Correlates of Crime and Violence among Persons with Mental Disorder: An Evidence-Based Review

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The issue of crime and violence among persons with mental disorder is a subject of longstanding clinical and policy importance. Over the past 15 years, much research has been conducted on the relationship between mental disorder and crime and violence. This article is a review of the research literature on the correlates of crime and violence among persons with mental disorder. To facilitate this review, the literature is organized into 4 sections that encompass research on variables that fall into one of the following four domains: demographic variables, historical variables, clinical variables, and contextual variables. It summarizes current knowledge on the sources of criminal and violent behavior and attempts to reconcile disparities across studies by taking into account methodological differences and by considering the potential role of confounding factors that require attention in future research. [Brief Treatment and Crisis Intervention 8:171–194 (2008)]

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Crime and Violence among Persons with Mental Disorder: A Review of the Demographic, Historical, Clinical, and Contextual Correlates

The possible relationship between mental illness and violent and criminal behavior has been the subject of considerable debate and controversy and the focus of extensive research. Over the last 15 years, the scholarly literature examining a possible association between mental disorder and crime has grown exponentially. The extant research has mapped out individual-level correlates and has begun to explore the community- and situational-level correlates to crime and violence. Researchers have also begun to consider interactions between individual characteristics and contextual factors in producing violence among persons with mental disorder. The purpose of this paper is to provide a comprehensive and critical assessment of the existing empirical literature on the correlates of crime and violence among persons with mental disorder. This review examines the empirical evidence from a number of different disciplines—criminology, psychiatry, psychology, and social work—on the risk factors for crime and violence among persons with mental disorder and provides a detailed discussion of the gaps and inconsistencies within the literature. It also identifies areas for further
research that are needed for the development of our understanding of the nature of the relationship of mental disorder to crime and violence. Such an understanding is pivotal to the formulation of appropriate and effective policies for the provision of mental health services aimed at preventing crime and violence and is necessary for matching patient need and treatment and for making decisions concerning managing the risk of crime and violence among persons with mental disorder.

Computerized databases were searched for studies exploring the relationship of mental disorder to crime and violence. Searches were conducted on four computerized databases: Criminological Abstracts, Ovid MEDLINE, PsycINFO, and Social Work Abstracts. The following combination of key words was used for the search: mental disorder and crime, mental disorder and violence, mental illness and crime, and mental illness and violence. Studies identified by this search then served as sources for the identification of additional studies through a review of their reference lists.

This review is limited to articles and texts that were published in 1990 or later and that dealt with crime or violence committed by persons with mental disorder in a community context. Excluded are studies dealing with inpatient violence and treatment studies on interventions aimed at changing violent or criminal behavior. Both of these types of studies are beyond the scope of this paper and merit their own extensive coverage. Although this review is intended to be representative and comprehensive, it does not purport to be exhaustive.

The research on violence and crime among persons with mental disorder encompasses a broad area. To facilitate this review, the literature is organized into four sections that encompass research on variables that fall into one of the following four domains: demographic variables, historical variables, clinical variables, and contextual variables.

**Demographic Variables**

There are a number of demographic variables considered within the literature to be of interest in understanding any potential relationship between mental disorder and violent or criminal behavior. Foremost among these is biological sex. In the general population, males are much more likely than females to engage in violent and criminal behavior (Bonta, Law, & Hanson, 1998; Gendreau, Little, & Goggin, 1996). However, among psychiatric populations, this sex effect is less clear. For example, in community-based epidemiological studies of self-reported violence and in studies of criminality among persons with mental disorder, male sex is a significant predictor of violent and criminal behavior (Bonta et al., 1998; Hwang & Segal, 1996; Lovell, Gagliardi, & Peterson, 2002; Solomon & Draine, 1999; Stueve & Link, 1998; Swanson, Holzer III, Ganju, & Jono, 1990; Wessely, Castle, Douglas, & Taylor, 1994); however, among retrospective and prospective studies of violence utilizing samples of psychiatric patients recently admitted or recently discharged from hospital, males were no more likely to be violent than females (Hiday, Swartz, Swanson, Borum, & Wagner, 1998; Robbins, Monahan, & Silver, 2003). Some studies have explored the relative effect of mental disorder on each sex’s potential for criminality and found that mental disorder had more of an effect on the criminal potential of females than of males. For example, a number of patient cohort studies using data obtained from psychiatric case registries and criminal record registries found that the crime rate among males with schizophrenia was almost the same as that of males with other mental disorders (Wessely et al., 1994) or that of the general male population (Lindqvist & Allebeck, 1990; Modestin & Ammann, 1995); conversely, the crime rate among females with schizophrenia was two to four times higher than that of females.
with other mental disorders (Wessely et al., 1994) or no mental disorder (Lindqvist & Allebeck, 1990; Modestin & Ammann, 1995; Wessely et al., 1994). Among individuals with a major mental illness, Hodgins (1992) found that males’ risk of criminality increased twofold and that of females increased fivefold whereas Fazel and Grann (2006) found the risk of criminal violence among males with schizophrenia or other psychotic disorders increased fourfold and that of females increased sixfold. Similarly, among homicide offenders, the risk of homicide based on diagnosis was found to be substantially greater among females in most diagnostic categories than among males (Eronen, Hakola, & Tiihonen, 1996; Tiihonen, Eronen, & Hakola, 1993). Sex differences have also been found in the severity and consequences of violence perpetrated by persons with mental disorder, with males more likely to commit serious injury and to be arrested (Hiday et al., 1998; Robbins et al., 2003).

Conceivably, the confluence of two phenomena may explain the mixed findings relating to the role of biological sex as a determinant of crime and violence among persons with mental disorder. First, it is possible that police are more likely to lay criminal charges against males than females for delinquent behavior. Busfield (1996) posits that deviant behavior is apt to be framed as criminal when perpetrated by males and as psychopathological when perpetrated by females. Alternatively, men may be more likely to be arrested because the violence they commit is more likely to lead to serious injury. This may explain the elevated arrest rates among males with mental disorder. Second, it is possible that biological sex is a powerful risk factor among offender populations and community samples but a less robust predictor among hospitalized patient samples that include subjects who are typically acutely ill. That is, symptom risk factors may mask or overshadow sex effects. Further research is required to untangle the potential interactive effect of biological sex on the relationship between mental disorder and violent and criminal behavior.

Like biological sex, age is another risk factor for violence as well as criminal behavior in the general population (Gendreau et al., 1996). When official rates of crime are plotted against age, the rates for both prevalence and incidence of offending appear highest during adolescence and young adulthood but drop precipitously thereafter (Moffitt, 1993). Age also appears to be a risk factor for persons with mental disorder. Individuals with mental disorder in their late teens and early twenties are at the highest risk for criminal and violent behavior (Bonta et al., 1998; Feder, 1991; Hodgins, 1992; Steadman et al., 2000; Swanson, 1993; Swanson, Borum, Swartz, & Hiday, 1999; Swanson et al., 1990; Warren, Hurt, & Loper, 2002). However, this age effect may be moderated by the presence of psychiatric symptoms. For example, in a 30-year retrospective birth cohort study (N = 15,117), Hodgins (1992) found that young age was a predictor of criminal behavior and that criminality among males with no mental disorder decreased with age; however, she also found that a significant number of males with major mental illness began their criminal careers across all age groups. As with biological sex, the age effect may be eclipsed by symptom risk factors (Otto, 2000).

Race is a third demographic variable associated with arrests for violent crime in the criminological literature (Gendreau et al., 1996). Studies of patients and of mentally ill offenders have found a correlation between race and violence, with African-Americans having higher rates than Caucasians (Bonta et al., 1998; Grisso, Davis, Vesselinov, & Appelbaum, 2000; Hiday et al., 1998; Warren, Hurt, et al., 2002). However, the effect of race appears to be moderated by other factors. For example, Silver (2000b) found that the relationship between race and violence among psychiatric patients was eliminated when the variable neighborhood
disadvantage was considered. Similarly, Swartz et al. (1998b) and Hiday et al. (1998) found that African-Americans were at greater risk for perpetrating violence but only when they themselves have previously been the victims of violence. It is possible that these two moderating variables (i.e., neighborhood disadvantage and victimization) may be interrelated. That is, victimization may be a common experience among persons living in disadvantaged neighborhoods. Further, victimization may not be an individual-level risk factor linking mental disorder and violence but rather a measure of deleterious environmental conditions (Hiday, Swanson, Swartz, Borum, & Wagner, 2001).

Further research is required to ascertain whether the connection between race and violence by persons with mental disorder is contextually driven and possibly a product of socioeconomic factors (Otto, 2000).

The connection between socioeconomic status (SES) and criminal and violent behavior among individuals with mental illness appears complex. Within the criminological literature, SES is modestly correlated with risk of criminal recidivism. In a meta-analysis of the predictors of recidivism among general offender populations, Gendreau et al. (1996) found SES is a weak predictor ($r = .05$). Within the literature relating to mentally ill persons, however, the association is less clear. Bonta et al. (1998) found no relationship between SES and general or violent recidivism. In contrast, however, Swanson et al. (1990) found a relationship between violence and SES and Stueve and Link (1997) found that weapons use among persons with psychotic or bipolar disorders was related to SES. This variation may be a product of the potential differential role SES plays in different populations (e.g., mentally disordered offenders vs. community samples of mentally ill persons). Alternatively, it may be an artifact of the manner in which SES is operationalized. For example, Bonta et al. undertook a meta-analysis of predictors of criminal recidivism and did not indicate how SES was defined presumably because its operationalization varied among the studies they included in their analysis. By comparison, Swanson et al. combined information about respondents’ occupation status, education level, and household income, whereas Stueve and Link (1997) used years of education as a proxy for SES. Another possibility is that any potential relationship between SES and criminality or violence is mediated by other factors. For example, Silver, Mulvey, and Monahan (1999) found that SES was less predictive of violence than was neighborhood poverty. Further research is required using various indexes of SES to ascertain any relationship it has with criminality and violence among mentally ill persons.

**Historical Factors**

Prior violence and criminality have been found to be the best predictors of future violence and criminality within the criminological literature (Gendreau et al., 1996). Similar relationships have been found among mentally disordered offender samples (Bonta et al., 1998; Feder, 1991; Harris, Rice, & Quinsey, 1993; Phillips et al., 2005; Porporino & Motiuk, 1995; Rice, Harris, Lang, & Bell, 1990), hospital-discharged patient samples (Elbogen, Swanson, Swartz, & Van Dorn, 2005; Satsumi, Inada, & Yamauchi, 1998; steadman et al., 2000), patient cohorts (Wessely, 1998; Wessely et al., 1994), mental health outpatient service user samples (Brekke, Prindle, Bae, & Long, 2001; Hwang & Segal, 1996), and community-based epidemiologic samples (Swanson, 1993). Prior arrests, prior convictions, and self-reported prior violence are highly predictive of future offending and violence. Moreover, recent time series models provide evidence of an association between past violence and subsequent violence over relatively short time periods. Skeem et al. (2006)
found that a violent incident increased the odds of violence occurring in the following week by 1.4 times, whereas Mulvey et al. (2006) found violence reported on any given day increased the odds of violence occurring on the next day by 5.4 times. In both studies, participants were sampled from among patients who were evaluated in the emergency room of an urban psychiatric hospital and were selected using a prescreening procedure because of their high potential for repeated involvement in violence. Participants were limited to individuals aged 14–30 who did not present with delusions or carry a diagnosis of schizophrenia but endorsed heavy substance use and a recent history of violence (within prior 2 months).

A history of delinquency prior to adulthood has also been found to be a significant factor related to violence and criminality. This is borne out in both nondisordered offender samples (Gendreau et al., 1996) and mentally disordered samples (Hodgins & Janson, 2002; Solomon & Draine, 1999; Tengström, Hodgins, & Kullgren, 2001). For example, among mentally disordered samples, juvenile delinquency (Bonta et al., 1998; Solomon & Draine, 1999), early arrests (Rice et al., 1990; Tengström et al., 2001), and young age at index offense (Harris et al., 1993; Hodgins & Côté, 1993) have been found to be robust predictors of criminality and violence.

Additional historical factors identified in the research literature as possibly related to violence by persons with mental disorder relate to parental factors. Parental crime was found to be related to violent recidivism among mentally disordered offenders and to self-reported violence among psychiatric patients discharged from hospital (Harris et al., 1993; Monahan et al., 2001; Rice et al., 1990; Steadman et al., 2000). Parental substance abuse was also found to be associated with violence among discharged psychiatric patients, though the association was stronger for white patients than for African-American patients. The effect of excessive maternal drug use was found to interact with patient biological sex, with all of the effect taking place for males and none occurring for females (Monahan et al., 2001). Parental substance abuse was also found to impact upon the frequency of violence and criminality among persons with mental disorder (Tengström et al., 2001). Separation from parents before the age of 16 also predicted violent recidivism among mentally disordered offenders (Harris et al., 1993; Rice et al., 1990); conversely, having lived with either parent until age 15 was associated with a decreased rate of violence among psychiatric patients discharged from hospital. Finally, parental SES was found to be negatively associated with violence among mentally disordered offenders (Rice et al., 1990) and with criminality among females with major mental disorder (MMD) (Hodgins, 1992). These findings demonstrate the conditional nature of many of the relationships between specific childhood experiences and later violence and criminality.

Other childhood experiences identified as affecting subsequent violent behavior and criminality among persons with mental disorder relate to childhood abuse. Mixed results have been found regarding the association of serious physical abuse as a child and violence in adulthood among mental health patients. For example, Monahan et al. (2001) found that the seriousness and frequency of prior childhood physical abuse was positively associated with an increased rate of postdischarge violence (odds ratio [OR] = 1.50 and 1.40, respectively). By comparison, Swanson et al. (2002) found that early victimization was only related to violence if accompanied by victimization after
the age of 16. This possible interactive effect of childhood abuse and adult victimization on violence was not tested in the study by Monahan et al. (2001).

Mixed results have also been found regarding the association between childhood sexual abuse and violence. Experiences of sexual abuse as a child was not found to be associated with violence among patient groups (Monahan et al., 2001; Swanson et al., 2002); however, it was found to be related to institutional violence among incarcerated mentally disordered female offenders (Warren, Hurt, et al., 2002). Further research is required to examine the relationship of childhood sexual abuse and violence in adulthood by persons with mental disorder.

The experience of being a victim of violence as an adult has also been found related to violence among mentally ill persons. Swanson et al. (2002) found that physical abuse occurring after the age of 16 was significantly associated with violent behavior (OR = 5.91) in the previous year but only if victimization also occurred before the age of 16. As noted above, others found that the effect of victimization on violence was limited to African-American mentally ill subjects (Hiday et al., 1998, 2001; Swartz et al., 1998b). African-Americans with mental disorder experiencing previous victimization were approximately four times more likely to have engaged in serious violence than whites with no endorsed history of victimization. However, African-Americans who were not victimized were less likely than whites with no victimization to be violent. Research has not yet ascertained what relationship victimization has with violence perpetrated by mentally disordered offenders or what role it plays in non-violent criminality.

Clinical Factors

The importance of psychopathology in explaining criminal and violent behavior among persons with mental disorder is an issue of considerable empirical complexity. A substantial amount of research has explored this issue. Studies have been conducted using both cross-sectional and longitudinal designs and have included samples of the general population, birth cohorts, psychiatric patients, and incarcerated offenders. Yet, the empirical literature yields equivocal findings.

A number of studies have found a relationship between mental disorder and criminality or violence. For example, in a series of birth cohort studies conducted in Scandinavian countries, persons who developed MMD were at increased risk (OR = 2.6–8.7) across their lifespan for committing nonviolent and violent crime (Hodgins, 1992, 1998; Hodgins, Mednick, Brennan, Schulinger, & Engberg, 1996; Tiitonen, Isohanni, Räsänen, Koiranen, & Moring, 1997). It is important to note, however, that although these studies found an increased relative risk of criminality among persons with MMD, the absolute risk of crime among persons with MMD is relatively modest. In a population case register study in Sweden covering the period 1988–2000, Fazel and Grann (2006) found that the overall crude odds ratio for patients with severe mental illness acquiring violent convictions during the study period was 3.8, but the population attributable risk fraction of these patients to violent crime was 5.2% (i.e., these patients accounted for 5.2% of all violent crime during the study period). Support for a modest association between MMD and violent behavior has also been found in community-based epidemiological studies (Corrigan & Watson, 2005; Stueve & Link, 1997; Swanson, 1993; Swanson et al., 1990). Similarly, some studies of persons with mental disorder using outpatient mental health services (Link, Andrews, & Cullen, 1992) and inpatient mental health services (Modestin & Ammann, 1995) found that users of these services had a higher percentage of violent and illegal behaviors than
never-treated community residents. Finally, some studies estimating the prevalence of MMD among male offenders have found that rates of such disorders exceed those of men in the general population (Côté & Hodgins, 1990) and that rates of MMD among homicide offenders in particular, both male and female, exceed those for the general population (Eronen et al., 1996; Tiihonen et al., 1993).

There is also a considerable amount of evidence to discount suggestion of any relationship between mental disorder and crime or violence. In studies examining rates of recidivism among mentally disordered and non-disordered offenders, MMD has been found to be either unrelated or inversely related to recidivism (Bonta et al., 1998; Harris et al., 1993; Phillips et al., 2005; Porporino & Motiuk, 1995; Rice & Harris, 1995; Rice et al., 1990; Villeneuve & Quinsey, 1995). In a study of patients utilizing mental health services, Fulwiler, Grossman, Forbes, and Ruthazer (1997) found no difference in the rate of violence between patients with MMD and those with other mental disorders. By comparison, Monahan et al. (2001) found an inverse relationship. Asnis, Kaplan, van Praag, & Sanderson (1994) did not find any difference among patients engaging in attempted homicide on the basis of diagnosis. Other studies found mixed results. Eronen et al. (1996) found that males with schizophrenia were at elevated risk for homicide but individuals with bipolar disorder or major depression were not. By comparison, Solomon and Draine (1999) found that only mania was associated with a greater number of lifetime arrests among mentally disordered offenders on probation. In a twin study, Coid, Lewis, and Reveley (1993) found that male probands with schizophrenia were more likely than probands with affective psychosis to have a criminal record. Conversely, Hodgins, Lapalme, and Toupin (1999) found in a 2-year follow-up of psychiatric patients discharged from hospital that those with major affective disorders were twice as likely to be convicted of any offence than those with schizophrenia whereas Corrigan and Watson (2005) found in an epidemiological study that individuals with major affective disorders were two to six times more likely to have engaged in violence in the previous year. By comparison, Modestin and Wuerml (2005) found that individuals with schizophrenia were at increased risk of violent criminality but individuals with affective disorders had a greater probability of committing property offenses. Still, other studies of violence among hospital-discharged mental health patients found no difference in the rates of violence between patients with major affective disorders and schizophrenia (Swanson et al., 1999; Swartz et al., 1998b). Mixed results have also been found within diagnostic categories. Wessely (1998), Wesseley et al. (1994) and Lindqvist and Alleback (1990) found the overall crime rate among males with schizophrenia to be the same as that in the general population, but violent crime was higher among males with schizophrenia. Female cases had a higher overall crime rate and a higher violent crime rate than females from the general population.

The reasons for these disparities may be manifold. First, the differences in findings across studies may be methodologically based. Some of the divergence in the findings may be related to how MMD is operationally defined and measured across studies. For example, in some studies, MMD refers to schizophrenia-spectrum disorders, bipolar disorder, and major depression (Hodgins, 1992; Hodgins & Côté, 1993; Hodgins et al., 1996), in others it is limited to schizophrenia and affective psychosis (Belfrage, 1998; Coid et al., 1993), and in still others it includes a broader category of diagnoses (e.g., schizophrenia, schizophreniform, schizoaffective disorder, depression, dysthymia, mania, cyclothymia, brief reactive psychosis, and delusional disorder) (Steadman & Silver, 2000).
In addition, diagnoses are not always made using standardized measures, and some instruments have not been validated for use with specific populations. For example, birth cohort studies often rely upon the discharge diagnosis provided to patients leaving hospital rather than a diagnosis obtained with a standardized measure. In addition, studies of the prevalence of mental disorder among offender samples often rely upon the Diagnostic Interview Schedule (DIS), a diagnostic instrument that may have limitations when used with offender populations. The DIS was designed to be used with subjects who participate in good faith with the research interview and who do not have anything to gain or lose by participating in the interview (Hodgins, 1995). As such, it may not provide a valid measure of mental disorder among prison inmates and jail detainees who may be motivated to malign by a desire to avoid criminal sanction or obtain benefits bestowed mentally ill inmates. In addition, the DIS was not developed to diagnose MMD when multiple disorders are present yet some studies of offenders suggest that many have multiple mental disorders (Côté & Hodgins, 1990; Tihihonen et al., 1993; Warren, Burnette, et al., 2002). In a similar vain, the manner in which violence and criminality is measured may also account for the inconsistency of the findings. For example, reliance on official crime records may result in reporting biases as not all crimes are reported and individuals engaged in antisocial behavior recognized as mentally ill may be diverted to the mental health system in lieu of arrest or prosecution (Arbóleda-Florez, Holley, & Crisanti, 1998; Hodgins, 1998; Teplin, 1990). In addition, criminal history data provide an inadequate measure unless the data are corrected for the time at risk—that is the time the subject is not in hospital, jail, or prison and therefore able to engage in crime or violence in the community (Teplin, Abram, & McClelland, 1996). Moreover, some measures of self-reported violence lacked specificity and consequently a single violent event could be recorded as multiple events (e.g., a single occurrence could involve the use of a weapon, fighting, and threats but could be recorded as three separate events though each occurred within a single context and at a single point in time) (Côté, 2000).

Another methodological factor that may account for the discrepancy in findings is the heterogeneity of the samples. Studies have included samples of the general population, birth cohorts, psychiatric patients, and incarcerated and nonincarcerated offenders. All the studies are subject to selection bias. Community-based epidemiological studies such as the Epidemiological Catchment Area study (Swanson et al., 1990) may underestimate the true prevalence of violence and criminality among persons with mental disorder as individuals who are incarcerated or hospitalized would not be included in the sampling frame. Conversely, studies of hospitalized patients or incarcerated offenders may overestimate the true association between mental disorder and criminality and violence as individuals who are aggressive may be expected to be selected into a patient group by being hospitalized or an offender group by being incarcerated (Eronen, Angermeyer & Schulzer, 1998). Birth cohort studies (e.g., Hodgins, 1992; Hodgins et al., 1996; Tihihonen et al., 1997) relying on case tracking through official population registries (i.e., hospital records registries and criminal records registries) could overestimate the potential association, as only individuals who are hospitalized would be included but could also potentially underestimate the true rate due to reliance on official crime records as a measure of violence and criminality (Wessely, 1998). It is also important to consider the context within which these studies are conducted. If the level of violence and crime among mentally disordered persons were more or less
constant across countries, the relative magnitude of the association between violent and delinquent behavior and mental disorder would be contingent upon the level of crime existing within the specific country under study. For example, most of the birth cohort studies have been conducted in Scandinavian countries that have a low crime rate and relatively uniform prosperity. Given the relatively low crime rate, persons with mental disorder may appear to be at an elevated risk of criminality relative to the general population. However, in countries like the United States, which have high overall crime rates, the relative importance of mental disorder is apt to be understated given that crime is more pervasive.

In similar fashion, it is also important to consider the comparison group used within studies. For example, persons with MMDs may have a lesser rate of criminality and violence than incarcerated offenders but a greater rate of criminality and violence than persons with no mental disorder at all (Monahan et al., 2001). Consequently, when persons with psychosis are matched against persons who have a very minimal risk of committing offenses or violence, as in epidemiological research, a positive relationship is found; when they are matched against high-risk offenders, most of whom have a personality disorder, a negative association is found. Another related methodological issue is the difficulty of studies in providing controls drawn from the same neighborhoods as test cases (Wessely, 1998). As is noted below, contextual variables related to neighborhood disadvantage appear to influence the relationship between mental disorder and criminality and violence.

The lack of continuity in the research findings may also be a product of confounding or intervening variables that are not controlled across studies. A number of factors, some alluded to above, may account for the disparity in results. Key among these is the presence of a personality disorder. Though most studies do not control for the presence of a comorbid personality disorder among samples, a number of studies have found a significant relationship between violent and delinquent behavior and personality disorder (Eronen et al., 1996; Harris et al., 1993; Kjelsberg, 2004; Modestin & Ammann, 1995; Phillips et al., 2005; Putkonen, Kotilainen, Joyal, & Tiitonen, 2004; Rasmussen & Levander, 1996; Rice et al., 1990; Stuart & Arbóleda-Florez, 2001; Warren, Burnette et al., 2002; Warren, Hurt et al., 2002). In particular, antisocial personality disorder (ASPD) is an especially important diagnostic category in predicting criminality and violence among persons with mental disorder. Persons who meet the diagnostic criteria for this disorder are typically characterized by a history of impulsive, social convention-breaking, rule-breaking, and law-breaking behavior. A considerable number of incarcerated offenders and jail detainees have been found to meet the criteria for ASPD (Côté & Hodgins, 1990; Jordan, Schlenzer, Fairbank, & Caddell, 1996; Teplin, 1994; Teplin, Abram, & McClelland, 1996). Côté and Hodgins (1990) found that ASPD and substance abuse were the most common diagnoses and the most common co-occurring disorders among male incarcerated offenders. Similarly, Putkonen et al. (2004) found that ASPD and substance abuse were the most common co-occurring disorders among homicide offenders with major mental illness. ASPD was found to be a significant predictor of violent and nonviolent recidivism among male mentally disordered and nondisordered offenders (Bonta et al., 1998) and was found correlated with violence prior to arrest (Warren, Hurt, et al., 2002) and with violence within correctional settings (Warren, Burnette, et al., 2002) among female incarcerated offenders. In studies of homicide offenders, ASPD was found to increase the risk of committing homicide from between 9-fold for males to 75-fold for females. In addition to mentally disordered offender samples, ASPD has also been associated with
criminal and violent behavior among patient (Crocker et al., 2005; Hodgins et al., 1999) and epidemiological samples (Link, Monahan, Stueve, & Cullen, 1999). These findings help to explain results of studies in which MMD was found unrelated or inversely related to violence and criminality. Many of these studies drew on offender samples that have a high prevalence of individuals with ASPD. Consequently, it is quite plausible that the presence of ASPD among control subjects in studies of mentally disordered offenders served to conceal the effect of MMDs on violent and delinquent behavior.

Similarly, psychopathy is also an important personality construct that is not often controlled for but has been found to be robustly correlated with persistent criminality and violence. Psychopathy is a clinical construct often used in forensic contexts referring to a constellation of affective, interpersonal, and behavioral characteristics, including grandiosity, shallow affect, lack of empathy, guilt or remorse, manipulativeness, and adult and adolescent antisocial behavior. It was found to be the strongest predictor of violence in longitudinal studies of mentally disordered offenders (Harris, Rice, & Cormier, 1991; Harris et al., 1993) and civil psychiatric patients (Monahan et al., 2001; Steadman et al., 2000). Further, even individuals who did not meet the full criteria for a diagnosis of psychopathy but who had elevated scores on the Psychopathy Checklist—Shortened Version, a measure of psychopathy, were found to be at elevated risk of violence (Skeem & Mulvey, 2001). Thus, psychopathy may overshadow the effects of other mental disorders like schizophrenia in violence toward others. Though persons with schizophrenia may be at elevated risk of violence, when compared to individuals with psychopathy (or with elevated scores of psychopathy), they may appear to be at reduced risk.

In addition to comorbid personality disorder, psychiatric comorbidity generally may explain some of the divergence across studies. Most studies do not control for comorbidity, in fact, a number use a hierarchical approach of diagnostic categorization whereby individuals are placed in one diagnostic category according to an established hierarchy of diagnoses (Grisso et al., 2000; Hodgins, 1992; Hodgins et al., 1996; Silver, 2000b; Steadman & Silver, 2000). Yet, especially among incarcerated mentally disordered offenders, comorbidity is quite common (Côté & Hodgins, 1990; Rasmussen & Levander, 1996). Failure to control for comorbidity may confuse the effects of specific disorders. In addition, comorbidity is a relevant construct as it may be a proxy indicator of the severity of psychopathology present (Swanson et al., 1990) that itself may be related to elevated risk of violence. For example, in the epidemiological studies, higher rates of violence were found among persons with multiple diagnoses (Corrigan & Watson, 2005; Swanson et al., 1990).

A particularly important class of comorbid disorders known to increase the risk of violence and criminality among persons with mental disorder (as well as non-disordered persons) is substance abuse disorders. Across sample groups, substance abuse or dependence was the most consistent predictor of violence or criminality among persons with mental disorder (Bonta et al., 1998; Corrigan & Watson, 2005; Eronen et al., 1996; Estroff, Swanson, Lachicotte, Swartz, & Bolduc, 1998; Fulwiler et al., 1997; Grisso et al., 2000; Harris et al., 1993; Hartwell, 2004; Hodgins, 1992; Link et al., 1999; Modestin & Ammann, 1995; Räsänen et al., 1998; Rice & Harris, 1995; Rice et al., 1990; Silver et al., 1999; Steadman et al., 1998, 2000; Swanson, 1993; Swanson et al., 1990, 1999; Swartz et al., 1998a, 1998b; Teplin, 1994; Tiitonen et al., 1993; Tiitonen & Hakola, 1994; Wessler et al., 1994). The combination of drug and alcohol abuse was found to be the best predictor of violence (Modestin & Ammann, 1995; Swartz et al., 1998a), and subjects with
alcohol or drug abuse were found to have the highest rates of violence (Kjelsberg, 2004; Swanson et al., 1990) (though these findings are based on studies that did not control for psychopathy or prior history of violence). Age of onset of substance abuse may also be important as two studies found that onset of substance abuse before age 15 was an even better predictor of violence than adult onset of substance abuse (Fulwiler et al., 1997; Tiihonen & Hakola, 1994). The effect of substance abuse on risk of violence appears to hold across diagnostic groups except for psychopathy and possibly schizophrenia. Rice and Harris (1995) found that alcohol abuse was related to violent recidivism only among nonpsychopathic mentally disordered offenders whereas Swanson et al. (2006) found that a bivariate effect of substance abuse on serious violence among individuals diagnosed with schizophrenia was rendered nonsignificant when age, childhood conduct problems, positive psychotic symptoms, and recent nonviolent victimization were controlled. The findings by Rice and Harris (1995) and Swanson et al. (2006) raise the possibility that the effect of substance abuse on serious violence within subpopulations of mentally disordered persons may be mediated or potentiated by psychopathological features and other factors or eclipsed by the presence of psychopathy.

In addition to the above noted confounding variables, it is also possible that the presence or absence of specific mediating variables account for the discrepancy in the findings about the relationship between MMD and violent and criminal behavior. For example, the difference in rates of violence or delinquency between those with and without mental illness may not be a product of the existence of specific disorders, per se, but rather may relate to the occurrence of specific symptoms associated with mental disorder (Otto, 2000). That is, it may prove more fruitful to study active symptoms of MMDs as well as dimensional psychological traits rather than categorical disorders such as schizophrenia or ASPD. The transient and episodic nature of symptoms of MMD may be central to understanding any relationship existing between mental illness and crime and violence and may account for the different results found across studies. For example, if symptoms of mental disorders are ameliorated, then perhaps the risk of violence is attenuated irrespective of whether or not a particular disorder remains. Similarly, specific personality traits such as uncontrolled anger may be more relevant in the study of aberrant behavior than actual personality disorders. A variety of symptoms have been considered within the literature in an effort to explain the potential relationship between mental illness and violence.

Some of the research has focused on the effect of psychotic symptomatology and yielded equivocal findings. Link et al. (1992) found that the presence of psychotic symptoms accounted for an elevated level of violent and illegal behaviors among mental health service users relative to never-treated community residents. Similarly, Swanson, Estroff, Swartz, & Borum (1997) found a curvilinear relationship between psychotism and violence whereby risk of violence increases as the number of psychotic symptoms increase from zero to two but decreases with three or more symptoms. However, Swanson et al. (1999) found psychotic symptoms were not related to violence among civil psychiatric patients. The most recent study by Swanson et al. (2006) of violence among individuals diagnosed with schizophrenia found that positive psychotic symptoms significantly increased the risk of violence but only when negative psychotic symptoms were minimal or absent. That is, increased negative psychotic symptoms were significantly associated with reduced risk of serious violence and served to moderate the effect of positive symptoms upon risk of violence. These four
studies used cross-sectional designs but used different measures of psychotic symptomatology that may account for the divergence. In addition, apart from the later study by Swanson et al. (2006), the studies did not examine the potential suppressing role of negative psychotic symptoms (e.g., blunted affect, social withdrawal, difficulty with abstract thinking, and lack of spontaneity and flow in conversation) upon positive psychotic symptoms (e.g., persecutory delusions with accompanying hostility and command hallucinations) that may account for the divergence in findings. In addition, none of the four studies controlled for comorbid personality disorder that may overshadow any potential relationship between psychotic symptoms and violence.

Research on the effects of specific psychotic symptoms has also yielded ambiguous findings. For example, although studies found that command hallucinations in general did not predict violence (Junginger, 1995; McNeil, Eisener, & Binder, 2000; Monahan et al., 2001), the effect of the specific content of command hallucinations is not clear. Junginger (1995) found that compliance with command hallucinations was negatively correlated with the dangerousness of the command whereas Monahan et al. (2001) found that auditory hallucinations involving commands of violent acts increased the likelihood of violence.

Similar uncertainty surrounds the effect of delusions on violence. Two studies found delusions in general were not associated with a higher risk of violent behavior among civil psychiatric patients (Appelbaum, Robbins, & Monahan, 2000; Junginger, Parks-Levy, & McGuire, 1998), and one study found delusions were related to increased risk for violence (Taylor et al., 1998). Mixed results were found for threat/control override symptoms (TCO), a particular subgroup of delusions. TCO refer to delusions that one is being threatened by others or that one’s thoughts and/or actions are being controlled by external forces (Otto, 2000). Some studies found that TCO symptoms increased the risk of violence two- to threefold (Link, Stueve, & Phelan, 1998) and accounted for a large portion of the association between psychiatric diagnoses and violence (Link et al., 1999). Other studies, however, have found a negative relationship between the presence of TCO symptoms and violence (Appelbaum et al., 2000; Monahan et al., 2001; Steadman et al., 2000). Yet another found a qualified relationship between these symptoms and violence. In a retrospective comparison of Austrian mentally disordered offenders with schizophrenia and nonoffending schizophrenia patients, Stompe, Ortwein-Swoboda, and Schanda (2004) found that TCO symptoms were unrelated to violent behavior in general, but, taking into account the severity of the violence, they found threat symptoms as being associated with severe violence (i.e., violence resulting in victim’s death or victim’s hospitalization). Control override symptoms, however, were not found to be associated with the severity of violent behavior.

This lack of congruity may be a methodological artifact. With respect to command hallucinations and violence, the studies of Junginger (1995) and Monahan et al. (2001) varied on the basis of sample size (93 vs. 304 subjects, respectively), on the use of retrospective as opposed to prospective designs (asking subjects to recall their last command hallucination within the last 2 years vs. interviewing subjects on the presence and nature of hallucinations every 10 weeks over the course of a year), and on the sources of information used regarding subject violence (self-report vs. self-report, collateral informant, and clinical and arrest records). Monahan et al. use of a larger sample, prospective design, and multiple sources of information maximize the probability of detecting a possible effect. Similar methodological variance exists among studies examining the relationship between TCO symptoms and
violence. The differences in the findings across studies may be a result of the studies using different measures of TCO and violence and different protocols to ascertain whether subjects’ responses were delusional or whether they reflected reality or some other nondelusional belief (Appelbaum et al., 2000). Those studies that did not find a relationship (Appelbaum et al., 2000; Monahan et al., 2001; Steadman et al., 2000) used clinically trained researchers rather than lay persons in the administration of measures of TCO, thereby minimizing the risk of mislabeling as delusions other phenomena that could be related to violence. In addition, the TCO studies that found a relationship (Link et al., 1998, 1999; Stompe et al., 2004) used retrospective designs whereas those that did not used prospective designs. It is possible that the use of retrospective methods interposed unapparent biases into the data (Appelbaum et al., 2000).

Apart from methodological explanations, it is possible that the incongruence in the findings is a product of other potentiating variables. For example, symptom severity may account for the differences. With regard to command hallucinations, it is possible that the frequency of the hallucinations and the intensity of the auditory perceptual disturbance (e.g., whispers vs. shouting voices) influence the likelihood of compliance with the command (Bjorkly, 2002b). In addition, the presence of hallucination-related delusions may moderate the effect of compliance with command hallucinations. Taylor et al. (1998) found that hallucinations were related to violence when delusions were also present, and Junginger (1990) found that the co-occurrence of hallucination-related delusions (i.e., delusions that incorporated auditory hallucinations into subjects’ delusional belief system as evidence of the validity of their delusions) was related to compliance with command hallucinations. Assigning an identity to a hallucinated voice was also found to be related to compliance with command hallucinations (Junginger, 1990, 1995). The presence of hallucination-related delusions and the identification of voices may suggest a more severe psychotic disturbance and a more systematized or consistent distortion of reality (Junginger, 1990; Junginger & McGuire, 2004).

With regard to TCO symptoms, a curvilinear effect may explain its nonassociation to violence. Link, Stueve and Phelan (1998) found evidence of a negative interaction effect where the presence of both threat symptoms and control override symptoms lowered the risk of violence compared to the presence of either symptom alone. Similarly, as noted above, Swanson et al. (1997) found a curvilinear relationship between severity of psychotic symptomatology and violence in which violence increases as the number of psychotic symptoms rises from zero to two and falls with the occurrence of three or more symptoms. The presence of negative psychotic symptoms may also serve to suppress the potential influence of TCO symptoms and command hallucinations.

Alternatively, the effect of command hallucinations or TCO symptoms could be suppressed by treatment adherence. It is possible that individuals who are receiving treatment may endorse command hallucinations and TCO symptoms but may be less inclined to act violently if treatment serves to diminish the affective arousal that is assumed to underlie command hallucinations and TCO symptoms. That is, treatment may attenuate feelings of fear or hostility, though the perceptual or cognitive aspects of the symptoms persist. Consequently, though an individual may endorse violent command hallucinations or persecutory or control/override delusions, they may be less likely to act violently. A number of studies have found that nonadherence to medication increased the risk of violence among psychiatric patients (Brekke et al., 2001; Robbins et al., 2003; Swartz et al., 1998a, 1998b), though Steadman and Silver
(2000) found that violent acts committed by persons with MMD and no substance abuse were more likely to have occurred while the individual was taking psychotropic medications (however, the MMD group included individuals with a broad range of diagnoses—schizophrenia, depression, dysthymia, mania, cyclothymia, and brief reactive psychosis—and did not control for comorbid psychosis that may account for their finding).

Bjorkly (2002a) refers to the emotional distress resulting from a delusional belief system as delusional distress. Delusional distress may have an important intervening role in the link between delusions and violence. That is, delusional distress may mediate the association between delusional belief systems and violent behavior (Bjorkly, 2002b). Indirect support for this mediated relationship was found by Swanson et al. (1999) who reported that feelings of rage, anxiety, and fear of harm were the most common feelings experienced at the time of the commissions of a violent act as reported by a sample of hospitalized patients. Monahan et al. (2001) also found that patients endorsing high rates of anger were twice as likely as patients endorsing low rates of anger to engage in violence.

A potential confounding variable that may explain the mixed findings regarding the role of TCO symptoms is nondelusional suspiciousness, a personality trait involving a tendency toward misperception of others’ behavior as hostile. Preliminary research has found a link between this trait and violence (Arseneault, Moffitt, Caspi, Taylor, & Silva, 2000). It is also possible that the presence of a comorbid personality disorder (especially those characterized by impulsivity) may disinhibit an individual causing him or her to act on psychotic symptoms.

These data suggest that personality traits may moderate the relationship between symptoms of major mental illness and violence. Researchers have started to explore the relationship between specific personality traits and violence among persons with serious mental disorder. Skeem, Tiemann, Miller, Mulvey, and Monahan (2005) assessed the relationship between general personality traits included in the five-factor model (FFM) of personality (McCrae & Costa, 1990) and violence in the community among a sample of civil psychiatric patients. The FFM conceives of personality as being structured by five broad dimensions, including agreeableness (vs. antagonism), conscientiousness, extraversion, neuroticism, and openness to experience. Each of these dimensions subsumes six specific traits or facets. Skeem et al. (2005) found that the strongest correlates of violence were antagonism ($\eta = .26$, $p < .01$) and, to a lesser extent, neuroticism ($\eta = .10$, $p < .01$). Antagonism includes such personality traits as arrogance, combativelessness, deceptiveness, lack of empathy, and suspiciousness. On the other hand, neuroticism includes traits of angry hostility, anxiousness, impulsiveness, and trait depression. Skeem et al. (2006) found further evidence of a relationship between angry hostility and violence among a sample of non-psychotic patients with a recent history of violence and heavy substance use. Using a longitudinal design that obtained weekly reports from participants about their level of hostility and their engagement in acts of violence, Skeem et al. (2006) found anger is strongly related to itself over time, suggesting that it is trait like. Moreover, Skeem et al. (2006) found a concurrent relationship between hostility and violence (OR = 2.0) within any given week. In addition, anger modestly predicted violence in the following week (OR = 1.2). Future research is required to ascertain any potential role of specific personality traits on the expression of violent and illegal behavior by persons with symptoms of a MMD.

**Contextual Factors**

The risk for violence among persons with mental disorder may not only vary as a function of the
degree to which particular psychiatric symptoms or personality dimensions are present but also by the extent to which contextual factors or environmental events restrain or exacerbate their expression (Nestor, 2002). Consequently, consideration of the situational correlates and environmental contributors of violence may serve to explicate the complex relationship of mental disorder to risk of violence and criminality.

Though it has been postulated that situational stressors may moderate the relationship between violent behavior and mental disorder (Hiday, 1995, 1997; Otto, 2000), relatively little research has explored this possibility. Hiday (1995, 1997) suggests that stressful events or circumstances lead to tense or conflictive situations that can result in violence. There is some preliminary support for such a connection. Silver and Teasdale (2005) found higher levels of stress among persons with mental disorder who engaged in violence. Further, they found that the relationship between major mental illness and violence was attenuated by 18% when stressful events were controlled such as injury, family illness, change in financial status, change in employment status, or significant change in family situation. Stress related to housing status may also be related to violence. Residential instability has been found to be associated with risk of arrest or involvement with the criminal justice system among outpatient service users (Brekke et al., 2001; Sheldon, Audry, Arboleda-Florez, Wasylenki, & Goering, 2006). Similarly, Bonta et al. (1998) found that poor living arrangements and family problems were associated with general and violent recidivism among mentally disordered offenders. Stress related to financial matters may also be associated with elevated risk of violence. Estroff et al. (1998) found that the risk of violence among psychiatric patients with serious mental illness toward a family member increased fourfold when subjects were financially dependent on the family member. Similarly, increased risk of violence (OR = 2.11) toward family was found among recently discharged psychiatric patients with serious mental illness who had formal financial arrangements with family members such as representative payeeships or trustee ships that involve family members controlling the income of their mentally ill relative (Elbogen et al., 2005). This risk doubled (OR = 4.45) when subjects on payeeships or trustee ships had frequent contact with family members. A lack of autonomy associated with not controlling one’s own money may engender stress and conflict and ultimately precipitate violence toward those controlling one’s income and resources.

Broader environmental factors have also been implicated in the association between violent behavior and mental disorder. The chronic strain of neighborhood social disorganization and poverty has been postulated to be a cause of stress that in turn may lead to conflictive situations and ultimately to violence (Hiday, 1995). In support of this supposition, Silver et al. (1999) found that concentrated neighborhood poverty increased risk of violence among patients discharged from hospital by nearly threefold. Similarly, Steadman et al. (1998) found that the prevalence of violence among psychiatric patients discharged from hospital was the same as the prevalence of violence among a community comparison group living in the same disadvantaged neighborhood when substance abuse was controlled. By comparison, Silver (2000a) found that neighborhood disadvantage (a composite variable that included measures of neighborhood poverty, neighborhood wealth, neighborhood family structure, neighborhood employment, and racial composition of a neighborhood) explained a relatively small amount of variation in patient violence (4%) as compared to individual patient characteristics (23%). In addition, a sizeable portion (5%) of explained variance in patient violence was shared by both individual- and neighborhood-level factors.
Research on the contextual correlates of violence by persons with mental disorder has also begun to examine the targets and setting of violence. The targets of violence were generally known to the mentally ill individual perpetrating violence. Steadman et al. (1998) found that the individuals at highest risk of violence are family members and friends who are in their own homes or in the home of the mentally ill subject. Similarly, Steadman and Silver (2000) found that individuals with MMD but no substance abuse were more likely to target family than strangers and that violence was more likely to occur within the context of regularly scheduled activities. Estroff, Zimmerman, Lachicotte, and Beniot (1994) found that more than half the targets of violence were relatives, most were the mother of the perpetrator. However, a number of studies found a gender effect where females were more likely to target family and to be violent in the home whereas males were more likely than females to target strangers in public (Hiday et al., 1998; Robbins et al., 2003; Swanson et al., 1999).

Research has also begun to explore the possible moderating influence of formal and informal supports. The findings at this early stage in the research are equivocal. With regard to formal supports, some studies found that individuals who had mental health professionals within their social network were at reduced risk of violence (Estroff et al., 1998, 1994). Similarly, Swanson et al. (1997) found that risk of violence among persons with major affective disorders and schizophrenia was increased when individuals did not have contact with a mental health professional in the community. The risk-reducing effect of community support, however, did not extend to individuals who had a comorbid substance abuse diagnosis. In contrast, Draine and Solomon (1994) found that more face-to-face service time with case managers was associated with increased risk of criminal recidivism among mentally disordered offenders discharged from jail, whereas Jacoby and Kozie-Peak (1997) found that social support (both formal and informal) received before and after release from prison was not related to risk of recidivism. With regard to informal supports, Estroff et al. (1994) found that individuals with mental disorder who had large social networks were at increased risk of violence.

The disparity of the above findings may be the result of a number of factors. First, the inconsistency of the findings with regard to the role of formal supports may be due to differences in the specific type of support provided and to the possibility that some forms of formal support may be more likely to attenuate risk of violence or criminality than others. Second, it may be that mental health supports are more likely to reduce risk of violence among civil mental health patients but less likely to reduce the risk of recidivism among mentally disordered offenders. Third, the increased rate of recidivism found among individuals who had more face-to-face time with case managers may result from the efforts of case managers to increase contact with individuals assessed as being at elevated risk of recidivism. Increased monitoring may also increase the likelihood that criminal behavior will be detected. Fourth, the results found may be a function of how social support is operationalized within the studies. For example, Jacoby and Kozie-Peak (1997) did not differentiate between formal support provided by a mental health service provider and informal support provided by family and acquaintances. It is conceivable that the former may help to reduce risk of violence or criminality whereas the latter may exacerbate the risk. The type of support received may also interact with the mentally ill person’s level of functioning. There is some evidence to suggest that an interaction between severity of functional impairment and frequency of social contact is associated with an increased risk of violence. Specifically, moving from low to high
frequency of social contact (i.e., from monthly contact or less to weekly contact or more) with family and friends increases the risk of violence among individuals whose functional impairment is high as a result of mental disorder (Swanson et al., 1998). Conversely, frequent social contact was associated with lower risk of violence among individuals with lower functional impairment. It was hypothesized that increased social contact among seriously mentally ill individuals with severe functional impairment was not perceived as supportive but rather was experienced as a source of conflict because the illness undermined the individual’s ability to resolve conflict and communicate meaningfully with others. On the other hand, among higher functioning individuals, increased contact with others is experienced as supportive and had the effect of improving the quality of relationships with family, thus diminishing the risk of violence. Further research is required to test the posited mechanisms that may underlie the potential relationship between social support and violence.

Another possible situational correlate of violence and criminality is intoxication. Few studies of mental disorder and violent or criminal behavior have attempted to untangle the effects of chronic substance abuse from the situational effects of intoxication (Arseneault et al., 2000). In one such study, Arseneault et al. (2000) found that individuals with schizophrenia reported more substance use before engaging in violence as compared to community-based controls. Substance use prior to violence accounted for 19% of the association between violence and schizophrenia-spectrum disorders and 58% of the association between violence and a diagnosis of alcohol dependence. By comparison, Hiday et al. (1998) found that among male inpatients, 19% used alcohol and 13% used drugs prior to a violent incident, whereas among female inpatients, 29% used alcohol and 14% used drugs before a violent incident. Among those who consumed these substances before fighting, most (80% of males and 57% of females) reported getting into physical altercations at times without using alcohol or drugs prior to violence. Both of the aforesaid studies used retrospective designs asking participants to recall the proximate relationship between alcohol and/or drug consumption and violence that occurred in the past year or the past 4 months, respectively. However, support for a relationship between the consumption of alcohol and/or drugs and the commission of acts of violence among persons with mental disorder was also garnered in a prospective longitudinal study of nonpsychotic emergency room psychiatric patients who had a recent history of violence and heavy substance use. Examining the relationship between substance use (alcohol, marijuana, and other drug use) and violence at the daily level, Mulvey et al. (2006) found an increased risk of violence on days following the use of alcohol (OR = 1.8) or the use of alcohol in combination with marijuana and other drugs (OR = 4.1). However, if only alcohol and marijuana use was reported, the risk of violence the next day decreased to the point where it was no longer statistically significant. The same finding held for the combined effect of marijuana and other drug use. Mulvey et al. also found that participants were 1.7 times more likely to engage in serious violence on days that only alcohol was consumed and were 3.4–7.1 times more likely to engage in serious violence on days when multiple substances were used. Though they did not collect data regarding the ordering of substance use and violence on the same day, Mulvey et al. do provide evidence that the consumption of alcohol especially in combination with street drugs is a proximate correlate of involvement in violence as well as a proximate precursor of violence in the near future. Further research using prospective research designs is required to explore the relationship between violence and the consumption...
of alcohol and/or drugs among different clinical and community samples.

Conclusion

Within the last 15 years, substantial gains have been made in our knowledge of risk factors for violence and crime associated with mental disorder. This literature has yielded important findings about demographic, historical, clinical, and contextual factors associated with violence and criminality among individuals with mental disorder. However, though significant contributions have been made, our knowledge of the precise nature of the relationship between mental disorder and violence and crime is still embryonic. The inquiry into the nature of this potential relationship has engendered disparate results, which have yet to be reconciled. The lack of congruence in the research results may be a function of methodological variance. This variance may stem from use of different psychiatric diagnostic conventions and measures, diverging operational definitions for violence or criminality, and the use of heterogeneous samples and comparison groups. It may also be a product of the societal contexts within which studies were conducted. The comparative robustness of the association found between violent or illegal behavior and mental disorder is conditional upon the level of violence and crime existing within the wider society where the research was conducted and upon differences in the policies of the criminal justice, mental health, and social services systems operating in one jurisdiction as compared to another.

The inconsistency of the findings may also be a product of a lack of control for potentially confounding variables. Factors such as psychiatric comorbidity (including substance abuse and the presence of a personality disorder) and medication adherence may be important variables to consider in future research. In addition, there may not be adequate specificity with regard to predictor or criterion variables to be able to discern the effects of mental disorder on criminal and violent behavior. Much of the research to date has focused on broad categories of disorder or on specific diagnoses in attempting to explicate the association between mental illness and violent and/or illegal behavior. However, studying active symptoms of MMD or personality traits may have greater utility. It may also be useful to distinguish among forms of violence and criminality as both of these constructs include a broad range of acts that differ in nature and kind (Côté, 2000). It may also be important to consider the influence of environmental factors. To date, the empirical literature has been focused upon individual-level factors and intrapsychic forces and has not yet developed an understanding of the role of community-level factors and situational correlates of violent and delinquent behavior among mentally ill persons (Hiday, 1995). Failing to control for contextual correlates of violence and criminality increases the risk of overstating the effect of clinical variables (Hiday, 1995). Indeed, part of the reason for the lack of consistency among prior studies may be related to a myopic fixation on the clinical correlates of violence and crime and a concomitant inattention to how clinical and environmental factors may interact to increase or attenuate the risk of violence and criminality by person with mental disorder.

It is also important that future research be based on theoretical frameworks that inform the choice of variables to be investigated. There is a general preoccupation within the empirical literature toward assessment of risk of violent and illegal behavior. Much of this literature is predicated on an empiricist epistemology and is devoid of theoretical frameworks that could guide the research agenda. Consequently, though we have substantial knowledge of the correlates that predict violence or delinquency,
we have yet to develop an understanding of the process by which violence and criminality occur among persons with mental disorder. However, knowledge of which individuals are at elevated risk does not serve in the identification of effective interventions (other than incapacitation) that prevent violent and criminal behavior and promote autonomous community functioning. An understanding of the process by which violent and delinquent behavior occurs rather than knowledge of the correlates of such behavior among persons with mental disorder will assist in the identification of the components of treatment, supervision, and support necessary to address and prevent violent and illegal behavior by persons with mental illness.

More research is needed to further our understanding of the association between various mental disorders and antisocial behavior. Future studies will need to simultaneously broaden the scope of research to include contextual variables and narrow the focus of attention onto specific symptoms and traits. Further, future emphasis on understanding rather than merely predicting violence is needed if we are to minimize mentally ill persons’ contact with the criminal justice and correctional systems.

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