate crimes, also referred to as bias crimes, are crimes motivated by racial bias, religious bias, sexual orientation bias, or ethnicity/national origin bias. That is, hate crimes are designated when motivation for the aggression is determined to be in response to membership in one of these categories.

FBI's UCR is the designated venue for these voluntarily reported statistics, provided in 1996 by agencies representing 84% of the population, or 223 million Americans. There were 8,759 reported incidents with 11,039 victims in 1996. Over 5,000 of these crimes were motivated by racial bias, and about 1,000 each were motivated by religious, sexual-orientation, and ethnicity/national origin bias. Intimidation was the most reported hate crime, followed by property destruction and simple assault.

The Bureau of Justice Statistics (BJS) released the report *Criminal Victimization 1998: Changes 1997–98 with Trends 1993–98* (Rennison, 1999). According to this report based on data from NCVS, over 31 million criminal victimizations occurred to Americans aged 12 and older during 1998. There were 8.1 million violent crimes in 1998 of which there were 333,000 rapes/sexual assaults, 133,000 robberies, 1.6 million aggravated assaults, and 5.2 million simple assaults. The rate of 36.6 violent crimes per 1,000 persons aged 12 or older decreased 6.6% from the comparable rate of 39.2 in 1997. According to this BJS report, violent crime rates fell 27% between 1993 and 1998.

NWS produced bounded estimates of the past 2-year prevalence of rape and aggravated assault victimization of adult women in the United States over the age of 18. Out of the 3,006 women who completed the initial and 2-year follow-up interviews, 4.1% experienced either a new rape (1.2%) or a new aggravated assault (3.0%). This yields an estimate that approximately 3.9 million adult women in the United States were either raped (1.1 million

women) or aggravatedly assaulted (2.8 million women) in a 2-year period (Kilpatrick et al., 1997). Numbers of assaults were similar across both years, so it is reasonable to estimate that the past year prevalence was approximately 0.6% for rape and 1.5% for aggravated assault. These past year prevalence estimates from NWS are not directly comparable to those from NCVS because they were obtained from adult women only, are addressing the number of women who were victimized rather than the number of crime cases, and were collected during different years.

The NVAW survey differed from NWS that it did not include two interviews. Thus, it could not provide bounded estimates of past year prevalence. However, respondents were asked if they had experienced crimes within the year prior to being interviewed. Tjaden and Thoennes (1998a) reported that 0.3% of women had been the victim of rape or attempted rape during this 1-year period, producing an estimate that 302,100 adult women and 92,700 adult men were victims of rape or attempted rape. When rape cases were considered (i.e., some victims were raped more than once), Tjaden and Thoennes (1998a) estimated that 876,100 rapes occurred during the 12 months prior to interview. This estimate is considerably higher than the NCVS estimate for a comparable period, but there are a host of methodological reasons why these studies might produce different estimates. The NVAW survey estimated that the past year prevalence of physical assault was 1.9% for women and 3.4% for men, suggesting that approximately 1.9 million women and 3.2 million adult women were assaulted. Estimates of the total number of aggravated and simple assaults of adults in the United States were 5.9 million physical assaults against women and 7.9 million against men.

Finkelhor and colleagues reported data on past year victimizations from a national cohort of 10- to 16-year-old male and female adolescents who were interviewed twice over an 8–24-month period. Over that period, Boney-McCoy and Finkelhor (1996) reported that 6.4% of adolescents were sexually assaulted, 5.3% were victims of aggravated assault perpetrated by nonfamily members, 2.1% were assaulted by parents, and 2.3% were physically assaulted by other family members. Given the variable length between the interviews and the categories of victimization used, it is difficult to calculate past year prevalence estimates that are comparable to other studies. However, it is clear from this and other studies (e.g., Hashima & Finkelhor, 1999) that victimization rates appear to be particularly high among American youth.

On the basis of these data on past year prevalence of crime and crime rates, several conclusions can be drawn. First, estimates vary across data sources. Second, rather than engaging in “dueling statistics” debates about whose

numbers are right, it is more productive to conclude that millions of Americans become violent crime victims each year even using the most conservative estimates. Third, even though violent crime rates and past year prevalence appear to be lower than those in the past 10 years or so, they are still unacceptably high.

### Lifetime Prevalence of Criminal Victimization

As was previously noted, neither UCR nor NCVS collects information on lifetime prevalence. The best data we have on this topic for the United States as a whole come from the NSHVS, NWS, the NVAW study, NSA, and NCS. NSHVS found that 2.8% of the U.S. adult population had lost an immediate family member to either criminal homicide (1.6%) or alcohol-related vehicular homicide (1.2%). Another 6.5% had experienced homicides of other relatives or close friends. Thus, a total of 9.3% of this national probability sample of U.S. adults, or an estimated 16.4% million people, had experienced the homicide of a family member or close friend (Amick-McMullan et al., 1991). NWS (Resnick et al., 1993) found that 35.6% of adult women (an estimated 34.1 million women) had been victims of sexual assault (22.7%), aggravated assault (10.3%), or the homicide of a family member or close friend (13.4%). One out of eight adult women (12.7%) had been victims of completed rape. The NVAW Survey found that 18% of adult women and 3% of adult men had been victims of an attempted or completed rape. This survey also indicated that 52% of women and 66% of men were physically assaulted at some time in their lives. These estimates are greater than those in other studies. This is very likely due to the fact that the range of behaviors defined as assaultive was liberal, including anything from slapping, pushing, or grabbing to assault with a weapon. Lifetime prevalence of sexual and physical assault estimated by NSA is necessarily limited by the restricted age range of this sample. That is, these adolescents may not yet have lived long enough to be assaulted, and prevalence estimates will be low. Thirteen percent of female respondents and 3.4% of male respondents reported being sexually assaulted (i.e., rape or molestation) at some point in their lives. Conversely, 21.3% of boys and 13.4% of girls reported experiencing lifetime physical assault. Approximately 44% of boys and 35% of girls observed someone else being sexually or physically assaulted. Kessler et al. (1995) found that lifetime rates of rape and molestation in women equaled 9.2 and 12.3%, respectively; and lifetime rates of physical attack and being threatened with a weapon were 6.9 and 6.8%, respectively. By contrast, men reported very low rates of lifetime rape

(0.7%) and molestation (2.8%), but high rates of physical attack (11.1%) and being threatened with a weapon (19.0%).

### Risk Factors for Assault

The following review of the risk factor literature includes geographically limited, as well as national (U.S.-based) studies. Risk of being assaulted varies with gender, age, race, socioeconomic status, prior victimization history, psychiatric history, substance use, and geographic location (Adler et al., 1994; Breslau et al., 1991; Hanson et al., 1995; Norris, 1992). As can be discerned from aforementioned prevalence rates, women are at tremendously increased risk of all forms of sexual assault whereas men are more likely than women to experience physical assault, particularly at the hands of strangers. In terms of physical assault, women are more likely to be victimized by known individuals such as husbands or ex-husbands (31% of assaults), boyfriends (16% of assaults), other relatives (27% of assaults), and acquaintances (9% of assaults; Kilpatrick et al., 1998a, 1998b). By contrast, men are assaulted by strangers at a rate 11 times that of known perpetrators (Bachman & Salzman, 1994).

Risk of sexual assault diminishes with increased age; however, risk of physical assault first increases, then decreases as one ages (Bureau of Justice Statistics, 1992; Kilpatrick et al., 1992; Norris, 1992). Sixty-two percent of forcible rapes reported in NWS occurred prior to age 18. Kilpatrick et al. (in press) found that 23.7% of all assaults occurred before age 17, 46.8% occurred between age 17–29, and only 26.8% occurred after age 30. Similarly, NCVS data show that respondents 12- to 19-years old were at two to three times risk of crime than those over 20 years of age (Whitaker & Bastian, 1991).

Risk of being assaulted in terms of racial status is unclear. In some studies, Caucasians are at increased risk: Norris (1992) found that Caucasians were more likely to be physically assaulted than African Americans, but were at the same risk of sexual assault. Cottler, Compton, Mager, Spitznagel, and Janca (1992) also noted that risk of general exposure to traumatic events was elevated for Caucasians. In a study on Los Angeles residents, Burnam et al. (1988) noted that Caucasians were sexually assaulted at a higher rate than Hispanics. By contrast, Breslau et al. (1991) reported that race was not associated with increased risk of exposure to trauma (these investigators did not differentiate accidents, etc., from criminal victimization). However, the FBI UCR (1991) and other epidemiological studies (Hanson et al., 1993; Kilpatrick et al., 1991) indicate that African Americans are at greater risk for

violent assault than Caucasians. NCVS (1995) found that annual rates of victimization (a composite variable including rape, sexual assault, robbery, and physical assault) were greater in African American women (4.5%) than in Caucasians (3.5%). Kilpatrick et al. (1991) reported that only 19% of Caucasians were victims of violent crime, relative to 28% of African Americans and 30% of Hispanic Americans. According to the latest BJS report (Greenfeld & Smith, 1999), Native American ethnic status doubles one's risk of being the victim of violent crimes such as rape, robbery, aggravated assault, and simple assault. Among Native Americans, who represent about 1% of the population, the rate of violent crime is 124 per 1,000 individuals aged 12 and older. In contrast to other ethnic groups, almost 70% of assaults on Native Americans are by members of other racial groups. As with other ethnic groups, offender alcohol use is frequent. Discrepancies across studies may be attributable to confounding effects of income, education, age, geographic location, and gender. However, Kilpatrick et al. (1997) addressed this issue, in part, and reported that women of minority status were at increased risk of assault after effects of age, education, assault history, and substance use were controlled.

Very low income is generally associated with increased risk of violence (Kilpatrick et al., in press; Reiss & Roth, 1993). Bachman and Salzman (1994) reported that women in households with annual incomes less than \$10,000 were at increased risk of domestic violence. NWS also revealed that women with incomes less than \$10,000 were twice as likely to experience a *new* assault in the 2-year follow-up period. Moreover, this effect was apparent even after impact of victimization history was controlled. However, in their Los Angeles study Hanson et al. (1993) observed that income was a relatively weak predictor of past year assault compared to age and gender.

One of the best predictors of future victimization is past victimization (Hanson et al., 1995; Koss & Dinero, 1989; Sorenson, Siegel, Golding, & Stein, 1991; Steketee & Foa, 1987; Zawitz, 1988). Kilpatrick et al. (1997) reported that risk of new assault in previously assaulted women was increased more than fourfold, *over and above* the effects of age, race, education, and substance use. Further, this risk appears to increase at a linear rate. That is, Kilpatrick et al. noted that, compared to women who had not been assaulted, odds of experiencing a new assault over a 2-year period were doubled for women with one assault, increased about 400% for women with two assaults, and elevated about 1,000% for women with three or more prior victimizations. This risk appears to endure, and the best predictor of adult sexual assault is child sexual assault (Koss & Dinero, 1989; Wyatt, Guthrie, & Notgrass, 1992). Considering these data, one must be careful not to

"blame the victim." As Hanson et al. (1995) pointed out, having to remain in violent neighborhoods or being continually accessible to perpetrators (e.g., due to financial hardship, domestic violence, child abuse) will increase risk of victimization.

The relationship between mental health problems and assaultive violence is strong, although the direction of this relationship (i.e., which came first?) is less well established. Saunders, Kilpatrick, Resnick, and Tidwell (1989) found that 72.2% of community mental health center patients were victims of assault or were the family members of homicide victims. Breslau et al. (1991) reported that having family members with psychopathology nearly doubled risk that one would be exposed to traumatic events in general. Further, Burnam et al. (1988) found that depression, antisocial personality disorder, and phobias were associated with increased likelihood of reporting later sexual assault. Several explanations exist for the assault-mental-illness connection. For example, problems such as depression in which concentration difficulties are common might result in reduced ability to perceive dangerous situations and reduced resources to escape from these situations. In addition, individuals with mental illness might unintentionally elicit aggressive or assaultive behavior from others (Hanson et al., 1995). Mentally ill people might also be targeted by predatory assailants with the supposition that these individuals will be less likely to choose to defend themselves, less competent in defending themselves if they choose to do so, and less convincing in their accusations if perpetrators are caught.

Substance abuse is another emotional and behavioral problem linked to victimization. Cottler et al. (1992) found that odds of being assaulted for hard drug users and marijuana users were 5.06 and 1.46 times those of nonusers, respectively. Burnam et al. (1988) also reported that risk of sexual assault was increased in substance abusers. Moreover, Breslau et al. (1991) noted that odds of experiencing traumatic events in individuals with alcohol or drug use problems were 1.47 and 1.79 times those of individuals without such substance use problems, respectively. In addition, Kessler et al. (1995) reported alcohol and drug abusers were about 1.5 times as likely to experience traumatic events than nonusers. Childhood experience of assault was not directly addressed in these studies, however, and the temporal pattern of onset remains unclear. Prospective data from NWS answered three questions regarding the assault-substance-abuse relationship: (1) does substance abuse lead to assault; (2) does assault lead to substance abuse; and (3) do these two have a reciprocal relationship? Findings were that use of drugs (but not alcohol) at Time 1 increased odds of experiencing a new assault over the subsequent 2 years. Moreover,

experiencing a new assault increased odds of both drug and alcohol use and abuse, even among previously (at Time 1) nonusing women. Therefore, data showed a reciprocal relationship between assault and drug use; and a “one-way” relationship between assault and alcohol use (assault leads to alcohol use).

When many factors are simultaneously considered in multivariate analyses, relative risk of each factor is discernible. Acierno, Resnick, Kilpatrick, Saunders, and Best (1999) used longitudinal data from NWS to prospectively study risk, 2 years later, of new rape and new physical assault, given preexisting risk factors. Previously identified risk factors such as income did not consistently predict risk of new physical or sexual assault once the contribution of age, education, race, and substance abuse variables was controlled or when the type of assault under study was altered from sexual to physical. However, prior victimization (i.e., rape or physical assault) greatly increased the risk of experiencing a new rape, as did belonging to a younger age group. When past victimization status was not controlled, active PTSD at Time 1 also increased the odds that one would experience a new rape. A somewhat different picture emerged when considering physical assault victims. Although prior history of victimization also increased risk of physical assault, being non-White, actively depressed at Time 1, and to a lesser extent being a drug user were also associated with increased likelihood of being physically assaulted.

Reiss and Roth (1993) reported that violent crime levels are positively correlated with community size. For cities with populations lower than 10,000, the past 6-month reported violent crime rate (rape, robbery, and aggravated assault) was 0.36%, compared to 2.24% for cities with over 1,000,000 residents. Similar results are obtained when nonreported crimes are also considered. Data from NCVS (Bureau of Justice Statistics, 1992) demonstrated that violent crime rates were lowest in rural areas, higher in suburban areas, and highest in cities. Hanson et al. (1993) noted, however, that UCR and NCVS are more sensitive to crime perpetrated by strangers than to crime perpetrated by known assailants. As such, geographically based risk factors might not be relevant to risk of victimization by relatives, acquaintances, or partners.

Another factor associated with increased risk of assault is physical or mental disability (Jacobson & Richardson, 1987). Because of tremendous heterogeneity in the disabled population, national level epidemiological studies in this area have not been completed. However, preliminary data indicate that potential reasons for increased risk include isolation, limited ability to report crime, and reduced likelihood to be believed, once crime is reported. It is possible that aggressors target disabled

persons because they are less likely to successfully defend themselves or to participate in the criminal justice process. For example, physical access obstacles can reduce reporting and CJS participation by disabled victims. Reports of crime against disabled persons frequently fail to note the disability, and needed services to facilitate CJS participation may not be made available. Moreover, the stigma of being a crime victim is amplified by the societal stigma placed on being disabled. This dual stigma might serve to produce attitudes that implicitly discourage CJS participation. Perpetrators are aware of these facts, and may feel more confident that they will escape from punishment when their victims are disabled. Indeed, female disabled persons are at much higher risk of sexual assault. Further, repeated victimization by the same perpetrator and by caretakers is also more likely for disabled persons (Pease & Frantz, 1994).

Risk factor research has also addressed protective (i.e., reduced risk) factors. Using a 1-year longitudinal design with a sample of residents from Kentucky, Norris and Kaniasty (1992) evaluated the efficacy of several types of risk reduction strategies, including basic vigilance, professional crime reduction consultation, access control methods (e.g., locks), and neighboring (e.g., surveillance, house sitting). Importantly, they evaluated the protective aspects of these strategies while controlling for previously identified, relevant risk variables such as recent prior victimization, age, and living situation. After such experimental control, no method was associated with decreased risk of subsequent victimization. However, these investigators did demonstrate that neighboring strategies were associated with less crime-related fear and distress and access control strategies were associated with lower levels of general distress. Unfortunately, enhanced awareness strategies (used more frequently by women, minorities, and older adults) actually increased fear of crime.

### **Sequelae of Criminal Victimization: PTSD, Depression, Substance Abuse, and Panic**

Our review of violent crime outcomes also taps studies of nonnational as well as national (U.S.) research efforts. Victims of violence experience a variety of emotional problems. PTSD is common among these. PTSD is diagnosed when an individual has been exposed to a traumatic event that both presents actual or threatened death or serious injury to oneself or others, and elicits intense fear, helplessness, or horror. According to the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1994) symptom parameters of the PTSD diagnosis include reexperiencing, avoidance, and

hyperarousal. Reexperiencing may take the form of recurrent recollections of the event, nightmares, flashbacks, or reactivity upon exposure to traumatic cues. Avoidance may be in the form of behavioral or cognitive escape from thoughts, feelings, individuals, or places associated with the trauma, as well as the experience of feelings of detachment, foreshortened future, and restricted affect. Finally, hyperarousal is indicated by elevated startle response, sleep disturbances, hypervigilance, and concentration difficulties.

The process by which PTSD develops after victimization is the topic of some speculation. Kilpatrick, Veronen, and Resick (1979), and Keane, Zimering, and Caddell (1985) have adapted Mowrer's two-factor model of phobic avoidance (Mowrer, 1960) to explain posttraumatic psychopathology. According to this conceptualization, assault serves as the original event that naturally leads to responses characteristic of PTSD (i.e., avoidance, hyperarousal, and intrusive ideation). Initial responses typically also include symptoms of depression and panic. As with phobic fear, these responses become associated with salient stimuli present in the environment during the attack (e.g., perpetrator characteristics, location of assault) that themselves begin to elicit learned fear responses in the future. Thus, when a victim is exposed to an individual who resembles the perpetrator, or finds herself in an elevator similar to the one in which she was assaulted, a negative emotional PTSD response identical or very similar to the original emotional response occurs. To reduce or eliminate extreme aversiveness of this learned anxiety response, individuals will escape from and subsequently avoid things or people or places that remind them of the trauma. This avoidance behavior naturally results in diminution of the negative emotions and fear (i.e., "it works" to reduce fear) and is thus more likely to occur in the future. Unfortunately, this avoidance perpetuates the PTSD symptoms in that individuals never "learn" not to fear these cues because they always avoid them. This explains why many crime victims become housebound or cannot leave their homes after dark.

Prevalence estimates of crime-related PTSD are inextricably tied to the effectiveness with which surveys detect victimization. Simply put, if a traumatic event is not identified, PTSD is generally not evaluated. The aforementioned review of assessment strategies largely addresses this issue. Of the studies providing information about victimization prevalence reviewed previously, NWS and NCS also provided data on PTSD prevalence.

NWS used a structured clinical interview accompanied by a sensitive traumatic event screen (the NWS PTSD module; Kilpatrick, Resnick, Saunders, & Best, 1989) to assign diagnosis. Failure to include men in the sample pre-

cluded analysis of sex-based differences. PTSD diagnosis did not require respondents to link symptomatology with traumatic events. Thirty-two percent of rape victims had lifetime PTSD, and 12.4% had current (past 6 months) PTSD. Rates of lifetime and current PTSD in physical assault victims were similarly high: 38.5 and 17.8%, respectively. Lifetime and current rates of PTSD observed in response to other forms of sexual assault equaled 30.8 and 13.0%, respectively. Experiencing the homicide of a family member or friend also produced severe emotional reactions. Of women experiencing this event, 22.1% reported lifetime PTSD and 8.9% had current PTSD. Overall, crime victims had higher rates of lifetime (25.8%) and current (9.7%) PTSD than did noncrime victims (9.4% lifetime PTSD and 3.4% current PTSD).

NCS included men as well as women but was limited to young and middle-aged adults. PTSD diagnoses were established by using structured clinical interviews. Only minimal behavioral specificity characterized the trauma assessment used in this study, and PTSD was assessed for only one event (the one designated as *most upsetting*) per respondent. Therefore, estimates of the rate of PTSD in response to individual crimes are potentially low. Results indicated that once exposed to any type of traumatic event, women were more than twice as likely to develop PTSD, at any age, than men. Fully 20.4% of women and 8.6% of men who were exposed to trauma developed PTSD. Proportionately, rape was most strongly associated with PTSD in both men and women. Sixty-five percent of men and 45.9% of women indicating that rape was the "most upsetting experienced trauma" developed PTSD. These findings are complemented by those of Rothbaum, Foa, Riggs, Murdock, and Walsh (1992), who found that 90% of rape victims met symptom criteria for PTSD within 2 weeks of rape, and about 50% continued to meet criteria 3 months later. Moreover, Kilpatrick et al. (1987) showed that the disorder was present 17 years after assault in 16.5% of cases. In NCS, molestation was also associated with high rates of PTSD in both men and women. Of the male respondents who endorsed molestation as their most upsetting trauma, 12.2% developed PTSD. This rate was significantly less than the 26.5% of molested women who developed PTSD. Rates of PTSD by sex in response to physical attack were also disaggregated in NCS by Kessler et al. Only 1.8% of men who indicated that being physically attacked was their most upsetting trauma developed PTSD. The rate for women (21.3%) was more in line with those of previous studies.

The aforementioned percentages reflected proportionate rates of PTSD, or the rate of PTSD, given a certain crime. These figures are useful insofar as they allow comparison of "PTSD causing potential" of one form of



assault versus another. However, in NCS, Kessler et al. (1995) also reported overall rates of PTSD in response to different traumatic events, because some forms of trauma, while less likely to result in PTSD, might occur much more frequently, and hence lead to greater numbers of cases of PTSD. The most common precipitants of PTSD in men were combat and witnessed violence, whereas for women sexual and physical assault/abuse were primary index events. Rates of PTSD in women following physical assault and abuse were comparable to those observed with rape. Indeed, Kilpatrick et al. (1987) noted that lifetime rates of postrape and postassault PTSD in women were 57.1 and 36.8%, respectively, whereas Resnick et al. (1993; in NWS) found rates of postrape and postassault PTSD of 32 and 38.5%, respectively.

Prevalence of PTSD is also high in family members and friends of homicide victims. Amick-McMullan et al. (1991) reported that 19.1% of these individuals developed PTSD following the murder, and 5.2% of those assessed presented with current PTSD. Importantly, this high incidence of PTSD was in response to crimes that occurred an average of 16.6 years earlier. Rates of PTSD in assault victims and in chosen family members of homicide victims also vary as a function of involvement with the criminal justice system. For example, Freedy, Resnick, Kilpatrick, Dansky, and Tidwell (1994) assessed PTSD in a sample of reporting (i.e., to police) crime victims and found that 59% of assault victims and 71% of family and friends of homicide victims had lifetime PTSD. In the cases of assault, elevated rates might have been due to exacerbations of anxiety related to CJS participation or to the fact that those cases that are reported are typically more serious than those that go unreported.

Although often considered secondary to PTSD, depression is frequently observed in crime victims (Breslau et al., 1991; Kilpatrick et al., 1985). The co-occurrence of depression and anxiety following trauma is well documented, and significant overlap exists between PTSD and the diagnostic criteria for depression (Breslau et al., 1991; Davidson, Hughes, Blazer, & George, 1991; Helzer et al., 1987; Uddo, Allain, & Sutker, 1996). Breslau et al. found that 36.6% of those diagnosed with PTSD concurrently met criteria for major depression. Similarly, Kessler et al. (1995) reported that 47.9% of men and 48.5% of women with PTSD in their sample also suffered from major depression. These rates reflect estimates of comorbidity following any type of trauma, including, but not limited to physical assault.

Relatively few studies have investigated the relationship between depression and physical assault in isolation. However, data indicate that severity of depression produced by physical assault approximates that produced by

rape. Riggs et al. (1992) compared SCL-90-R depression subscale scores of victims of domestic violence and non-domestic violence with nonvictimized women. Women raped or assaulted by their husbands had SCL-90-R depression scores of .66 and .61, respectively, whereas women raped or assaulted by strangers had scores of .72 and .87, respectively. By contrast, nonvictimized women scored .47 on the Depression subscale.

NWS (Kilpatrick et al., 1992) also examined effects of assault on mood disorders such as depression. Women with life histories of physical assault were 3.31 times as likely to demonstrate life histories of depression. Similarly, past occurrence of assault increased odds of current depression by a factor of 2.9. Most importantly, recently assaulted women were 5.5 times as likely to present with depression as women who were not recently assaulted, with 12.6% of assaulted versus 2.6% of nonassaulted women meeting criteria for active depression.

Recent investigations also reveal high comorbidity between assault-related PTSD and substance use disorders. Breslau et al. (1991) demonstrated that approximately 45% of participants with PTSD also met criteria for substance use or abuse, with 31% meeting criteria for alcohol abuse or dependence. Kessler et al. (1995) found that 35% of men and 27% of women in their sample diagnosed with PTSD experienced drug abuse or dependence, and over 50% of men and 28% of women with PTSD reported concurrent alcohol abuse or dependence. Despite evidence that victimization facilitates substance abuse, directionality of the assault-substance-abuse relationship remains unclear. Several investigators (Breslau et al., 1991; Cottler et al., 1992; Scribner, MacKinnon, & Dwyer, 1995) have reported an increased risk of trauma, given a proximate association with substance abuse. Indeed, victims use substances at significantly elevated rates relative to nonvictims and this substance use appears to facilitate additional violence (Cottler et al., 1992; Kulka et al., 1990). For example, Buss, Abdu, and Walker (1995) determined, on the basis of self-report and toxicology screens, that 69.7% of seriously assaulted individuals seeking hospital treatment were under the influence of drugs or alcohol at the time of their attack and 60% reported that their attackers were drinking or were on drugs.

Data illustrating origins of the substance-abuse-assault cycle remain sparse and are derived primarily from long-term retrospective reports. However, prospective data from NWS demonstrated that rape and physical assault may lead to substance use and abuse in previously nonusing women (Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997). That is, likelihood of progression to substance-use-abuse following assault in previously nonusing women was double that of nonassaulted women.

Thus, the position that substance use follows physical and sexual assault (in addition to preceding victimization) is strengthened.

The NWS (Kilpatrick et al., 1992) data indicated that, compared to noncrime victims, victims of rape were 13.4 times as likely to have two or more major alcohol-related problems and 26 times more likely to have two or more serious problems related to drug abuse. In addition, rape victims were 3.4 times as likely to use marijuana, 6 times more likely to have used cocaine, and 10.1 times as likely to use hard drugs other than cocaine.

In addition to PTSD, depression, and substance use, assault appears to facilitate panic in some women. This is not surprising when one considers that the symptom overlap between PTSD and panic is great, and includes palpitations, chest pain, dizziness, shortness of breath, nausea, derealization, sweating, trembling, and numbness (Falsetti, Resnick, Dansky, Lydiard, & Kilpatrick, 1995). Falsetti et al. reported that 94.4% of 391 women meeting criteria for panic disorder had positive victimization histories. In addition, Kessler et al. (1995) reported that odds of lifetime comorbid panic disorder in female respondents with PTSD were increased by a factor of 3, with 12.6% of PTSD women also meeting criteria for panic, compared to 4.3% of non-PTSD women. Relatedly, Falsetti and Resnick (in press) noted that 68.9% of a clinical sample of 62 participants seeking treatment for trauma-related problems experienced four or more symptoms of panic attacks, and 67.6% of those diagnosed with PTSD reported suffering from panic. Breslau and Davis (1987) have also demonstrated associations between stressor events and panic. Stress-related panic is particularly prevalent in instances where trauma is life-threatening and extremely uncontrollable, and results in significant reductions in self-esteem (Roy-Byrne, Geraci, & Uhde, 1986).

### **Risk Factors: Violent Crime-Related Emotional Problems With a Focus on PTSD**

Every victim of severe violence does not develop psychopathology. Individual, contextual, and societal variables also determine relative risk of emotional problems. Of course, any factor that increases risk of assault may also be considered to increase the potential for psychological disorders. As such, the following risk factors are examined somewhat independent of their association with assault risk (discussed earlier). The likelihood of developing PTSD and other disorders appears to vary according to sex, age, objective crime characteristics (e.g., degree of injury experienced), subjective crime characteristics (e.g.,

level of perceived life threat), and demographic characteristics (e.g., gender, age).

### **Gender**

PTSD and depression risk was consistently elevated for women across studies in which sexes were compared (Breslau et al., 1991; Cottler et al., 1992; Kessler et al., 1995; Norris, 1992). This finding was particularly noteworthy for physical assault, with women at about 10 times the risk following assault than with men. Although rape produced equally high rates of PTSD in both sexes, the frequency of its occurrence in adult males is low.

### **Age**

As was the case for exposure to crime, age appears to be inversely related to PTSD and depression risk (Kilpatrick et al., 1989). Norris (1992) found that the rate of current PTSD in older adult violent crime victims (3.3%) was less than half that reported by younger adult victims. However, she did not attempt to control for severity or type of violent crime. Kessler et al. (1995) also observed a decreasing rate of PTSD in older participants of NCS. More definitive statements regarding the effect of age on PTSD prevalence were precluded, however, because this sample was of restricted age range (15–54 years) and did not include any older adults.

### **Race**

As with risk of exposure to violent crime, risk of developing PTSD associated with race is mixed. Norris (1992) contrasted rates of crime-related PTSD in African Americans and Caucasians and observed no differences, although African Americans did report higher levels of stress in response to trauma in general. Breslau et al. (1991) and Kilpatrick et al. (1989) failed to find race-based differences in PTSD for crime victims. Although initially associated with increased risk, Cottler et al. (1992) controlled for age, gender, cocaine use, and depression, and found that race no longer predicted PTSD in those exposed to any type of trauma. Similarly, in their meta-analysis assessing distress in victims of interpersonal violence, Weaver and Clum (1995) found no race-based differences. By contrast, Green et al. (1990) noted that African American survivors of disaster did evince greater rates of PTSD, and Norris (1992) reported that African Americans reported more subjective distress (but not PTSD, *per se*) following general trauma. Therefore, race differences in PTSD might be apparent only in victims of noncriminal trauma.

### ***Prior Victimization***

In addition to increasing risk of future assault, prior victimization also appears to elevate risk of emotional problems following new victimization. Considering NWS data, Kilpatrick et al. (in press) noted that women who endured multiple traumas throughout their lifetime were more likely to be diagnosed with PTSD than women who experienced fewer than two traumas. Specifically, these investigators found that 3.2% of nonassaulted women had current PTSD, compared to 19.4% of women who were assaulted in the previous 2 years, and 18.3% of women who were assaulted both in the previous 2 years and in the distant past. However, 52.9% of women with two prior assaults who were newly assaulted had current PTSD.

### ***Prior Mental Illness***

Preexisting emotional problems may increase risk of PTSD. Kessler et al. (1995) noted that the incidence of existing psychiatric conditions was high in individuals with PTSD. Cottler et al. (1992) specifically studied the risk of PTSD in drug users and found that cocaine abuse was associated with increased risk of PTSD among trauma victims (most often assaultive violence), even after effects of depression, gender, race, and age were controlled.

### ***Assault Characteristics***

As mentioned, characteristics of assaultive violence also affect risk of developing PTSD. Crime characteristics can be divided into objective and subjective classes (Weaver & Clum, 1995). Objective parameters of assault include whether a weapon was used, duration and location of the attack, level of force imposed, resultant physical injury, and relationship of perpetrator to the victim. By contrast, subjective aspects of physical assault include perceptions of life threat or potential for injury, appraisal of responsibility and self-blame or guilt, and perceptions of controllability and attacker intentionality (Kilpatrick et al., 1989). Subjective factors may be important in determining posttrauma psychological distress. For example, risk of posttraumatic emotional problems is greatest in individuals who report that during the trauma they feared they would be seriously injured or die, or actually were injured (Green, 1990; Kilpatrick et al., 1989; Resnick et al., 1993; Wirtz & Harrell, 1987). Specifically, 30.8% of those assault victims who reported both perceived life threat and actual physical injury developed PTSD, compared to 20.6% with only life threat, and 25% with only injury (Kilpatrick et al., 1989). By comparison, the rate

of crime-related PTSD in victims with neither life threat nor injury was 19.0% (Resnick et al., 1993). Because perceived threat of serious injury and actual injury are both risk factors for posttraumatic psychopathology, it is important to identify which forms of trauma are associated with these events. Along these lines, Resnick et al. (1993) demonstrated that threat of injury or actual injury were most often observed in physical assault victims (90.8%), followed by rape victims (67.9%). Further, both perceived threat of injury and actual injury were reported by 61.1% of physical assault victims, compared to 36.7% of rape victims.

### ***Comorbidity: Violent Crime-Related PTSD***

Crime victims frequently present with multiple emotional problems (Breslau et al., 1991; Davidson, Hughes, Blazer, & George, 1991; Helzer et al., 1987; Shore, Vollmer, & Tatum, 1989). Data from NSA indicate, however, that many of the emotional problems that follow criminal victimization may be secondary to PTSD, as opposed to “complex” forms of PTSD. For example, NSA data show that rates of major depression and substance abuse are progressively higher in victims of one, two, and three or more crimes. Yet, when PTSD is present, these problems occur even more frequently. Indeed, even after controlling for age, gender, race, income, family substance use problems, and sexual assault, physical assault, and witnessed violence, the odds of presenting with major depression and substance abuse are increased in individuals with PTSD. That is, PTSD increased risk of these mental illnesses over and above risk of depression associated with all the other factors, including victimization. Thus, in many cases, it appears that it is the combination of traumatic events and PTSD, and not simply the traumatic events themselves, that “drives” depression, substance abuse, and other emotional problems. NCS, the most comprehensive comorbidity study to date, showed that lifetime prevalence of other psychological disorders in men and women with PTSD were 88.3 and 79.0%, respectively. The most common comorbid disorders were depression, substance abuse, and phobia. Half of the men and women with PTSD had a lifetime history of major depression, compared to 11.7% of non-PTSD men and 18.8% of non-PTSD women. Alcohol abuse was also comorbid, with 51.9% of PTSD men and 27.9% of PTSD women, compared to approximately 34.4% of non-PTSD men and 13.5% of non-PTSD women, meeting substance abuse criteria. Simple or social phobia was noted in about 30% of men and women with PTSD. Rates of other disorders, including panic, agoraphobia, generalized anxiety disorder,

mania, and conduct disorder, were also significantly elevated in participants diagnosed with PTSD. Note, however, that rates of comorbidity in NCS were not limited to crime-related PTSD. Moreover, these rates described lifetime, rather than current comorbidity.

Comorbidity estimates were also provided by Breslau et al. (1991). Approximately 37% of those with PTSD also had a history of major depression, compared to 11% of those without PTSD. Alcohol abuse and drug abuse were also relatively more prevalent in individuals with lifetime PTSD (31.2% alcohol abuse; 21.5% drug abuse), as opposed to those without lifetime PTSD (20.5% alcohol abuse; 10.6% drug abuse). Other disorders that were significantly more prevalent in individuals with PTSD included obsessive-compulsive disorder (15%), dysthymia (13%), mania (5%), and generalized anxiety disorder. As with NCS, rates of comorbidity observed by Breslau et al. did not necessarily reflect concurrent conditions.

Women participating in NWS were also screened for bulimia nervosa. Physical and sexual assault victims who subsequently developed PTSD were at particularly increased risk (odds were 3.3 to 1) of developing bulimia nervosa (Dansky, Brewerton, Kilpatrick, & O'Neil, 1997). Importantly, risk of this eating disorder increased only marginally among women who had been victimized but did not develop PTSD. It appears either that individuals who are victimized and predisposed to develop PTSD are also predisposed to engage in binge eating and purging, or that certain aspects of PTSD (e.g., its intense anxiety component) potentiate these behaviors in women.

As mentioned, high rates of depression and general anxiety in individuals with PTSD may be a function of diagnostic criterion overlap between disorders or a PTSD-"driven" mood dysfunction. By contrast, high comorbidity of substance use disorders in individuals with PTSD may reflect inappropriate, albeit intermittently effective, stress reduction strategies (Acierno et al., 1997; Kilpatrick et al., 1997). Indeed, individuals with PTSD are characterized by increased hyperarousal and distress, and substances such as alcohol might reduce this arousal, whereas substances such as cocaine might address depressive symptomatology. The findings regarding PTSD and bulimia nervosa are startling, and additional study is necessary to illuminate the exact nature of this comorbid relationship.

## Conclusion

Overall, men are physically assaulted more than women and are sexually assaulted less than women. In general, rates of lifetime PTSD in response to sexual assault range from 30 to 80%, depending on the type of sex-

ual victimization; rates of PTSD in response to physical assault range from 23 to 39%. Women develop PTSD in response to physical or sexual assault at about the same rate, whereas men rarely develop PTSD in response to physical assault, but regularly develop PTSD in response to severe sexual assault such as rape (a much rarer occurrence for them). Thus, rates of PTSD are greater for women than for men. Race-based differences in prevalence of victimization and PTSD remain unresolved, with some studies, but not others, showing Caucasians at increased risk of assault and African Americans at increased risk of developing PTSD. However, these differences might be due to culturally based response biases or influence of uncontrolled confounding factors such as education or socioeconomic status. Age-based differences in both victimization prevalence and PTSD seem clear: younger people are at increased risk of victimization, and, once victimized, are more likely to develop PTSD. Past victimization is the most powerful risk factor for future victimization. Further research is needed to ascertain precisely why rates of victimization are lower in older adults, and if reduced risk of PTSD is attributable to some resiliency associated with age, or if older adults simply display posttraumatic symptomatology differently (e.g., perhaps more somatically) than younger adults.

Some forms of trauma (e.g., rape) are undoubtedly more distressing than others, and carry with them greater likelihood of developing PTSD. Existing research has demonstrated that completed rape, perceived life threat during assault, and injury due to assault are associated with increased risk of PTSD. Future research should continue to isolate those qualitative and quantitative factors of assault that increase risk of PTSD so that at-risk populations are quickly identified, and preventive interventions effectively designed to meet each individual victim's specific needs. In addition to epidemiological research, future efforts should be directed toward standardization of crime and risk factor definitions at the local, police, and victim service agency levels. Specifically, until rape crisis centers, domestic violence shelters, and local police departments adopt standardized definitions of assault types, assault characteristics, and eventually, assault outcomes (e.g., services used by victims) the true scope and effects of criminal violence will remain unknown.

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