

2003

Crime and violence in men with schizophrenia: a literature review

Bianca DiJulio
Whittier College

Follow this and additional works at: <https://scholar.utc.edu/mps>



Part of the [Psychology Commons](#)

Recommended Citation

DiJulio, Bianca (2003) "Crime and violence in men with schizophrenia: a literature review," *Modern Psychological Studies*: Vol. 9 : No. 1 , Article 7.

Available at: <https://scholar.utc.edu/mps/vol9/iss1/7>

This articles is brought to you for free and open access by the Journals, Magazines, and Newsletters at UTC Scholar. It has been accepted for inclusion in Modern Psychological Studies by an authorized editor of UTC Scholar. For more information, please contact scholar@utc.edu.

Crime and Violence in Men with Schizophrenia: A Literature Review

Bianca DiJulio
Whittier College

This literature review examines the strength of the relationship between schizophrenia and violence, symptoms associated with violence in schizophrenics, and two drug treatments associated with treating violence in schizophrenia. In terms of the relationship between schizophrenia and violence, schizophrenia does not surpass other mental illnesses in its association with violence; however, just as other mental illnesses do, it surpasses the normal population in levels of violence. Two symptoms, hostility and suspiciousness, are common in violent schizophrenics. In contrast, antisocial personality disorder and psychopathy have not been clearly associated with violent schizophrenics, most likely due to methodological problems. Similarly, hallucinations, delusions, serotonin levels, and testosterone levels have not been clearly associated with violence in schizophrenia. In terms of drug treatments, the use of clozapine and risperidone have been found to be effective in treating violent schizophrenics.

In 1998, a man walked into the United States Capital building and killed two people and injured one as he was trying to obtain a satellite that would save the world from cannibalism (Miller, 1999). The individual responsible for this act had been diagnosed as schizophrenic and was obviously suffering from a delusion. Media coverage of such violent acts committed by the mentally ill creates a connection in the public's mind between violence and mental illness. This connection then is further exacerbated through fictional movies and television shows that portray violent criminals as mentally ill. Schizophrenia is often the mental illness that the media portrays as highly connected to crime and violence. Through this isolated media coverage the public

begins to view schizophrenics as dangerous, unpredictable criminals; this stigma follows schizophrenics throughout their lives. Research connecting crime and schizophrenia has been done to examine the reality of this connection.

Previous reviews have examined the link between violence and schizophrenia and the role antipsychotic drugs play in the treatment of violent schizophrenics. Modestin (1998) examined the connection between crime and schizophrenia by focusing on four different methodologies researchers use when examining the relationship between crime and schizophrenia. The four methodologies are (a) evaluating criminals for psychiatric disorders; (b) evaluating psychiatric patients for criminal

or violent behavior; (c) looking at community samples or (d) birth cohorts for an overlap between criminal behavior and mental illness (Modestin). Within this review, Modestin considered different risk factors related to schizophrenia and crime such as socio-demographic indicators, clinical indicators, social indicators, and psychopathological indicators. Angermeyer (2000) also looked at risk assessment when he reviewed the psychiatric perspective and the public health perspective of the connection between crime and schizophrenia. Both Angermeyer and Modestin concluded that there is a connection between crime and schizophrenia, however, it was relatively small and much less than the public believes.

A review of the effectiveness of antipsychotic drugs (e.g. clozapine and risperidone) in treating violence in schizophrenia identifies the positive outcomes and risks involved with the two medications (The Special Hospitals' Treatment Resistant Schizophrenia Research Group, 1996). Hector (1998) also concluded, in his review of clozapine related to aggressive behavior, that clozapine is effective in decreasing aggressive behavior in schizophrenics.

Previous reviews have failed to address in one cohesive review the connection between crime and schizophrenia, the symptoms and characteristics related to crime and schizophrenia, and antipsychotic drug treatments used in treating violent schizophrenics, however, those three topics will now be addressed in one review. I have included studies on criminal behavior as well as studies on violent or aggressive behavior considering that not all violent behavior is criminalized or reported to the police. Although there are many other treatments, pharmacological and behavioral, only two antipsychotic medications will be covered. Only literature from the past six years will be covered whereas, direct risk factors for violent behavior in schizophrenics will not be covered in this review as it is beyond the scope of this review. Studies exclusively on women and substance abuse, and their relationship to violence and schizophrenia were also excluded.

First, the link between schizophrenia and violence will be examined through inpatient studies, case register studies and cohort studies. The symptoms of violent or aggressive schizophrenics will be explored next. The

symptoms related to violent schizophrenics that will be detailed are psychopathy, hallucinations and delusions, and biological symptoms. Finally, two antipsychotic medications will be discussed in relation to treating violent schizophrenic patients.

Schizophrenia

Schizophrenia is operationally defined in the literature in terms of medical criteria, and depending on the time and place of the study, different criteria may be used. For example, the Diagnostic and Statistical Manual of Mental Disorders (DSM) has many editions and criteria can change slightly from one edition to the next. Because the literature was conducted in the past five years, the most common DSM diagnostic criteria were the DSM-III-R and the DSM-IV. The diagnoses were most often determined by conducting the Structured Clinical Interview for the current DSM edition. The DSM is used primarily in America whereas the editions of the International Classification of Diseases (ICD) are used abroad. Also because of the time period, the most common ICD used were the ICD-8, ICD-9 and ICD-10. A few of the studies diagnosed schizophrenia by using the Research Diagnostic Criteria (RDC) for schizophrenia. The DSM-III-R, when compared to the RDC requires a "deterioration in psychosocial functioning" (Modestin & Ammann, 1996, p. 71). The RDC requires symptoms to be present for only two weeks while the DSM-III-R requires symptoms to be present for six months (Modestin & Ammann, 1996). The DSM has steadily narrowed its criteria for schizophrenia, making the DSM-IV one of the most restrictive set of criteria (Sue, Sue, & Sue, 2000).

Because of these different editions of classification systems, schizophrenia has been defined differently throughout its history. In the late 19th century, symptoms of hallucinations and delusions were recognized to set in at an early age and were called "dementia praecox" which means early onset insanity (Sue et al., 2000, p. 394). The early 20th century saw a broader definition with a wider variation of symptoms. At that time, international definitions of schizophrenia were more strict than the DSM, which brought about the movement for a more strict definition within the DSM.

Violent Crime

Violent crime is different from violent behavior. Violent crime ranged from "all offenses involving interpersonal aggression or a threat thereof" (Hodgins, Mednick, Brennan, Schulsinger, & Engberg, 1996, p. 490) to specific offenses including murder (Brennan, Mednick, & Hodgins, 2000) assault, aggravated assault, rape, robbery, and gang conflict (Arseneault et al., 2000). Because not all violent acts are criminalized by arrests or convictions, it is important to look at violent behavior that goes unnoticed by the criminal justice system. Violent or aggressive behavior was assessed in a variety of ways in the current body of literature. One study by Arango, Barba, Gonzalez-Salvador, and Ordonez (1999) used the Overt Aggression Scale to measure four types of behavior which are "verbal aggression, physical aggression against objects, physical aggression against self, and physical aggression against others" (p. 496). Often, individuals who committed two or more violent behaviors in a certain time period were considered the violent group. When necessary, the type of behavior will be discussed as the studies are discussed and compared.

Schizophrenia and Violent Behavior

Examining the Link Between Schizophrenia and Violent Behavior

Schizophrenia is often thought to be associated with criminal behavior; however, the level of this association is still questionable. The United States lacks literature on violent schizophrenics, therefore, only two US studies that examine the link between schizophrenia and violence have been reviewed. Due to this lack of literature, the majority of studies reviewed are international which is perhaps due to better record keeping in small countries, the majority of which have socialized medicine and lower crime rates than the US.

United States inpatients and prisoners.

The relationship between violence and schizophrenia is unclear when two studies conducted in America are considered. In a study by Tardiff, Marzuk, Leon, Portera, and Weiner (1997), self admitted patients in a New York private university clinic were divided into different categories, the main ones being schizophrenia, mania, depression and substance abuse. The schizophrenia group was not only composed of schizophrenics but also those with

brief reactive psychosis, psychotic disorder not otherwise specified, or delusional disorder (Tardiff et al.) creating a heterogeneous group. The results of this study indicated that schizophrenics were not more likely to act violently than other patients (i.e. mania, depression, and substance abuse groups). Similarly, schizophrenics, along with those with other mental illnesses were not more likely to have a substance use disorder before admission. When compared to those without mental illness, the Baillargeon and Contreras (2001) study of prescribing patterns in a Texas prison system found that "schizophrenia was significantly elevated among inmates who were incarcerated for having committed violent offenses" (p. 50). The differences in the connection between schizophrenia and crime in these two studies could be due to the fact that the subjects in the Tardiff et al. study were self admitted whereas the subjects in the Baillargeon and Contreras study were convicted criminals. Convicted criminals had already demonstrated violent behavior in the Baillargeon and Contreras study unlike the self-admitted patients used by Tardiff et al. Also, the heterogeneity of the schizophrenic group in the Tardiff et al. study compared to the homogeneous schizophrenic group in the Baillargeon and Contreras study could have made a difference in the results. The differences between the studies in selection of subjects and in heterogeneity of the groups create differences in the results of these two studies, which do not lead to conclusive evidence regarding the connection between schizophrenia and crime.

International inpatients. A link between violence and schizophrenia was found among schizophrenic inpatients abroad (Hodgins, Lapalme, & Toupin, 1999). Schizophrenics were found to have been hospitalized earlier, more frequently, and for longer periods than those with major affective disorders, in a two year follow up study done on inpatients with either major affective disorders or schizophrenia (Hodgins, Lapalme, et al.). Although schizophrenics had more incidents related to hospitalization, the major affective disorder group had twice as many convictions and three times as much violent crime than schizophrenics (Hodgins, Lapalme, et al.). Psychosocial functioning levels, defined as "social handicap" meaning the level of functioning

"during the last acute episode," social functioning during the past five years, and life skills based on independent functioning, were not found to be different between the two groups (Hodgins, Lapalme, et al., p. 191), which may be due to the fact that all patients had to be functioning well enough to be discharged. A difference between the two groups related to drug use was found in that drug use was found to increase violence in the major affective disorder patients; however, it did not have the same effect in the schizophrenic group. This study demonstrates that there is a relationship between violence and schizophrenia but it is not as prevalent as the relationship between violence and other disorders such as major affective disorder.

International case registers. The use of case registers has been frequent in establishing the relationship between schizophrenia and criminal behavior. Often these case registers are records of all those individuals that sought psychiatric help, or all those that were convicted or arrested for a crime. Four studies used case registers that documented convictions as a way to link schizophrenia to criminal behavior (Belfrage, 1998; Modestin & Ammann, 1996; Wallace, Mullen, Burgess, Palmer, Ruschena, & Browne, 1998; Wessely, 1998). Convictions demonstrate guilt and avoid the biases that may be associated with arrests of the mentally ill, such as lack of arrest based on referral to psychiatric services. However, using criminal case registers also tends to underestimate the amount of crimes committed (Modestin & Ammann). Many individuals commit crimes but are not caught. If they are caught, after arrest, the courts may divert some mentally ill from conviction and refer them to psychiatric services (Wallace et al.). The use of case registers also may bias results in that those that sought only public psychiatric services are included (Wallace et al.) or that the register is only for one county that may not be representative of the whole country (Belfrage). Case registers also vary in terms of what sort of crimes they record and in ways to get off of the register. The Swedish Police Register used in the Belfrage study, only removes individuals from the register if they die, turn 80 years old, or do not commit any crimes for ten years. The Swiss Central Criminal Record Department can delete minor convictions after

15 years, however more serious convictions, such as assault and murder, are not deleted (Modestin & Ammann). This database also does not record minor offenses whereas some data bases record all offenses regardless of degree of severity. Case registers also differ in diagnostic tools used to classify individuals with mental disorders. The Stockholm County In-Patient Register based diagnosis on the ICD-9 diagnostic codes for schizophrenia (Belfrage). Other studies used registers to identify contact with psychiatric hospitals or services and then reviewed clinical information to determine diagnosis (Modestin & Ammann; Wessely). The differences in case registers make comparing results of case register studies difficult.

When establishing the link between schizophrenia and crime, researchers have to decide whether or not to compare schizophrenics with other mentally disordered individuals or with the normal population. Wessely (1998) compared a group of schizophrenics to a group of individuals with mental disorders that did not include psychosis. Wallace et al. (1998) also chose to compare a group of schizophrenics to other mentally ill individuals with diagnoses such as affective disorder, personality disorder, and substance misuse disorders. Belfrage (1998) compared his group of schizophrenics to other specific mental illnesses such as affective psychosis and paranoia. Wallace et al. and Belfrage analyzed the criminal rates of the other diagnostic groups and thus made each group homogeneous in regards to a specific disorder whereas, Wessely lumped all other mental disorders into one heterogeneous group. Modestin and Ammann (1996) chose to compare schizophrenics to the general population which creates a problem. As the authors state, "hospital entry procedure likely selects patients at higher risk for violence and therefore criminal conviction" (Modestin & Ammann, p. 77) implying that being in a hospital setting increases the chances that an individual has been violent. Those with schizophrenia were divided into different groups, schizophreniform, acute, and chronic, based on the severity of the disorder as determined by a combination of the RDC criteria and the DSM-III-R criteria and length of hospitalization, which homogenized the groups. The schizophreniform disorder group fulfilled the RDC criteria but not the DSM-III-R criteria and

the acute schizophrenia group fulfilled both the RDC and the DSM-III-R criteria having been hospitalized for less than a year, whereas the chronic schizophrenia group fulfilled both the RDC and the DSM-III-R criteria and had been hospitalized more than one year (Modestin & Ammann). Wallace et al., Wessely, and Belfrage explored the relationship between schizophrenia and violence in the context of mental illness whereas Modestin and Ammann explored the relationship in regards to the general public.

Comparing schizophrenics with other mentally ill patients produced varied results in determining the relationship between schizophrenia and crime. Wessely (1998) found that mentally ill patients did not differ significantly from schizophrenics in the amount of convictions. Schizophrenics however, were more likely to commit violent crimes than controls were. Schizophrenics were significantly associated with interpersonal violence, homicide, property crimes, and sex offenses but were not more strongly associated with these crimes than other mental illness sufferers such as those with affective disorder, personality disorders, or substance misuse disorders (Wallace et al., 1998). Belfrage (1998) found more criminal behavior in schizophrenics compared to controls but schizophrenics did not differ from other mentally ill patients in the types of crimes committed. Contrary to Belfrage, when Modestin and Ammann (1996) compared schizophrenics to the general population, they found that there was no significant difference between groups in convictions but that schizophrenics differed from the general population in that they committed five times as many violent crimes, two and a half times as many property crimes, and three times as many drug offenses. Schizophrenics classified as acute schizophrenics were significantly more likely to commit violent crimes and property crimes. The chronic schizophrenia subgroup in the Modestin and Ammann study had fewer convictions than the acute schizophrenics and schizophreniform schizophrenics. Some of the problems mentioned above such as heterogeneity of groups, differences in registers and use of convictions may have influenced the results of these studies which would explain the inconsistency of results found regarding the link between schizophrenia and crime.

International birth cohort studies. Schizophrenia was found to be related to violence in several birth cohort studies (Arseneault, Moffitt, Caspi, Taylor, & Silva, 2000; Brennan, Mednick, et al., 2000; Hodgins, Mednick, et al., 1996; Räsänen, Tiihonen, Isohanni, Rantakallio, Lehtonen, & Moring, 1998; Tiihonen, Isohanni, Räsänen, Koiranen, & Moring, 1997). It was not, however, found to be associated with violent crime more than other mental disorders or substance use disorders. Although the results were consistent, researchers used different methodologies to investigate this link.

Studies connecting crime and schizophrenia varied on whether they looked at a variety of mental disorders clumped together or at schizophrenia specifically. In the most heterogeneous of study groups, Hodgins, Mednick, et al. (1996) composed a hierarchical list of diagnoses starting with Major Mental Disorders, which included schizophrenia, manic-depressive psychosis, psychogenic psychosis or other psychosis down to those with no mental disorder at all. Brennan et al. (2000) looked at schizophrenia specifically, however, the group still included all subtypes of schizophrenia making the group heterogeneous. In the most homogeneous of study groups, Tiihonen et al. (1997) separated out from the schizophrenia category schizophreniform disorder, schizoaffective disorder and delusional disorder, which are disorders with similar symptoms to schizophrenia but have their own set of diagnostic criteria. Nevertheless, these differences in the homogeneity of the groups does not seem to make a difference in the link between schizophrenia and crime.

Just as different researchers created different groups to examine the association between crime and violence, different definitions of violence and crime were considered. Similar to the use of different group compositions, the use of different definitions did not seem to affect the association between crime and schizophrenia. Because the studies were cohort studies, the authors had the responsibility of tracking down all those with criminal offenses, which was most often accomplished with help from government agencies. Violent crimes were defined as "homicide, assault, robbery, arson, or violation of domestic peace" (Räsänen, Tiihonen, et al., 1998, p. 438). The Hodgins, Mednick, et al.

(1996) study of the Danish cohort also looked for convictions in the police register in which crime was defined as interpersonal violence, theft, fraud, vandalism, severe traffic offenses such as driving a stolen car, drugs, or other unspecified crimes. Brennan et al. (2000) considered arrest data when connecting crime and schizophrenia in order to include those individuals that were found too mentally ill to stand trial. Arseneault et al. (2000) chose to use a police file to determine convictions and self reports to determine violence and crime that goes undetected by the criminal justice system. The use of convictions, arrests and self reports did not influence the connection between schizophrenia and crime.

Perhaps results remain consistent even with heterogeneous groups and different operational definitions of crime and criminal behavior because of the more general association between mental illness and crime. Many mental illnesses are associated with crime and violence (Arseneault et al., 2000; Brennan et al., 2000; Hodgins, Mednick, et al., 1996) and some may in fact be more associated with crime than schizophrenia (Eronen, Hakola, & Tiihonen, 1996; Räsänen, Tiihonen, et al., 1998; Tiihonen et al., 1997). Individuals with mood disorders with psychotic features are at a higher risk for violent criminal behavior than schizophrenics (Tiihonen et al.). Similarly, from the same Finish cohort, the group with other psychoses had a higher rate of violence than those with schizophrenia without alcohol abuse (Räsänen, Tiihonen, et al.). In the Räsänen, Tiihonen, et al. study there were only three individuals without concurrent substance abuse, which severely limits the power of the analyses. Organic brain disorder was found to have the strongest association with arrests in comparison with schizophrenia, affective psychosis, and other psychoses (Brennan et al.). However, all four of these disorders increased the likelihood of arrests when compared to the normal population. Schizophrenia was found to be associated with violence based on arrest rates "regardless of SES [socio-economic status], marital status, and concurrent disorders" (Brennan et al., p. 499). Organic disorders, antisocial personality disorder, drug use disorders, alcohol use disorders and other mental disorders, along with schizophrenia, were all found to increase the likelihood of conviction over

those with no mental disorder (Hodgins, Mednick, et al.). Arseneault et al. found that not only schizophrenia but also substance dependence and marijuana dependence were associated with violence. These studies demonstrate that when compared to a normal population, schizophrenia, along with other mental disorders, is associated with violence. Schizophrenia, however, is not as highly associated with violence, convictions or arrests as other mental illnesses are.

The majority of studies support the idea that the link between schizophrenia and violence is strengthened when substance use disorders are taken into account. Concurrent substance abuse disorders were found to increase the likelihood of violence in several studies (Arseneault et al., 2000; Räsänen, Tiihonen, et al., 1998; Tiihonen et al., 1997). Schizophrenics with alcohol abuse problems committed almost four times as many violent crimes than schizophrenics without alcohol abuse, however, both committed more violent crimes than the normal population (Tiihonen et al.). In another study, although rates of violence were high among schizophrenics without substance use problems, the rates increased for both schizophrenia with concurrent alcohol abuse and schizophrenia with concurrent marijuana use (Arseneault et al.). Specifically, Räsänen, Tiihonen, et al. found that schizophrenics with alcoholism were 25.2 times more likely to commit crimes than the normal population was. Arseneault et al. took into account the fact that not all people with substance use disorder are under the influence when committing a crime, which decreased the association between substance dependence and crime. Brennan et al. (2000) found that violence was high among schizophrenics regardless of other disorders, including substance abuse disorders. Concurrent substance abuse disorders increase the likelihood of violence considerably, however, they cannot be assumed to always contribute to the connection between violence and schizophrenia.

Schizophrenia and homicide specifically have been found to be associated in Finland (Eronen, Hakola, et al., 1996; Eronen, Tiihonen, & Hakola, 1996). However, like more general violent crimes, other mental disorders are also associated, if not more so, with homicide (Eronen, Hakola, et al.; Eronen, Tiihonen, et al.). In a study of most homicidal offenses between

1984 and 1991, schizophrenia increased the odds ratio for homicide eight times while antisocial personality or alcoholism increased the odds ratio ten times (Eronen, Hakola, et al.). Eronen, Tiihonen, et al. looked at a larger sample of homicide offenders between 1980 and 1991 and found that schizophrenia increased the odds ratio ten times when alcoholism was not controlled. Schizophrenics with alcoholism had an increased odds ratio of seventeen times and those without alcoholism had an increase of only seven times. Like other studies of general violent crimes, homicides were found to be elevated among schizophrenics and even more so among schizophrenics with alcoholism. The link between homicide and schizophrenia is present, however, it is also present among other mentally ill individuals.

The results from Denmark and Finland are highly generalizable to other Scandinavian countries. Arseneault et al. (2000) claim their results to be generalizable to Scandinavian countries and the United States. Results from these studies, however, are only comparable to countries with similar social systems and mental health care systems. Also, the crime rates in these countries are not as high as in America and the conviction rates in the Finish homicide studies are far greater than the conviction rate in America which diminishes the generalizability (Tiihonen et al., 1997). However, these studies are important for understanding the international differences between schizophrenia and violent or criminal behavior. Understanding more about schizophrenia and violence in other cultures will help American researchers focus research efforts in America.

Characteristics and Symptoms of Violent Schizophrenics

After establishing the link between violence, crime, and schizophrenia it is important to look at the symptoms of the schizophrenics that participate in these behaviors. In order to obtain an accurate representation of the characteristics of a violent schizophrenic, a number of symptoms and characteristics are considered, including psychiatric symptoms, personality characteristics, social skills, and inpatient behaviors (Flannery, Penk, Irvin, & Gallagher, 1998; Krakowski, Czobor, & Chou, 1999; Rasmussen & Levander, 1996; Steinert, Hermer, & Faust, 1996; Tengström, Hodgins, & Kullgren, 2001).

Symptoms such as hostility, uncooperativeness, poor impulse control (Arango, et al., 1999; Cheung, Schweitzer, Crowley, & Tuckwell, 1997a), and suspiciousness (Arango et al.) are associated with violent schizophrenics. These studies used the Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein, & Lewis, 1987 as cited in Cheung et al., 1997a) to measure type of symptoms and the severity of symptoms. Although Krakowski et al. (1999) used the Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962 as cited in Krakowski et al.) they also found that hostility and suspiciousness, along with other symptoms, were related to violent schizophrenics. Impaired anxiety and depression were found among persistently violent patients at the beginning of the four week evaluation. At the end of the four weeks, persistently violent patients were more impaired than transiently violent patients in hostility, suspiciousness and anergia. Transiently violent schizophrenics generally had less severe symptoms and showed improvement in psychiatric symptoms at the end of the four week evaluation. Krakowski et al. found more symptoms associated with violence most likely due to the homogeneity of the groups.

The symptoms of violent schizophrenics have been studied with many different methods. In a study by Tengström et al. (2001), violent schizophrenics were divided into early and late starter groups in which early starters were convicted of their first offense before age 18 and late starters were convicted after the age of 18. This division made the groups more homogeneous and therefore the statistical tests were more powerful. Tengström et al. accounted for the fact that individuals that commit crimes early in life may have different characteristics than those that do not commit crimes until later in life. Steinert, Hermer, and Faust (1996) chose to divide schizophrenics into groups based on those with aggressive behavior and those without aggressive behavior. Similarly, Krakowski, Czobor, and Chou (1999) and Flannery, Penk, Irvin, and Gallagher (1998) divided their subjects into those that were violent and those that were nonviolent. Krakowski et al. ensured a violent pattern of behavior by noting those that were violent in the first two months at the hospital and then had another assault during the next four weeks. This eliminated miscategorizing random acts of

violence into the violent group. The violent group was then divided into persistently violent and transiently violent which increased homogeneity of the groups. Flannery et al. also increased homogeneity within the violent group when they divided their violent group into those that were interpersonally violent and those that were not interpersonally violent. Interpersonal acts were those that were physical against another person while noninterpersonal acts were verbal assaults or violence against property. The homogeneity of the groups helped identify what characteristics were specific to violent schizophrenics of many types.

Violent schizophrenics and nonviolent schizophrenics differ in terms of community adjustment and hospital adjustment. Violent patients were found to be less depressed but to have more problems with community adjustment and self care (Flannery et al., 1998) whereas nonviolent patients had better social skills but were more disorganized within the hospital. Steinert, Hermer, et al. (1996) found that nonaggressive patients were significantly more likely to live with a stable partner such as a spouse. Aggressive patients were also significantly more likely to stay in an institution twice as long as nonaggressive patients (Steinert, Hermer, et al.). Similarly, in a study of maximum security psychiatric unit patients admitted between July 1987 and November 1993, the length of stay in psychiatric institutions and maximum security hospitals was found to be positively correlated to levels of schizophrenic symptoms (Rasmussen & Lavander, 1996). Violent patients also demonstrated more disturbed ward behaviors, could not follow rules, and were more irritable compared to nonviolent patients in a study by Krakowski et al. (1999).

Medications for schizophrenia often influence the type or amount of symptoms the individual has. In the study by Krakowski et al. (1999) medications were monitored to avoid error. Most subjects in the study by Rasmussen and Lavander (1996) were on antipsychotic, or neuroleptic medications, which may have resulted in more negative symptoms being present than positive symptoms which is characteristic of neuroleptic medications. Rasmussen and Lavander defined negative and positive symptoms in accordance with standard psychological descriptions such that negative symptoms include

"poor social ability," "lack of social interest," and "poverty of language" whereas positive symptoms include different types of delusions, hallucinations, and disorganized speech (Rasmussen & Lavander, p. 32). Therefore, it is unknown what sort of symptoms violent schizophrenics have when they are not on medication. Other studies have failed to report the prevalence of neuroleptic medications in their subjects which possibly affects the results, specifically those related to positive symptoms (Flannery et al., 1998; Steinert, Hermer, et al., 1996).

Psychopathy and antisocial personality disorder. Psychopathy and antisocial personality disorder (APD or ASPD) are not the same concept. Although most psychopaths have APD, not all individuals with APD are psychopaths (Nolan, Volavka, Mohr, & Czobor, 1999). Both of these conditions have been studied in relation to their influence on violent behavior in schizophrenics. APD has been linked to schizophrenics that begin offending early in life (Steinert, Voellner, & Faust, 1998; Tengström et al., 2001). Hodgins, Lapalme, et al. compared rates of ASPD according to the Research Diagnostic Criteria (RDC) of those convicted to those that were not convicted during a two year follow up of discharged patients. They found that, generally, mentally ill individuals had higher ASPD results. Of individuals convicted of criminal behavior, schizophrenics were found to have a higher rate of APD than individuals with major affective disorders (Hodgins, Lapalme, et al., 1999). These associations however are not clearly related to violence in schizophrenia. Steinert, Voellner, et al. and Tengström et al. failed to have controlled comparison groups of nonviolent schizophrenics, which would have provided more definite findings of an association between violence and APD. Hodgins, Lapalme, et al. failed to compare convicted schizophrenics specifically with nonconvicted schizophrenics. Currently, APD is not clearly associated with violence among schizophrenics and may be associated with the general symptomology of schizophrenia.

A clear association between APD and schizophrenia cannot be established also due to the retrospective nature of the studies conducted (Steinert, Voellner, et al., 1998; Tengström et al., 2001). Steinert, Voellner, et al. used the chart information, psychiatric reports from crimi-

nal trials, and information from relatives in order to assess cases of APD according to the DSM-III-R. The authors attempted to reduce error by eliminating a subject that fulfilled some but not all criteria for APD, therefore making the groups homogeneous. Tengström et al. attempted to assess ASPD according to the DSM-IV when the patients were symptom free in order to avoid an overlap of symptoms. This attempted to determine ASPD status regardless of schizophrenic symptoms, which is important in determining the relationship between schizophrenia, APD and violence. However, this also has the same error that retrospective evaluations create. Although the relation to violence is not determined, a study of violent schizophrenics admitted to a maximum security psychiatric unit found that dual diagnoses of schizophrenia and APD was the most common dual diagnosis (Rasmussen & Levander, 1996). Therefore, further investigation into the role of APD in violent schizophrenia is warranted.

Psychopathy, measured by the Psychopathy Check List: Screening Version (PCL:SV; Hart, Cox, & Hare, 1995 as cited in Nolan et al.), is associated with violence in schizophrenia when a matched comparison group is considered (Nolan et al., 1999). Violent schizophrenics, when compared to a matched group of nonviolent schizophrenics, had higher PCL:SV total scores, higher scores related to interpersonal traits, and higher scores related to antisocial traits, more arrests, and lower socioeconomic status (Nolan et al.). In a group of violent maximum security psychiatric patients, psychopathy was assessed by the PCL-R (Hare, 1990 as cited in Rasmussen & Levander, 1996) and schizophrenia was found in 55% of psychopaths. However, this study lacked a comparison group of nonviolent schizophrenics, which would clarify the association between psychopathy and violence in schizophrenia. The subjects were also the most violent of the mentally ill because they were selected from a maximum security psychiatric unit that houses patients found to be too dangerous for other facilities. The Nolan et al. study includes patients with substance abuse disorders, however, no association between substance abuse and psychopathy was found. Substance abuse, however, was considerably higher among violent patients than controls which may be a confounding variable. The association between psychopathy and violent schizophrenics is not as clear as it could

be if more controlled studies were conducted with the appropriate matched comparison groups.

Hallucinations and delusions. The association between hallucinations and delusions and violence is unclear. Limited amounts of significant results have linked hallucinations and delusions to violence. An inpatient study in Australia compared violent to matched nonviolent schizophrenics to look at the differences in hallucinations and delusions (Cheung, Schweitzer, Crowley, & Tuckwell, 1997b). In regards to delusions, the violent group was significantly more likely to suffer from persecutory delusions than the nonviolent group which was more likely to suffer from grandiose delusions. Violent patients had hallucinations that were associated with negative emotions, tone and content, whereas, nonviolent patients reported hallucinations as more positive in emotion, tone and content (Cheung et al., 1997b). Command hallucinations were not related to violence because the groups did not differ in the amount of command hallucinations. Zisook, Bryd, Kuck, and Jeste (1995) looked at the differences in violence between outpatients with command hallucinations and without command hallucinations. No significant differences were found in terms of global psychopathology, negative or positive symptoms, or history of violent behavior (Zisook et al.).

Zisook et al. (1995) may not have found a significant difference in violent or impulsive acts between the groups because the command hallucination group included individuals with violent hallucinations as well as benign hallucinations. In both studies, the number of individuals in each group was also not large enough to provide a large amount of power. Assessing a subjective behavior such as auditory hallucinations, creates a problem predicting or assessing violent behavior (Zisook et al.) in that subjects do not always indicate the presence of auditory hallucinations. In the Zisook et al. study, the subjects were outpatients which implies a level of functioning higher than inpatients. This level of functioning may be based on less severe symptoms which may make the groups used in this study similar in that regard. This may be why Cheung et al. (1997b) found some significant results while Zisook et al. did not. Retrospective studies, such as the Zisook et al. study, contain error in that only clinical charts with enough information can be used for analysis. Negative

content of hallucinations or delusions were found to be related to violent behavior (Cheung et al., 1997b) but command hallucinations were not necessarily associated with violent behavior (Zisook et al.).

Biological characteristics. Biological factors such as serotonin and testosterone levels are not associated with violence in schizophrenics. A small study in the Czech Republic matched a group of nonviolent patients to violent patients in order to compare levels of serotonin, specifically, CSF 5-HIAA (Kunz, Sikora, Krakowski, Convit, Cooper, & Volavka, 1995). Similarly in Finland, serum testosterone levels were examined in schizophrenics, personality disordered individuals, and controls with no mental disorder (Räsänen, Hakko, et al., 1999). Both studies looked at violent behavior retrospectively by examining clinical and police records. The violent group in the Kunz et al. study was heterogeneous in the fact that they included both recently aggressive individuals who were aggressive in the past two months along with historically aggressive individuals who were aggressive in the past two years. There may be differences in serotonin levels based on the amount of time since the aggressive behavior. Perhaps, if a larger sample had been examined, these two types of aggressive behavior could have been looked at separately. Kunz et al. matched their participants on dosage of neuroleptic medication, which reduces the effects differences in medication had on results. Kunz et al. made a point of drawing serotonin for matched subjects on the same days. Räsänen, Hakko et al. also ensured that the sample of serum testosterone was taken no more than six months after the violent incident. Although Kunz et al. attempted to match subjects on the bases of antipsychotic medication, in both studies medication may have influenced the results. As identified by Kunz et al., medication may not have had enough time to be cleared from the brains of the individuals. Räsänen, Hakko, et al. also identified the fact that testosterone levels may decrease as a result of antipsychotic treatment.

In sum, testosterone levels were not related to violence because of the failure to find significant differences between schizophrenics and controls (Räsänen, Hakko, et al., 1999). No significant difference was found between violent

and nonviolent schizophrenics in terms of CSF 5-HIAA levels (Kunz et al., 1995). Further studies attempting to link testosterone or serotonin levels to violent schizophrenics may find more significant results with larger groups of participants.

Atypical Drug Treatments

Once the symptoms of violent schizophrenics have been discussed it is important to look at treatments that can perhaps limit the number of violent acts schizophrenics commit. A common way for psychiatrists to help schizophrenics deal with symptoms has been to prescribe antipsychotic, or neuroleptic, medications. However, in a study of schizophrenic outpatients, medication noncompliance was associated with the severity of symptoms such as hallucinations or delusions (Duncan & Rogers, 1998). Schizophrenics are often readily involved in behavioral treatments, however, their resistance to medications creates the problem of dealing with symptoms that can not be suppressed otherwise (Duncan & Rogers). Duncan and Rogers proposed that patients may not be taking their medications because of low levels of functioning or because of bad side effects that discourage the patient from taking the drug. Therefore, it is important to examine how to get patients to take medications by examining which medications have the most benefit with the least amount of side effects.

Before examining the effectiveness of various drugs, prescribing patterns must be identified to determine what sort of drugs are already commonly in use. There are many different classes and kinds of drugs to choose from; in general neuroleptic medications result in an overall calming effect on the individual as well as decreased interest in environmental stimuli (Julien, 1998). "Atypical" medications, are the new generation of antipsychotic medications and have been found to produce less adverse side effects and higher compliance among patients than typical medications (Marder, Davis, & Chouinard, 1997 as cited in Baillargeon & Contreras, 2001). Although these findings indicate they may be more helpful in treating violent schizophrenics, atypical medications may not be prescribed as often as typical medications due to their higher cost. Atypical medications differ from conventional or typical medications in both their chemical structure and their

receptor-binding profile (Beck, Greenfield, Gotham, Menditto, Stuve, & Hemme, 1997). Atypical antipsychotic medications also have been found to be more effective than typical antipsychotic medications in treating negative symptoms and also do not result in motor problems such as tremors or rigidity as typical antipsychotic medications do (Julien).

It is important to know whether psychiatrists are using atypical drugs in a variety of settings. Baillargeon and Contreras (1998) researched this by conducting a study in Texas to look at the Texas prison system's prescribing patterns for antipsychotic medications using subjects with either schizophrenia or a nonschizophrenic psychotic disorder that were prescribed antipsychotic medication. Unlike the Duncan and Rogers (1998) study in which the patients had the choice of not taking the drug, forensic patients in the Baillargeon and Contreras study were required to take the medication prescribed to them. Of the schizophrenic inmates, 85.4% were prescribed typical antipsychotic medications whereas only 14.6% were prescribed atypical medications (Baillargeon & Contreras). This large discrepancy is perhaps due to the requirement of the Texas Department of Criminal Justice that inmates be treated with typical medications before atypical medications because of the high cost of atypical medications (Baillargeon & Contreras). This result is also only representative of a prison population and may be different in psychiatric or community settings.

Before working to change the discrepancy present in the Baillargeon and Contreras study, the effects of atypical drugs, such as clozapine and risperidone, on reducing aggression or violent behavior will have to be examined. Clozapine and Risperidone were reviewed here because they are relatively new drugs in the treatment of violent schizophrenics and therefore, are just beginning to be researched (The Special Hospitals' Treatment Resistant Schizophrenia Research Group, 1996).

Clozapine. Clozapine is becoming the primary treatment for "severe 'neuroleptic-refractory' forms of schizophrenia" according to Buckley, Bartell, Donenwirth, Lee, Torigoe, and Schulz (1995, p. 608). It is characterized by its ability to treat schizophrenics that are treatment resistant and its ability to treat negative

symptoms without causing motor disturbances (Julien, 1998). Two studies using schizophrenic patients that had been unresponsive to at least three previous trials of typical neuroleptics were conducted to look at the effects of clozapine on aggressive behavior in schizophrenia (Buckley, Bartell, et al.; Rabinowitz, Avnon, & Rosenberg, 1996). Buckley, Bartell, et al. had a control group of nonviolent individuals, also on clozapine, to assess the different effects the drug had. The researchers distinguished the violent from the nonviolent individuals based on seclusion and restraint records and the Brief Psychiatric Rating Scale (BPRS) scores. Rabinowitz et al. collected all aggressive incidents from the patients' charts. The quantity of aggressive incidents may be underreported, thus affecting the results. Using more measures of aggression could lead to reports that are more accurate descriptions of aggression and psychiatric characteristics related to aggression.

Overall, clozapine was found to reduce aggressive behavior in schizophrenics. Both Rabinowitz et al. (1996) and Buckley, Bartell, et al. (1995) collected data prior to treatment and then again four to six months after the start of treatment. Significant differences were found between patients in regards to both verbal and physical aggression before clozapine treatment and the first three months of treatment (Rabinowitz et al.). There was no significant difference between the last three months of treatment and the first three months of treatment or the months prior to treatment. Buckley, Bartell, et al. also found significantly less aggression after clozapine based on the number and length of seclusion and restraint incidences. Violent subjects were also found to have higher BPRS scores than nonviolent subjects before clozapine; however, during treatment the violent group and the nonviolent group were found to have similar scores indicating a reduction of violent symptoms.

It should be noted that Rabinowitz et al. (1996) systematically increased the doses of clozapine until an average of 350mg was reached per day whereas Buckley, Bartell, et al. (1995) did not control the amount of clozapine given to the patients, reporting only that violent patients were on higher doses of clozapine at the end of the study than those that were nonviolent.

It should also be noted that in both studies, clozapine was documented to have a small negative result. In the Rabinowitz et al. (1996) study, 15% of subjects showed more physical aggression during clozapine treatment and 25% of subjects showed more verbal aggression. However, the increases in aggression were minimal in comparison to the decreases in aggression. Therefore, even with these cases in mind, the benefits of using clozapine still seem to outweigh the negative effects.

Risperidone. Risperidone, like clozapine, is an atypical antipsychotic medication that has been linked to reducing levels of aggression in schizophrenics. Patients in which other medications do not produce effects are often prescribed risperidone to reduce their positive symptoms (Julien, 1998). However, two studies comparing aggressive behaviors in patients taking typical neuroleptics and risperidone found no significant difference between typical antipsychotic medications and risperidone (Beck et al., 1997; Buckley, Ibrahim, Singer, Orr, Donenwirth, & Brar, 1997). The study by Beck et al. (1997) was retrospective in nature and looked at past aggressive behaviors on patients' charts to determine level of aggression. Buckley, Ibrahim, et al. (1997) measured the level of aggression by the time spent in seclusion and restraint, similar to the Buckley, Bartell, et al. (1995) study on clozapine. Therefore, both of these measures may include some error because of potential underreporting of aggression in patients' charts. However, the control groups in both studies were matched to the experimental group, which reduces error.

More specifically the results indicate a high level of similarity between patients on risperidone compared to patients on typical antipsychotic medications. Both Buckley, Ibrahim, et al. (1997) and Beck et al. (1997) reported no significant difference between the control group and the experimental group in the decrease of aggression throughout the study. Buckley, Ibrahim, et al. did however demonstrate a significant main effect of time which indicates the medication did not decrease violent behavior but that the time in the hospital did. The amount of time spent in a hospital may decrease aggressive behavior as the patient learns the functioning and rules of the hospital. Buckley, Ibrahim, et al. suggest that the decrease in

aggression across both groups could be a result of changes in the policies of the hospital. Because Buckley, Ibrahim, et al. only looked at seclusion and restraint data, there is no way to determine if changes in policy regarding seclusion and restraint affected the results. This limitation can be solved by including other measures of aggression and aggressive attitudes, as Beck et al. did.

Comparison groups in each study were important in determining the results. If no comparison group had been present, the decrease in aggressive behavior with risperidone would have been attributed solely to risperidone; however, because comparisons were made to typical antipsychotic medications the effectiveness of the two types of medications were not found to be different. Perhaps larger groups of subjects would produce a significant result.

CONCLUSIONS

Violent acts committed by schizophrenics influence public opinion on the distance people keep from schizophrenics (Angermeyer & Matschinger, 1996). The public only hears isolated incidents and therefore, overestimates the link between schizophrenia and crime. It is important to study the connection between schizophrenia and crime in order to better educate the public about the risks schizophrenics present. By educating the public on the degree of the connection between schizophrenia and crime, more services may become available or more people may be willing to work with schizophrenics. An examination of the current literature in this area demonstrates that the association between crime and schizophrenia is present however, it is not as strong as people think and may not be as strong as the link other mental disorders have to crime (Brennan et al., 2000; Tiihonen et al., 1997).

Symptoms of violent schizophrenics generally include hostility and suspiciousness (Arango et al., 1999; Cheung et al., 1997a). Once the connection and the symptoms that relate schizophrenia to crime are determined, treatments are considered. Atypical treatments are still being investigated to determine their effectiveness at treating violent behavior in schizophrenics. The positive effects of clozapine have been found to outweigh the negative effects (Buckley, Bartell, et al., 1995; Rabinowitz et al.,

1996). Risperidone's benefit over typical medications is still in question (Beck et al., 1997; Buckley, Ibrahim, et al., 1997).

Future research needs to include more homogeneous groups of schizophrenics. Attempts to distinguish early starters from late starters have begun to identify differences within groups of schizophrenics (Tengström et al., 2001). When heterogeneous groups are used it is difficult to tell what effect schizophrenia has had on the presence of violence or specific symptoms. Violent schizophrenic groups also need to be matched with nonviolent schizophrenics. Future research needs to include larger samples in order to make the results more powerful. One major obstacle is obtaining accurate research on the association of crime and schizophrenia without concurrent substance abuse. In previous studies, only a few subjects did not have substance abuse disorders which makes comparisons difficult (Tiihonen et al., 1997). There is also a lack of cross cultural research. The majority of studies were done in Scandinavian countries with the exceptions of Canada, New Zealand and a few American studies. The use of specific populations makes it difficult to determine if schizophrenia and violent behavior may be a function of society or race. Research on violent schizophrenics does not serve to perpetuate the stereotype; it serves to recognize the connection and take steps to treat it.

REFERENCES

Angermeyer, M. C. (2000). Schizophrenia and violence. *Acta Psychiatrica Scandinavica*, 102(Suppl. 407), 63-67.

Angermeyer, M. C., & Matschinger, H. (1996). The effect of violent attacks by schizophrenic persons on the attitude of the public towards the mentally ill. *Social Science Medicine*, 43, 1721-1728.

Arango, C., Barba, A. C., González-Salvador, T., & Ordóñez, A. C. (1999). Violence in inpatients with schizophrenia: A prospective study. *Schizophrenia Bulletin*, 25, 493-503.

Arseneault, L., Moffitt, T. E., Caspi, A., Taylor, P. J., & Silva, P. A. (2000). Mental disorders and violence in a total birth cohort: Results from the Dunedin Study. *Archives of General Psychiatry*, 57, 979.

Baillargeon, J., & Contreras, S. A. (2001). Antipsychotic prescribing patterns in the Texas prison system. *Journal of the American Academy*

of Psychiatry and the Law, 29, 48-53.

Beck, N. C., Greenfield, S. R., Gotham, H., Menditto, A. A., Stuve, P., & Hemme, C. A. (1997). Risperidone in the management of violent, treatment-resistant schizophrenics hospitalized in a maximum security forensic facility. *Journal of the American Academy of Psychiatry and the Law*, 25, 461-468.

Belfrage, H. (1998). A ten-year follow-up of criminality in Stockholm mental patients. *British Journal of Criminology*, 38, 145-155.

Brennan, P. A., Mednick, S. A., & Hodgins, S. (2000). Major mental disorders and criminal violence in a Danish birth cohort. *Archives of General Psychiatry*, 57, 494-500.

Buckley, P., Bartell, J., Donenwirth, K., Lee, S., Torigoe, F., & Schulz, C. (1995). Violence and schizophrenia: Clozapine as a specific antiaggressive agent. *Bulletin of the American Academy of Psychiatry and the Law*, 23, 607-611.

Buckley, P. F., Ibrahim, Z. Y., Singer, B., Orr, B., Donenwirth, K., & Brar, P. S. (1997). Aggression and schizophrenia: Efficacy of risperidone. *Journal of the American Academy of Psychiatry and the Law*, 25, 173-181.

Cheung, P., Schweitzer, I., Crowley, K., & Tuckwell, V. (1997a). Aggressive behaviour in schizophrenia: The role of psychopathology. *The Australian and New Zealand Journal of Psychiatry*, 31, 62-67.

Cheung, P., Schweitzer, I., Crowley, K., & Tuckwell, V. (1997b). Violence in schizophrenia: Role of hallucinations and delusions. *Schizophrenia Research*, 26, 181-190.

Duncan, J. C., & Rogers, R. (1998). Medication compliance in patients with chronic schizophrenia: Implications for the community management of mentally disordered offenders. *Journal of Forensic Science*, 43, 1133-1137.

Eronen, M., Hakola, P., & Tiihonen, J. (1996). Mental disorders and homicidal behavior in Finland. *Archives of General Psychiatry*, 53, 497-501.

Eronen, M., Tiihonen, J., & Hakola, P. (1996). Schizophrenia and homicidal behavior. *Schizophrenia Bulletin*, 22, 83-90.

Flannery, R. B. Jr., Penk, W. E., Irvin, E. A., & Gallagher, L. (1998). Characteristics of violent versus nonviolent patients with schizophrenia. *Psychiatric Quarterly*, 69, 83-93.

Hector, R. I. (1998). The use of clozapine

- in the treatment of aggressive schizophrenia. *Canadian Journal of Psychiatry*, 43, 466-472.
- Hodgins, S., Lalonde, M., & Toupin, J. (1999). Criminal activities and substance use of patients with major affective disorders and schizophrenia: A 2-year follow-up. *Journal of Affective Disorders*, 55, 187-202.
- Hodgins, S., Mednick, S. A., Brennan, P. A., Schulsinger, F., & Engberg, M. (1996). Mental disorder and crime: Evidence from a Danish birth cohort. *Archives of General Psychiatry*, 53, 489-496.
- Julien, R. M. (1998). *A Primer of Drug Action* (8th ed.). New York: W. H. Freeman and Company.
- Krakowski, M., Czobor, P., & Chou, J. C. (1999). Course of violence in patients with schizophrenia: Relationship to clinical symptoms. *Schizophrenia Bulletin*, 25, 505-517.
- Kunz, M., Sikora, J., Krakowski, M., Convit, A., Cooper, T. B., & Volavka, J. (1995). Serotonin in violent patients with schizophrenia. *Psychiatry Research*, 59, 161-163.
- Miller, B. (1999). Weston's mind-set de tailed. *The Washington Post*, pp. A1, A14.
- Modestin, J. (1998). Criminal and violent behavior in schizophrenic patients: An overview. *Psychiatry and Clinical Neurosciences*, 52, 547-554.
- Modestin, J., & Ammann, R. (1996). Mental disorder and criminality: Male schizophrenia. *Schizophrenia Bulletin*, 22, 69-82.
- Nolan, K. A., Volavka, J., Mohr, P., & Czobor, P. (1999). Psychopathy and violent behavior among patients with schizophrenia or schizoaffective disorder. *Psychiatric Services*, 50, 787-792.
- Rabinowitz, J., Avnon, M., & Rosenberg, V. (1996). Effects of clozapine on physical and verbal aggression. *Schizophrenia Research*, 22, 249-255.
- Räsänen, P., Hakko, H., Visuri, S., Paanila, J., Kapanen, P., Suomela, T., et al. (1999). Serum testosterone levels, mental disorders and criminal behaviour. *Acta Psychiatrica Scandinavica*, 99, 348-352.
- Räsänen, P., Tiihonen, J., Isohanni, M., Rantakallio, P., Lehtonen, J., & Moring, J. (1998). Schizophrenia, alcohol abuse, and violent behavior: A 26-year followup study of an unselected birth cohort. *Schizophrenia Bulletin*, 24, 437-441.
- Rasmussen, K., & Levander, S. (1996). Symptoms and personality characteristics of patients in a maximum security psychiatric unit. *International Journal of Law and Psychiatry*, 19, 27-37.
- Steinert, T., Hermer, K., & Faust, V. (1996). Comparison of aggressive and non-aggressive schizophrenic inpatients matched for age and sex. *European Journal of Psychiatry*, 10, 100-107.
- Steinert, T., Voellner, A., & Faust, V. (1998). Violence and schizophrenia: Two types of criminal offenders. *European Journal of Psychiatry*, 12(3), 153-165.
- Sue, D., Sue, D. W., & Sue, S. (2000). *Understanding Abnormal Behavior* (6th ed.). Boston: Houghton Mifflin Company.
- Tardiff, K., Marzuk, P., Leon, A. C., Portera, L., & Weiner, C. (1997). Violence by patients admitted to a private psychiatric hospital. *American Journal of Psychiatry*, 154, 88-93.
- Tengström, A., Hodgins, S., & Kullgren, G. (2001). Men with schizophrenia who behave violently: The usefulness of an early- versus late-start offender typology. *Schizophrenia Bulletin*, 27, 205-218.
- Tiihonen, J., Isohanni, M., Räsänen, P., Koiranen, M., & Moring, J. (1997) Specific major mental disorders and criminality: A 26-year prospective study of the 1996 Northern Finland Birth Cohort. *American Journal of Psychiatry*, 154, 840-845.
- Wallace, C., Mullen, P., Burgess, P., Palmer, S., Ruschena, D., & Browne, C. (1998). Serious criminal offending and mental disorder. *British Journal of Psychiatry*, 172, 477-484.
- Wessely, S. (1998). The Camberwell study of crime and schizophrenia. *Social Psychiatry and Psychiatric Epidemiology*, 33(Suppl. 1), 24-28.
- Zisook, S., Byrd, D., Kuck, J., & Jeste, D. V. (1995). Command hallucinations in outpatients with schizophrenia. *The Journal of Clinical Psychiatry*, 56, 462-465