Psychiatric status, self control and violence: Application of the general theory of crime

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Psychiatric status, self control and violence: Application of the general theory of crime

Abstract
Previous studies have suggested that psychiatric patients are more likely to be violent then the individuals in the general population. This thesis uses data collected in MacArthur Violence Risk Assessment Study to compare violent behaviors perpetrated by psychiatric patients in 10 weeks after their release from a psychiatric hospital and by subjects living in a similar community setting. Furthermore, Gottfredson and Hirschis's (1990) self control theory is applied to examine etiological causes of violence. The outcomes suggest that psychiatric patients were more likely to be violent during the study period than the community control subjects. The difference in violence rates between these groups did not remain statically significant when a self control measure was introduced in the multiple logistic regression analysis, controlling for social and demographic variables and social desirability.

Keywords
Sociology, Criminology and Penology, Psychology, Clinical, Health Sciences, Mental Health
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PSYCHIATRIC STATUS, SELF CONTROL AND VIOLENCE: APPLICATION OF THE GENERAL THEORY OF CRIME

BY

FEODOR A. GOSTJEV

Sociology and Justice Studies, BA, University of New Hampshire, 2008

THESIS

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ABSTRACT

PSYCHIATRIC STATUS, SELF CONTROL AND VIOLENCE: APPLICATION OF THE GENERAL THEORY OF CRIME

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University of New Hampshire, May, 2010

Previous studies have suggested that psychiatric patients are more likely to be violent than the individuals in the general population. This thesis uses data collected in MacArthur Violence Risk Assessment Study to compare violent behaviors perpetrated by psychiatric patients in 10 weeks after their release from a psychiatric hospital and by subjects living in a similar community setting. Furthermore, Gottfredson and Hirschis’s (1990) self control theory is applied to examine etiological causes of violence. The outcomes suggest that psychiatric patients were more likely to be violent during the study period than the community control subjects. The difference in violence rates between these groups did not remain statistically significant when a self control measure was introduced in the multiple logistic regression analysis, controlling for social and demographic variables and social desirability.
CHAPTER I

INTRODUCTION

The perpetration of violent and aggressive actions by the mentally ill individuals has become an important topic of research because today the mentally ill are no longer separated from the general population by the means of long term psychiatric hospitalization. Since the mental health system in the United States has undergone major changes in the middle of the twentieth century, the locus of the long term inpatient care has been replaced by the use of much shorter psychiatric admissions and by the outpatient treatment. As a result of mental health system reforms, the process preceding the voluntary and involuntary admission of disordered persons into inpatient psychiatric care became much more bureaucratically complex and less time efficient, further limiting the accessibility of the long term inpatient treatment.

At the present time, the potential risks of the community treatment model require eclectic assessment in order to insure the welfare and safety of both the mentally ill individuals and members of the community. The clear understanding of etiology of risky and dangerous behaviors in the mentally ill population is paramount to the prevention of stigmatization of the disordered individuals. Also, the risk of perpetration of violent and aggressive behaviors has become a key factor influencing involuntary commitment decisions, and thus, the study of violent behaviors among the mentally ill is important to practical and functional improvement of current treatment models (Monahan et al., 2001).
A broader scientific look at the causes of violence among mentally ill individuals is needed because the mentally ill today spend much more time in the community setting and, so, are exposed to the social ills and strains known to affect the risks of deviance in members of the wider society. While it is unequivocally important to understand how psychiatric conditions may affect the risk of perpetration of crime and violence, consideration of behavioral tendencies acquired through the process of socialization of the mentally ill individuals could further inform the current research efforts. Some researchers have argued that any scientific effort to study criminal or violent behavior perpetrated by the mentally ill could greatly benefit from engaging the disciplines like criminology (Fisher, Silver, & Wolf, 2006).

The current inquiry aims to further examine the utility of the application of criminological theory and methods of analysis in the studies of violent behavior perpetrated by the psychiatric patients released into the community. Furthermore, I explore whether the psychiatric patients are more violent than individuals living in a similar community setting when criminological variables are considered.

While a number of criminological theories have been applied in the mental illness and violence research, no previous studies have considered psychiatric patient violence in the theoretical context proposed by Gottfredson and Hirschi (1990) in A General Theory of Crime. The self control theory put forth by Gottfredson and Hirschi (1990) is one of the most debated theories within the criminological discipline. The theory relies on a single construct labeled- self control- as the major factor underlying all criminal and imprudent behaviors that comprise a deviant lifestyle and lead to further negative social consequences. Previous studies have also indicated that there is a connection between the
life-stable individual tendency to exercise low self control and the perpetration of various violent and aggressive actions.

While the construct of self control and the publication *A General Theory of Crime* have generated a great deal of attention in academic circles, the applicability of Gottfredson and Hirschi’s (1990) theory in studies of violence perpetrated by the mentally ill has not been explored by previous research. As conceived by Gottfredson and Hirschi (1990), self control is an individual level characteristic that affects the behavioral choices of individuals throughout the life-course and is not dependent on psychiatric wellbeing.

I will argue that self control is a construct capable of providing new evidence on whether psychiatric patients are more violent than individuals in the general population. By using the data collected in the MacArthur Violence Risk Assessment Study (Monahan et al., 2001), I aim to examine whether self control has a stronger association with the perpetration of violence than psychiatric status and alcoholism.

The main goals of the current research are to identify (a) whether psychiatric status, alcohol consumption, and alcoholism symptoms are associated with violent behavior during the study period; (b) whether self control is associated with the violent behavior reported by the released psychiatric patients and the subjects with no recent history of psychiatric hospitalization living in a similar community setting; (c) whether controlling for self control fully or partially attenuates the correlations between psychiatric patient status, alcohol consumption, alcoholism symptoms and violence.
Mental Illness and Violent Behavior

Michel Foucault (1965) in his book *Madness and Civilization: A History of Insanity in the Age of Reason* outlines the history of mental illness in Western civilization. His analysis suggests that historically, social and economic developments have changed the way disordered individuals were treated in Western European societies. In his work, Foucault (1965) devotes a great deal of attention to the use of confinement and the separation of the mentally ill from non-disordered population through institutional means. Such separation, according to the author, transposes the public’s fear of the social control institutions, such as prisons and mental hospitals, on to the confined individuals. This process leads to construction of the social image of the mentally ill as inherently immoral and dangerous.

In the United States, until the second half of the nineteen hundreds, psychiatric confinement was used extensively (Arrigo, 2002). Commitment to psychiatric facilities was justified primarily by paternalistic concerns reflected in the *parens partiae* doctrines (Monahan, et al., 2001, p. 3). While many individuals diagnosed with mental illness were confined in mental hospitals for extensive periods of time, the public generally lacked the formal knowledge about the specific behavioral implications of the various mental disorders.

In the early second half of the twentieth century the *deinstitutionalization* process had begun and, within a few decades, had brought on dramatic changes in the organization and delivery of public mental health services. Deinstitutionalization is a term used to describe the process of reduction of the public mental hospital populations. This process was mobilized by the discharging of long-term residents, the shortening of
the hospital stays, and by the reduction in the number of admissions so is to transfer the
care of the mentally ill from institutions to community (Steadman, Monahan, Duffee,

This effort was largely a result of several changes in legal and medical approaches
to mental illness. In part, the deinstitutionalization movement gained momentum due to
the extensive criticism of the ill-effects of the long term psychiatric confinement practices
(Kelly & McKenna, 2004, p. 377). During this period the evidence of poor management
of the psychiatric facilities came to light and were used to establish new legal regulations
designed to protect the civil rights of the mentally ill individuals (Arrigo, 2002). The new
regulations provided the more strict involuntary commitment guidelines along with the
rights to receive or refuse treatment for mentally ill individuals. Significant advances in
psychopharmacology bolstered the idea that mental ill individuals could be treated in a
community setting with some help from their family members and outpatient psychiatric
professionals (Arrigo, 2002; Kelly & McKenna, 2004; Markowitz, 2006; O'Keefe &
Schnell, 2007).

The deinstitutionalization reforms were supported by the Community Mental
Health Centers Act of 1963 initiated by National Institute of Mental Health with a goal of
creating community-based outpatient psychiatric care system (O'Keefe & Schnell, 2007).
These reforms also led to the closure of large public mental health hospitals and to a
dramatic decrease in the inpatient services the remaining large institutions could offer to
general public. Based on the National Institute of Mental Health estimates, the number of
beds available in the year 1960 in psychiatric hospitals decreased by the year 1990 from
about 563,000 (314 beds per 100,000 persons) to 98,800 (40 beds per 100,000) in the
United States (National Institute of Mental Health 1990, as cited in Markowitz, 2006, p. 46). The average length of stay in inpatient psychiatric care has also decreased dramatically (Steadman et al., 1984).

The disappearance of institutional walls, historically separating mentally ill individuals from the general public, allowed for the de facto integration of disordered individuals into society. However, the disordered individuals today face a different set of walls and barriers bolstered largely by the public opinion. The association between mental illness and dangerousness can be identified as a supreme factor supporting this largely de jure segregation.

In the studies of the stigmatization of the disordered individuals the impact of limited knowledge about mental illness can be clearly seen as the major factor leading to the social ostracism of this population. The studies suggest that the lack of personal contact with mental illness is a key factor in the perpetuation of stigmatizing ideas, such as identification of disordered individuals as inherently dangerous (Phelan & Link, 2004). The factor of dangerousness is also paramount to the determination of the State’s responsibility to confine a mentally ill individual and so is a key precursor to the deprivation of liberty and further stigmatization of the mentally ill (Monahan, et al., 2001). These facts suggest that the generation of knowledge elucidating the nature of the connection between mental illness and dangerous behavior is of great importance to both, the public and to professionals.

Fortunately, the calls for this effort have not gone unanswered. It is possible to identify a number of the academic studies that aimed to investigate the perpetration of
violent and criminal acts among the mentally ill by using data on violence, arrest and incarceration rates collected from samples of this population.

These studies, however, vary significantly in the sampling and analytical methodologies. Some studies, for example, look at the prevalence of mental health issues in correctional institutions and suggest that mentally ill are overrepresented in the incarcerated population in the US. Other studies compare rates of violence perpetrated by the mentally ill whose symptoms fit in different diagnostic groups. Yet, others draw a comparison between psychiatric patients and individuals in a community with no recent or lifetime history of psychiatric hospitalization. Overall, most studies concerned with the investigation of violent behavior and mental illness follow the techniques of:

epidemiological studies of prevalence of mental health issues in prison populations, risk assessment studies of psychiatric patients, birth cohort studies and epidemiological comparison group studies (Crichton, 1999; Hiday, 1995).

The studies of the prevalence of mental health problems in the prison populations supply arguably the most alarming data on the connection between mental illness and crime. According to James and Glaze, (2006, p. 1) at midyear of 2005 more than half of all prison and jail inmates had a mental health problem, including 705,600 inmates in state prisons, 78,800 in federal prisons, and 479,900 in local jails.

Some researchers compared the prevalence rates of mental illness in penal institutions to the epidemiological data on the prevalence of the mental disorders in the general population and concluded that mentally ill are overrepresented in jails and prisons. For example Teplin (1990) compared the prevalence of mental illness in a random sample of Cook county jail detainees to the data from Epidemiological Catchment Area
survey that described prevalence of mental illness in five cities in the United States. “The overall prevalence rates for current disorders were 1.24% to 4.52% higher among jail detainees than in the five-city sample and, for lifetime disorders, the rates were 2.01% to 5.07% higher in the jail sample” (Teplin, 1990, p. 665).

Studies have also found that mentally ill inmates have higher recidivism rates and generally have more life time incarcerations than non-disordered inmates. For example, Baillargeon, Binswanger, Penn, Williams, and Murray (2009) reported that inmates with major psychiatric disorders (i.e. major depressive disorder, bipolar disorders, schizophrenia, and non-schizophrenic psychotic disorders) were substantially more likely to have multiple incarcerations over a six year period than inmates with no psychiatric disorders. The greatest increase in the risk of having multiple incarcerations was observed among the inmates with bipolar disorder, who were three times more likely to have had four or more previous incarcerations compared with the inmates who had no major psychiatric disorder (Baillargeon et al., 2009). Similarly, the studies of the US incarcerated populations conducted by the Bureau of Justice Statistics report that mentally ill inmates are more likely to have served more previous sentences than their non-disordered counterparts (James & Glaze, 2006).

Some studies on recidivism and violent recidivism of mentally ill individuals, however, show that the association between mental illness and repeat offending is rather equivocal when social and demographic factors are considered. Bonta, Law, and Hanson (1998) conducted a meta-analysis that included 64 unique samples from 58 longitudinal studies that provided sufficient data on recidivism of the mentally ill offenders. The researchers catalogued 74 different recidivism predictor variables in their sample of
studies and further grouped these variables into one of four domains: personal
demographics, criminal history, deviant lifestyle history, and clinical (Bonta et al., 1998).
Bonta et al. (1998) concluded that among the four domains of predictors of general
recidivism, defined as arrest or return to the hospital for criminal behavior, the average
effect size for the predictors in the clinical domain was significantly smaller compared
with other three domains. More specifically, variables such as intelligence, mood disorder
and treatment history were not significantly related to general recidivism, while psychosis
was negatively related to recidivism (Bonta et al., 1998). Bonta et al. (1998) reported
similar findings with regard to violent recidivism, indicating that the variables based on
psychiatric diagnosis (e.g. mood disorders, schizophrenia) were equivocal in predicting
violent recidivism when variables from other domains were considered in the analysis.

Phillips, et al. (2005) further examined the influences of variables defined by
Bonta et al. (1998) on the recidivism and violent recidivism of the patients discharged
from Llanarth court hospital in England. Patients’ diagnosis was obtained from the
hospital case files. Similar to the Bonta’s et al. (1998) study, Phillips et al. (2005) found
that the diagnosis of severe mental illness was not significantly related to recidivism
when variance attributable to the other significant variables was controlled in their
multivariate analysis, which was true for both violent and general recidivism.

Other studies target the mentally ill individuals who come into contact with the
inpatient and outpatient psychiatric services. The methodologies involved in the
collection of data on perpetration of violent and aggressive acts from psychiatric clients
have developed over last few decades. New data collection strategies allow researchers to
analyze violent and aggressive behaviors identified through the triangulated reports that
combine the information self-reported by a psychiatric participant with the reports from collateral and the official hospitalization and criminal justice data (Borum, Swanson, Swartz, & Hiday, 1997; Monahan et al., 2001; Swanson, Borum, Swartz, & Hiday, 1999; Swartz et al., 1998). Using the triangulation method generally raises estimates of prevalence of violent behavior that, otherwise, official records would have failed to report.

A number of studies of psychiatric patients are based on the data that depict the perpetration of violent and aggressive actions by a patient in the months preceding his or her psychiatric admission. Swartz et al. (1998) reported that 17.8% of the involuntarily admitted patients recruited for the study reported engaging in serious violence in the past four months. Using the same data, Swanson et al. (1999) found that, based on the triangulated report, 51% of the patients have committed at least one physically assaultive action in the four month preceding their psychiatric admission with prevalence ranging from 1 to 15 separate incidents of violence. Also, Borum et al. (1997) reported that 20% of the patients in the same dataset have been picked up or arrested for some type of crime in the four months preceding their admission.

Nevertheless, the researchers did not find a clear connection between a particular psychiatric disorder or a group of disorders and violent behavior. For example, the researchers reported that the prevalence of patient violence did not vary significantly between the principal diagnostic categories (Swanson et al., 1999; Swartz et al., 1998). In addition to the use of diagnoses, Swanson et al. (1999) used the subscales from the Brief Symptom Inventory (BSI) to measure paranoid ideation and general psychoticism and the Global Assessment of Functioning Scale (GAF) to determine the degree of functional impairment and the degree of severity of psychotic disturbances. After controlling for the
relevant social and demographic variables, Swanson et al. (1999) concluded that the type of primary diagnosis, scores on the BSI scales and the GAF scores did not significantly correlate with the reporting of any type of violent incidents in the four months preceding the psychiatric admission.

Taken together, these studies suggest that when the social and demographic variables are controlled, there is a lack of correlation between the specific clinical variables, symptomology scales, medication non-adherence measures and violent or dangerous behavior (Borum et al., 1997; Swanson et al., 1999; Swartz et al., 1998). In other words, it is not clear what particular disorders are associated with violence and criminality in samples of psychiatric patients.

The studies of psychiatric patients discussed above have a major limitation. The researchers used cross-sectional data to establish the psychiatric diagnoses and the degree of symptomology experienced by the participants, while the patients’ violence was surveyed retrospectively for the period preceding psychiatric admission (Swanson et al., 1999). For example, Swanson et al. (1999) argue that: “BSI is a rather conservative measure for the given analyses because the BSI assesses current symptomatology (i.e. present in the past week), whereas the violence measure covers a four month retrospective period of reference” (p. 192). Also, the retrospective studies can only show how the clinical factors correlate with violence, but fail to depict the causal effects of the mental illness related variables on the perpetration of violence.

It is worthwhile to look at the similar studies that overcame the temporal order issues. One of such studies is the MacArthur Violence Risk Assessment Study, where psychiatric patients recruited for the study were followed for a year after their clinical
variables and backgrounds were professionally verified during their psychiatric admission (Monahan et al., 2001). The primary goal of the researchers was to develop a statistical instrument that could be applied to validly and reliably predict dangerousness of psychiatric patients (Monahan et al., 2001). However, the data collected in the process of the MacArthur Violence Risk Assessment Study were used by the researchers in the various analyses of the clinical, behavioral and socio-demographic predictors of violence and aggressive behavior.

Monahan et al. (2001) found that the one year prevalence rate of violence was 14.8% for patients with schizophrenia, 28.5% for the patients with depression and 22% for the patients with bipolar disorder. The differences in the one year prevalence of violence between the diagnostic groups in the study were statistically significant (Monahan et al., 2001). Yet, the patients who had major mental disorder without the symptoms indicating co-morbidity with substance abuse had one year prevalence rate of violence of 17.9%, much lower than the rate in the co-morbid group which was 31.1% (Monahan et al., 2001). Such findings suggest that differences in the rates of violence are much more profound between the psychiatric patients with and without substance abuse problems than between patient diagnosed with different types of major mental disorders.

A number of the previous studies of mental illness and violent behavior included a control group of the non-disordered individuals. These studies compared the rates of involvement in violence and deviance in the disordered and non-disorder groups. Some researchers argue that the comparison based studies are of greater use in establishing whether there is a causal relationship between mental illness and dangerous behavior (Crichton, 1999).
In the course of the previously mentioned MacArthur Violence Risk Assessment study, the researchers collected the additional data from a community sample of non-disordered individuals (Monahan et al., 2001). These non-disordered individuals resided in the same neighborhood as the disordered subjects after their release and completed the same questioners and evaluations as the psychiatric group subjects.

Steadman et al. (1998) used these data to compare the involvement in violence between the community group and the patients, after the patients’ release. The researchers found that the mean number of violent acts reported during the first of the five follow-ups (total of five follow-ups were conducted over the course of one year with the patient group subjects) in the patient sample was significantly higher than the mean number of violent acts reported in the community group (Steadman, et al., 1998). Other studies have also reported that psychiatric patients were more violent than individuals living in a similar community setting based on data collected in face-to-face interviews and from arrest records (Link, Andrews, & Cullen, 1992).

A number of studies used the data from national probability surveys that included items needed to determine the presence of mental health diagnosis, demographic variables and behavioral outcomes in the general population. Elbogen and Johnson (2009) analyzed data from the two waves of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), conducted by the National Institute on Alcohol Abuse and Alcoholism. NESARC is a survey of the civilian population of the United States, including Alaska and Hawaii, conducted using housing sampling frame that allows for inclusion of important subgroups in the population (Elbogen & Johnson, 2009).
By using items from a DSM-IV based diagnostic interview schedule and the self-report of psychiatric diagnosis included in the survey, Elbogen and Johnson (2009) determined one year and life-time prevalence of the major psychiatric conditions in the first wave of NESARC. Violent behavior that occurred between two waves of the data collection was assessed via self-report of serious violence and substance abuse related violence included in the second wave. The researchers aimed to analyze whether the subject meeting the diagnostic criteria for severe mental illness would report greater involvement in violent behaviors. After conducting a multivariate analysis that included dispositional, historical, clinical, and contextual variables, Elbogen and Johnson (2009) concluded that, while subjects reporting any of the severe mental illness diagnosis were at greater risk of violence than those without disorders, this risk was largely contingent on the factors such as substance abuse, criminal history, age, sex and income.

A similar comparison-based study, based on the data from the National Survey on Drug Use and Health (NSDUH) national probability survey, was conducted in order to examine the relationship between the psychiatric disorders and the reporting of arrests for violent, non-violent or drug-related offenses in the past year (Swartz & Lurigio, 2007). The researchers found that the NSDUH participants who reported being arrested in the past year were two times more likely to have one or more psychiatric diagnosis than those who reported no arrests (Swartz & Lurigio, 2007).

In the multivariate analysis conducted by Swartz and Lurigio (2007), when the mental illness diagnoses were entered as primary predictor variables, participants with psychiatric disorders were significantly more likely to report past year arrest for violent, non-violent or drug related offence. However the relationship between the mental illness
diagnosis and arrest was significantly attenuated (in non-violent and drug-related arrest categories to non-significance) when substance abuse related variables were entered in to the analysis (Swartz & Lurigio, 2007).

Total birth cohort studies also provided data that were used for the comparison of the involvement in violent behaviors between the mentally ill and the non-disordered subjects. Arseneault, Moffitt, Caspi, Taylor, and Silva (2000) analyzed data from the Dunedin study that enrolled children from 91% of the consecutive births from April 1, 1972, through March 31, 1973, in Dunedin, New Zealand. The data on the study participants were gathered from age three to their mid twenties. Arsenault et al. (2000) reported that the study participants who met the diagnostic criteria of any Axis I disorder were at higher risk of committing violent acts. The connection between Axis I diagnoses and violence did not remain statistically significant when substance and psychiatric co-morbidity were controlled (Arsenault et al., 2000).

Birth cohort studies with larger samples and covering larger geographic areas have been conducted. Davis, Fisher, Gershenson, Grudzinskas, and Banks (2009) compared the official arrest records of adolescent girls receiving public mental health treatment in Massachusetts who were born between 1976 and 1979 with arrest data on all of the females born in the state in the same cohort years. The researchers reported that the girls with psychiatric treatment background had a much higher number of life time charges for serious violence and other offenses (Davis et al., 2009).

As it can be seen from the studies discussed above, the research studies investigating the connection between mental illness and violence often differ by sampling strategies, selection and measurement of relevant variables, and by designs they introduce.
Some researchers have argued that such inconsistency in the selection of sampling and analytical strategies abates the transparency of the aggregate findings that depict the mental illness and violence connection (Sirotich, 2008). Nevertheless, a few conclusions regarding the mental illness and violence association can be drawn from my review.

While the recent studies support the notion that mental illness is a risk factor for perpetration of violence, it is still unclear what specific psychiatric conditions or diagnoses contribute to the violent propensities of the mentally ill. Some researchers have suggested that the factors influencing the violent and dangerous behaviors perpetrated by the mentally ill individuals are essentially the same as the factors influencing the violent behavior of the non-disordered persons (Bonta et al., 1998; Phillips et al., 2005). Indeed, the studies suggest that the risk of violence is less dependent on the specific types of psychiatric diagnoses or on severity of disorders than on social and demographic characteristics of the individuals in a study. It is possible that the association between mental illness and violence is contingent on the factors that pertain to the social and demographic characteristics of the individuals diagnosed with mental illness or treated in psychiatric hospitals rather than attributable to the direct effects of mental disorders on dangerous behavior.

**Theoretical Constructs in Mental Illness and Violence Research**

It is not surprising that the evaluation of the effects of psychiatric disorders and symptoms of mental illness on choices and behaviors of an individual are central to the mental illness and violence research. Yet, the discourses on this subject would be much better informed if the effects of socialization and of social environment, central to the sociological discipline, were integrated in to the models designed to elucidate the
etiology of violent behaviors perpetrated by mentally ill individuals (Fisher et al., 2006). An even greater balance in mental illness and violence research can be achieved if the evaluation of criminological and psychiatric variables were conducted along the lines of empirical theoretical perspectives. Indeed, today criminological variables play an increasingly important role in the mental illness and violence research as correlates of violent behavior in risk assessment instruments. Integration of these variables in a theoretical context must be the next step in mental illness and violence research.

A number of researchers have put forth theoretical constructs attempting to explain why the mentally ill are at risk of perpetrating violent acts. Some have developed new constructs that depicted violent and criminal behaviors as outcomes of active psychiatric symptoms such as delusions, while others applied theories previously used to explain criminal and violent behaviors in the general population as outcomes of social and demographic variables. However, some gaps in the application of the criminological theory in the mental illness and violence research field have not yet been filled. The current study is designed to address some of the limitations in application of criminological theory in mental illness and violence research.

I will further identify the theoretical constructs that underlie some of the recent investigations of the mental illness and violence issue. My goals are to illustrate the utility of applying criminological theory and to identify the areas in the mental illness and violence research that could further benefit from the application of the criminological constructs.

Hiday, (1995, 1997) proposed a number of models designed to theoretically explain how influences of the social context combine with psychological vulnerability of
mentally ill individuals further leading to violence. The first set of models described by Hiday (1995, 1997) discusses the effects of psychotic symptoms on the risk of violence perpetration in social situations. One of the primary models coined by the researchers in such investigations is the Threat/Control-Override (TCO) model. The TCO model is concerned with a specific set of psychotic symptoms that have a potential to affect an individual’s threat perception in a social situation (Link, Monahan, Stueve, & Cullen, 1999).

In an epidemiological study of the Israeli citizens, Link et al. (1999) concluded that three TCO symptoms, defined as feeling: “(a) that your mind was dominated by forces beyond your control, (b) that thoughts were put into your head that were not your own, and (c) that there were people who wished to do you harm” (p. 322), were significantly related to violence in the form of fighting and weapon use. The presence of the TCO symptoms significantly attenuated the relationship between the other symptoms experienced by the study subjects, the diagnosis of severe mental illness and the indicators of violent behavior (Link et al., 1999).

The same set of the TCO symptoms was found to correlate with hitting, fighting and weapon use in the sample of individuals residing in Washington Heights section of New York City (Link & Stueve, 1994). Furthermore, Link and Stueve (1994) found that, after controlling for the TCO symptoms, the correlation between psychiatric background and other psychotic symptoms was no longer significantly related to violence among the study participants.

While the TCO model implies that only some mentally ill individuals may experience the TCO symptoms and react violently to the falsely perceived threat, Hiday
(1997) suggest that psychiatric symptoms other than those included in the TCO could lead to violence through a more environmentally interactive path: by soliciting hostile reactions from individuals interacting with the mentally ill. Studies report that mentally ill individuals are likely to perpetrate socially disruptive behavior noticed in a community setting. For example, Novak and Engel (2005) conducted a systematic observation of the patrol officers employed by the Cincinnati police department and concluded that in the encounters with mentally ill individuals, suspects were more likely to be resistant and disrespectful towards a police officer than non-disordered suspects.

Hiday (1995, 1997) suggest that hostile social reactions to the actively displayed symptoms of mental illness may lead to situation where the wellbeing of a mentally ill individual is actually threatened. Over the life-course, the occurrence of such situation in social and interpersonal contexts may increase stress experienced by the mentally ill.

Some studies have explored the effects of stress and stressful events on the violent behavior of mentally ill individuals (Silver & Teasdale, 2005). Silver and Teasdale (2005) used data from the Durham site of the Epidemiological Catchment Area survey to explore whether the general strain theory (Agnew & White, 1992) can be used as model for the explanation of the violent behavior of people diagnosed with severe mentally illness. The researchers reported that stressful life events significantly correlated with violence and that introduction of the acute stress variable in to a multivariate analysis significantly attenuated the correlation between mental illness diagnoses and violence (Silver & Teasdale, 2005).

In addition to the risks presented by the acute stressful situations, Hiday (1995, 1997) argues that the mentally ill are often subjected to the negative life events such as
being victims of abuse and bullying. She further argues that the victimization and stressful life events are more likely to be experienced by the mentally ill individuals living in the conditions of social disorganization and poverty (Hiday, 1995, 1997).

Previous research confirms that psychiatric patients are more likely to come from and to be discharged into highly economically disadvantaged neighborhoods (Silver 2000a). The prevalence of violence in such environments further increases the risk of victimization of the mentally ill, and increases the likelihood of their aggression being release by the means of violence (Hiday, 1997). Some research supports these assumptions. For example, Swartz, et al. (1998) found that the bivariate association between race and violence in a sample of involuntarily committed mentally ill can be explained by high rates of victimization in the African American communities.

The suggestion that living in a socially disorganized neighborhood would foster violence among the mentally ill has been well explored by the previous research. In this area of research on mental illness and violence, the application of criminological theory has proven to be most fruitful. For example, Silver, Mulvey and Monahan (1999), using data from the Pittsburg site of the MacArthur Violence Risk Assessment Study, assessed whether the discharge of psychiatric patients in to a neighborhood with concentrated poverty puts them at a greater risk of perpetration of violence.

The researchers found that just under one third of the patients were discharged into highly impoverished neighborhoods (Silver et al., 1999). Those discharged into poor neighborhoods were almost three times more likely to commit a violent act than those discharged in to a neighborhood with less poverty (Silver et al., 1999). The study by Silver (2000b) used a similar analytical strategy and introduced a more sophisticated
measure of the neighborhood poverty. Neighborhood disadvantage was found by the researchers to positively correlate with violence in a sample of psychiatric patients after their release in to community (Silver, 2000b). By further improving the measure of neighborhood level disadvantage, Silver (2000a) tested the effects of neighborhood disadvantage and neighborhood mobility on patient violence. The bivariate analysis showed that the patients discharged in to communities with high levels of neighborhood disadvantage but not high levels of neighborhood mobility were more likely to be violent than the other psychiatric patients in the study (Silver, 2000a).

Hiday (1997) theorized that the effects of environmental variables are further mediated by formal and informal social support. However researchers generally found that the effects of social support on violence among the mentally ill are rather equivocal (Jacoby & Kozie-Peak, 1997; Silver, 2000a; Sirotich, 2008; though see Silver 2005).

The high prevalence of drug and alcohol use in the socially disorganized areas further increases the risk of involvement in violence and aggression in the mentally ill population (Hiday, 1995, 1997; Silver, 2000a). For example, Silver (2000a) concluded that psychiatric patients living in neighborhoods with higher level of neighborhood disadvantage are more likely to be diagnosed with substance use related disorders.

Due to high rates of co-morbidity of severe mental illness with substance abuse and dependence, the substance use patterns have been well explored in previous research on mental illness and violence. Substance abuse and dependence have been explored and confirmed as the major risk factors in violence risk assessment of disordered individuals (Sirotich, 2008). Substance abuse is a well pronounced issue of interest in the studies of psychiatric patients (Borum et al., 1997; Steadman et al., 1998; Swanson et al., 1999;
Swartz et al., 1998), jail and prison inmates with psychiatric disorders (Abram & Teplin, 1991), and severely mentally ill individuals in the general population (Arsenault et al., 2000; Elbogen & Johnson, 2009; Link et al., 1999; Swartz & Lurigio, 2007). The previous research has identified that use and abuse of psychoactive substances such as alcohol and street drugs increases the risk of involvement in violence (Elbogen & Johnson, 2009; Link et al., 1999; Silver et al., 1999; Steadman et al., 1998, Swanson et al., 1999; Swartz et al., 1998), being arrested for violent and non-violent crime (Borum et al., 1997; Swartz & Lurigio, 2007; White, Chafetz, Collins-Bride, & Nickens, 2006), and becoming a recidivist or being re-hospitalized (Bonta et al., 1998).

A number of comparison based studies have investigated whether substance misuse mediates the relationship between the mental health or psychiatric status and the involvement in violence (Arsenault et al., 2000; Link et al., 1999; Steadman et al., 1998). Steadman et al. (1998) analyzed the demographic and the substance use related data reported by both the acute psychiatric patients and the comparison group subjects from the Pittsburg site of the MacArthur Violence Risk Assessment Study. The researchers reported that there was a significant main effect of drug and/or alcohol abuse symptoms on the perpetration of aggressive acts and violence at each of the post release follow-up period (Steadman et al., 1998).

Furthermore, when Steadman et al. (1998) disaggregated the total sample composed of the released psychiatric patients and the comparison group subjects in to those with symptoms of substance abuse measured by Michigan Alcoholism Screening Test (MAST) and the Drug Abuse Screening Test (DAST) and those without the symptoms, significant positive effect of the patient status on violence and aggressive acts
could be detected only in the group with substance abuse symptoms. The researchers concluded that there is no difference in the involvement in violence and aggressive acts between the psychiatric patients and the non-disordered individuals in a community when they do not experience substance related problems (Steadman et al., 1998).

While the associations between substance related disorders and the involvement in violent behavior among the mentally ill are frequently found by the researchers, only a few studies have undertaken a closer examination of the processes responsible for the existence of this association. Generally, these studies are concerned with the evaluation of whether substance use prior to the perpetration of a violent or criminal act can mediate the relationship between substance use related disorders and violence.

Surprisingly, previous research provided limited evidence to the perspective that the connection between the substance use related disorders and the deviant behavior exists due to the risk of causing harm while under influence of drugs or alcohol. For example, Swanson et al. (1999) reported that only 16% of the involuntarily committed mentally ill individuals in their study reported feeling “drunk” and only 10% reported feeling “high” in response to the question: "When you got into physical fights ... what were you feeling?”(p. 197). Overall, while substance use related disorders have been found to be an important factor aggrandizing the risk of violence among the mentally ill, it remains unclear how this relationship is constructed.

Hiday (1995, 1997) proposes that both violence and substance abuse in mentally ill individuals may coalesce as a result of the co-morbidity with personality disorders such as the Antisocial Personality Disorder (ASP) or the psychopathy disorder. Indeed, a number of studies report finding a remarkably robust relationship between psychopathy or
the ASP and the perpetration of violence and aggression in the populations suffering from severe mental illness (Bonta et al., 1998; Link et al., 1999; Monahan et al., 2001; Silver 2000a; Silver et al., 1999; Skeem, Miller, Mulvey, Tiemann, & Monahan, 2005; Skeem & Mulvey, 2001). Hiday (1995, 1997) further argues that defective socialization puts mentally ill at higher risk of having such personality diagnoses.

Generally, the ASP diagnosis is associated with a life-stable pattern of delinquent and criminal behavior. In a theoretical sense, the inquiries into connection between ASP and violence in mentally ill foster a more general interest in the effects of the criminal background and past violent behavior on subsequent involvement in violence. Some studies report that when past offenses along with other relevant variables such as age, gender and marital status are controlled, the ASP diagnosis no longer predicts law breaking behavior among the mentally ill (Phillips et al., 2005).

A number of studies have also confirmed that past violent and criminal behavior are strong predictors of future serious violent behavior among the mentally ill (Bonta et al., 1998; Elbogen & Johnson, 2009; Monahan et al., 2001; Phillips et al., 2005). In fact, Bonta’s et al. (1998) meta-analysis of factors increasing the risk of recidivism among the mentally ill shows that the criminal history domain factors (e.g. adult criminal history, juvenile delinquency, institutional maladjustment) were more predictive of the violent recidivism than the demographic, life styles and the clinical domain factors.

Previous research has devoted a great deal of attention to the link between the violent behavior and psychopathy personality disorder. Psychopathy disorder is seen by some researchers as a useful alternative to the ASP diagnosis mainly because the diagnosis of psychopathy is based on the diagnostic evaluation of personality traits and
on the retrospective evaluation of deviant behaviors while ASP only relies on the latter (Hare, Hart, & Harpur, 1991). Hare, et al. (1991) argue that the diagnosis of psychopathy is based on the personality traits that underlie the patterns of chronic deviant behavior.

The use of psychopathy diagnosis as the major violence predictor has not, however, escaped criticism. Skeem et al. (2005) examined which aspects of personality are maximally related to violence through the examination of the items from the Psychopathy Checklist Revised-Screening Version (PCL: SV) and the items from broader personality measures administered to the participants of the MacArthur Violence Risk Assessment Study. The researchers reported that the predictive power of PCL:SV in predicting psychiatric patient violence pertains to the scale’s ability to tap into broader personality traits that further predispose individuals to violence, such as antagonism and low conscientiousness (Skeem et al., 2005). The researchers suggest that while the psychopathy diagnosis may be a salient predictor of violence, more research is needed on personality traits as correlates of violent behavior as some of the traits related to violence may be outside of the scope of PSL:SV and of the other psychopathy scales (Skeem et al., 2005).

The review of factors increasing the risk of violence among the mentally ill and of theoretical frameworks applied in mental illness and violence research suggests: (a) studies of mental illness and violence could benefit from integration of variables that are beyond the scope of traditional research in psychopathology (Bonta et al., 1998); (b) the investigation of factors affecting the risk of violence perpetrated by the mentally ill could accommodate application of criminological theory and utilize the knowledge about the etiology of violent and criminal behavior in the general population (Fisher et al., 2006).
While Hiday (1995, 1997) extends several models that elucidate the connection between mental illness and violence, she maintains that violence is not a direct outcome of any particular psychiatric disorder and is not one of the symptoms of mental illness. She argues that perpetration of violence among mentally ill, much like among non-disordered individuals, is contingent on the socialization experiences and the environment in which individuals are embedded (Hiday, 1995, 1997).

While some of the models applied in the mental illness and violence research have been subjected to theoretical scrutiny, a few areas remain where the application of criminological theory has not been attempted and, yet, appears to be necessary. Particularly, the exploration of the individual character traits known to increase the risk of violent behavior among the mentally ill has hardly gone beyond the research concerned with the effects of the ASP and psychopathy on violence.

In the science of criminology, a number of theories highlight the importance of the personality traits as etiological factors increasing the risk of involvement in violent and criminal behavior (Gottfredson and Hirschi, 1990; Moffitt, 1993). According to these criminological theories, character traits consistently affect behavioral outcomes of individuals throughout the life-course. These traits are theorized to be products of the socialization experiences rather than outcomes of mental pathology (though see Moffitt, 1993). Application of such criminological theories would then offer a new perspective for the evaluation of the effects of individual character traits on the violent behavior perpetrated by the mentally ill and would help to further integrate the criminological knowledge regarding the importance of the character traits as predictors of violence into the mental illness and violence discourse.
Gottfredson and Hirschi (1990) in the publication *A General Theory of Crime* proposed that a combination of individual traits, stemming from impairment in the early life socialization, comprise a life-stable trait of self control. They argued that low self control further predisposes individuals to engaging in a broad scope of criminal and socially deviant actions including acts of violence and aggression. As theorized by Gottfredson and Hirschi (1990), the individuals with high levels of self control would be more likely to resist the desire for immediate gratification, which crime and violence often satisfy, while the individuals with low self control would be more likely to engage in immediately gratifying actions and so disproportionately suffer from the consequences of these actions, among others, being perpetrators and victims of violence.

A number of studies based on samples drawn from the general population and important subgroups have shown a robust relationship between the behavioral and attitudinal measures of self control and criminal behavior, including violence (Evans, Cullen, Burton, Dunaway, & Benson, 1997; Grasmick, Tittle, Bursik, & Arneklev, 1993; Longshore & Turner, 1998; Piquero, MacDonald, Dobrin, Daigle, & Cullen, 2005; Pratt & Cullen, 2000; Sellers, 1999).

The application of the self control theory in the mental illness and violence research could provide new perspectives on the nature of the violence perpetrated by the mentally ill. The self control theory provides a unique opportunity to look at the individual level factors as predictors of violent behavior perpetrated by the mentally ill, while following Hiday’s (1995, 1997) logic of sociological rather than psychological underpinnings of such behaviors. I will further evaluate (a) potential applicability of the
self control construct in studies of mental illness and violence and (b) establish the
framework for the present investigation.

**Self Control and Violent Behavior**

Gottfredson and Hirschi (1990) argued self control to be the sole element that
determines an individual’s criminal propensity. Their publication *A General Theory of
Crime* and their theoretical position have received much attention in the criminological
studies and literature (Cohn & Farrington, 1999).

Gottfredson and Hirschi (1990) argue that human behavior is directed by self-interest and the pursuit of pleasure. Though, unlike non-criminal behaviors, deviant acts are often followed by various painful sanctions, the authors suggest that individuals engage in deviant acts due to the ability of such acts to bring immediate gratification. Furthermore, theorizing that criminal acts are easy and available to everyone and, yet, are performed by some individuals much more frequently than others, leads them to believe that the only meaningful difference between the offenders and the non-offenders is the ability of the latter individuals to exercise self-restrain over desire for immediate gratification or the individual trait they call- self control (Gottfredson and Hirschi, 1990).

Gottfredson and Hirschi (1990) claim that the nature of self control can be derived from the nature of criminal acts. The authors argue that criminal acts are most commonly committed in a pursuit of self-interest, that these acts provide immediate gratification to the perpetrator, and that they require little planning or skills. Furthermore, they argue that most crimes are immediately exiting and thrilling, but lack long term benefits for the perpetrator. Based on these characteristics of crime, Gottfredson and Hirschi (1990) propose that individuals with low self control will have “here and now orientation”, “lack
diligence”, “prefer physical activities to intellectually involving ones”, “dislike long term commitments”, “have little planning skills”, and will be “self centered” (p. 89). Previous research studies have further confirmed Gottfredson and Hirschi’s (1990) suggestion that these traits further compose a uni-dimensional trait of self control (Arneklev, et al., 1999; DeLisi & Vaughn, 2008; Grasmick, et al., 1993; Vazsonyi & Crosswhite, 2004; though see Baron, Forde, & Kay, 2007).

The authors theorize that the self control trait will persist throughout the life-course of an individual after the level of self control is set in the process of behavioral conditioning that takes place in early childhood (Gottfredson and Hirschi, 1990). Gottfredson and Hirschi (1990) do not see crime as a necessary consequence of low self control since individuals are often presented with opportunity to engage in acts the authors consider analogues to crime (e.g. deviant sex, smoking and alcohol use) that, similarly to crime, are easy and immediately gratifying, yet, bear no criminal sanctions. Gottfredson and Hirschi (1990) theorize that low self control leads to negative psychical (e.g. accidents) social (e.g. employment instability) and legal (e.g. arrest) consequences throughout individuals life-course. Since some of these theorized consequences of self control are used in psychological and sociological studies as predictors of deviance, the authors argue that such psychological and sociological factors are spurious related to crime through the effects of self control.

Such claims raised an active debate in the area of violence research. Gottfredson and Hirschi (1990) claimed that the connection between self control and interpersonal violence is unequivocal since: “people with low Self control tend to have minimal tolerance for frustration and little ability to respond to conflict through verbal rather than
physical means." (p.90). A number of studies have found a positive connection between low self control and various types of violent behavior including assault, rape, homicide, robbery (Baron, 2003; Longshore & Turner, 1998; Vazsonyi & Crosswhite, 2004), and violent recidivism (Piquero, et al., 2005), however, others found no such connection (Cretacci, 2008).

Some researchers have expressed concerns over the ability of self control to predict violence in more complex social situations such as intimate partner violence and courtship aggression. Recognition of intimate partner violence as acts committed in pursuit of long term benefits (e.g. dominance in a relationship) is contradictory to Gottfredson and Hirschi’s (1990) conception of crime as means to acquire immediate gratification (Sellers, 1999). This concern is especially significant to the current inquiry since previous studies of violence have shown that the most common targets of violent and aggressive acts that are perpetrated by the mentally ill are family members, followed by friends and acquaintances (Steadman et al., 1998; Swanson, et al., 1999).

Sellers (1999) assessed whether low self control, identified through behavioral measure (Grasmick, et al., 1993) administered to the college students who were involved in dating relationships at the time of data collection, was correlated with the use of physical aggression against their intimate partners. The researcher concluded that self control was indeed a significant predictor of the use of physical aggression against dating partners even when gender, age and opportunity (i.e. frequency of interaction with the partner and cohabitation) were controlled (Sellers, 1999). Gottfredson and Hirschi (1990) overcame the difficulty of explaining intimate violence by arguing that low self control leads to violence directly, since the perpetration of a violent act pleasurably alleviates
aggravation of an offender and indirectly since individuals with low self control are more likely to have defective dating and marital relationships.

Studies also show that violence among individuals suffering from mental illness may be a result of a complex response to the experiences or history of victimization imposed on them by the people in their close and distant social networks (Hiday, 1995, 1997). From Gottredson and Hirschi's (1990) perspective, the experience of victimization and perpetration of violent behavior is more likely to coalesce in individuals with low self control as such individuals are more likely to be involved in more defective marriages and dating relationships and are more likely to gravitate towards life in crime-prone social environments. Studies support this connection by showing that individuals who report low levels of self control tend to live in the socially-disorganized environments (Evans et al., 1997).

Based on the analysis of the data from a three wave longitudinal study of school age children in several urban areas of the United States, Schreck, Stewart, and Fisher (2006) concluded that low self control during the first wave of the study was a significant predictor of victimization experience in the later waves, net of the effects of earlier victimization, as well as self-reported delinquency and peer delinquency. Other studies have further investigated the effects of self control on victimization and perpetration of violence in more crime-prone populations. Piquero et al. (2005) examined data on offenders paroled from the California Youth Authority in the 1980s who were followed for five years after their release and concluded that low self control both increased the probability of being re-arrested for violent offense and increased the risk of homicide victimization in the study sample during the follow-up years. The importance of self
control as correlate of both victimization experiences and violence perpetration suggests that self control may be a useful predictor of violence among mentally ill even if such behavior appears to be a response to victimization.

Multiple studies emphasize the connection between alcohol abuse and dependence and violence among mentally ill individuals, and argue that such a connection is due to the innate ability of psycho-active substances to induce violence (Arsenault et al., 2000; Junginger, Claypoole, Laygo, & Crisanti, 2006). According to the logic followed by Gottfredson and Hirschi (1990), both substance abuse problems and violent behavior are manifestations of low self control and so the application of their theory should render their interactions as spurious. “The reason they go together is that they both reflect a characteristic of the person: low self-control, the tendency to pursue short-term, immediate pleasure” (Gottfredson and Hisrchi 1990, p. 140). The authors hold a similar opinion regarding the relationship between drugs and violent behavior.

Previous research found a connection between low self control and perpetration of substance use induced violence (Gibson, Schreck, & Miller, 2004; Piquero, Gibson, & Tibbetts, 2002). For example, Gibson et al. (2004) found that self control was a robust predictor of negative alcohol related behaviors, those including violent and aggressive actions such as fighting and hurting self or others while drinking alcohol in a study of college students. Furthermore, self control reduced the effect of self-reported binge drinking on alcohol related behaviors showing that the co-occurrence of these behaviors is more likely among individuals with low self control (Gibson et al., 2004).

Self control seems to be a well fitting theoretical construct for mental illness and violence research. It is reasonable to argue that self control may be correlated with the
perpetration of violence in the population of mentally ill since it has been found to correlate with violence in the general population net of the social context and substance abuse patterns.

However, previous research has rarely considered the self control variable alongside diagnostic measures of mental pathology to than identify how each affects criminal propensity or the risk of engaging in violent behaviors. One study, however, offers some comparison of self control and mental pathology variables as predictors of criminal behavior including violence. DeLisi and Vaughn (2008) conducted an analysis of data acquired through face-to-face interviews from residents of the Missouri Division of Youth Services. The researchers examined the influence of low self control on the likelihood of membership in the career criminal group, as determined by the career criminal index composed of self-reported items of violent and non-violent delinquency, substance abuse, police contact and victimization in the twelve months proceeding incarceration. The mental health status of the participants was evaluated based on their responses to the items on the Brief Symptom Inventory, which included the Global Severity Index items (DeLisi & Vaughn, 2008).

In the multivariate regression analysis, introduction of the self control variable reduced the previously significant relationship between the scores on the Global Severity Index scale and membership in the carrier criminal group to statistically non-significant (DeLisi & Vaughn, 2008). Furthermore, the introduction of self control reduced the correlation coefficient of self-reported mental health diagnosis as a predictor of career criminality (DeLisi & Vaughn, 2008).
Another study, dealing with the Attention Deficit Hyperactivity Disorder (ADHD) as a mental pathology variable, provided additional evidence on the topic. Unnever, Cullen, and Pratt (2003) analyzed the data from the surveys that were administered to middle school students and found that while having ADHD was significantly related to self-reported delinquency, introduction of self control into the multivariate analysis attenuated that relationship.

While self control seems to correlate with deviant behavior even when factors attributable to mental pathology are considered, previous research also suggest that the construct itself is independent of particular types of mental pathology. Previous research has examined whether the predictive power of self control is contingent on presence of personality disorders. Vaughn, DeLisi, Beaver, Wright, & Howard, (2007) concluded that a significant proportion of variance in self control was statistically attributable to symptoms of anxiety including obsessive compulsion and narcissism. However, 44 % of the variance in self control was left unexplained by the full model that included demographic, mental health, psychiatric symptoms, trauma, substance abuse and personality disorders (Vaughn, et al., 2007).

Further information on the overlap between constructs of the psychopathy personality disorder and self control has been presented in the analysis of self-reported data collected from college students by Wiebe (2003). The researcher concluded that a variable based on the union of two constructs was poorly correlated with antisocial behavior reported by the participants in the study , suggesting that effects of self control and psychopathy are not equivalent and do not justify considering them the same phenomenon (Wiebe, 2003).
Current Study

Gottfredson and Hirschi (1990) argue that the correlation between self control and criminal behavior would remain robust regardless of what social or demographic group individuals in a study belong to. A number of studies have explored the invariance of the effects of self control on crime and deviance in different gender, age, ethnic and racial groups and in the separately collected samples, finding that salience of self control as predictor of deviance remained stable (Arneklev, Grasmick, & Bursik, 1999; De Li, 2005; Keane, Maxim, & Teevan, 1993; Pratt & Cullen, 2000; Vazsonyi & Crosswhite, 2004; though see Longshore & Turner, 1998). However, the effects of self control on violent propensity of individuals diagnosed with mental disorders or those released from psychiatric hospitals have not been examined in previous research. It remains unclear whether the effects of self control on criminal behavior remain consistent with Gottfredson and Hirschi’s (1990) expectations in these populations.

Also, it is possible that the application of Gottfredson and Hirschi’s (1990) theory can provide additional evidence needed to further explain the disparity in the risks of violence between mentally ill and non-disorder individuals (Fischer et al., 2006). Previously, the researchers have found that the association between psychiatric treatment history and violence is substantially reduced when factors such as alcohol abuse are controlled (Steadman et al., 1998). However, since high prevalence of both alcohol use and violence can be interpreted as outcomes of low self control, the current investigation presents a unique opportunity to examine whether the differences in rates of violence perpetrated by psychiatric patients and community controls can be explained by controlling for self control.
In the current investigation I compare the rates of violence reported by a group of psychiatric patients after their release from a psychiatric hospital to the rates of violence reported by the individuals living in a similar community setting who had no histories of recent psychiatric admissions. Based on the previous research on perpetration of violence by psychiatric patients and individuals with no history of psychiatric admissions (Link et al., 1992) I expect that even after controlling for age, gender, race and education the psychiatric patients will report being more violent during the study period.

Also, based on previous research that highlights substance abuse as one of the major risk factors in perpetration of violent actions among psychiatric patients and non-disordered individuals in the community (Steadman et al., 1998) I expect that self-reported alcohol consumption and alcoholism symptoms will be associated with a greater risk of reporting violent behaviors during the study period.

Hypothesis 1: Psychiatric patient status, alcohol consumption, and alcoholism symptoms will be significantly associated with the higher rates of violence during the study period controlling for age, gender, race and education.

Since previous research studies show that self control is a robust correlate of violent behavior in various populations, I hypothesize:

Hypothesis 2: The rates of violence will differ significantly based on self control levels in both psychiatric patient group and in the comparison group.

Following the suggestion by Fischer et al. (2006) I investigate whether controlling for self control attenuates the correlation between psychiatric status, substance abuse patterns and violence. Since Gottfredson and Hirschi (1990) theorize that individuals with low self control are both at higher risk of substance abuse and are more likely to be
violent, I expect that introduction of self control will also attenuate the correlation between alcohol consumption, alcoholism symptoms and violence.

_Hypothesis 3:_ Controlling for self control will reduce the correlation between psychiatric status, alcohol consumption, alcoholism symptoms and violence to statistically non-significant.
CHAPTER II

METHODS

Data


The original data collection effort was initiated with a goal of providing new and reliable information on the violent and aggressive behavior perpetrated by psychiatric patients after their release from a psychiatric hospital. The researchers have also collected information on various psychological and sociological characteristics of the study participants identified in previous research as factors influencing the risk of perpetration of violence.

To insure the validity and reliability of the measures of key risk factors of violent behavior, experts from the field of mental illness and violence research were asked to create measures appropriate for surveying psychiatric patients and a pilot study that used the created measures was conducted.
In the final design, three acute inpatient psychiatric facilities were targeted as sites for data collection: Western Psychiatric Institute and Clinic (Pittsburgh, PA); Western Missouri Mental Health Center (Kansas City, MO); Worcester State Hospital and the University of Massachusetts Medical Center (Worcester, MA). The study enrollment criteria required that the subjects recruited for the study were on civil admission, were between 18 and 40 years of age, spoke English, were of White or Black race, and were not hospitalized for over three weeks at the facility before being approached by the researchers and did not remain at the hospital for more than 145 days (Monahan et al., 2001, pp. 150-152).

The data on the psychiatric subjects were drawn from multiple sources including patients discharge charts; baseline interviews conducted by a research interviewer and a research clinician (research clinicians confirmed the chart diagnosis); five follow-up interviews conducted over the course of one year, one interview every 10 weeks, with the patients and patient nominated collateral; and arrest records (Monahan et al., 2001, pp. 151-153). Participation in the study was voluntary and the subjects were paid for every interview they completed. The research team has also developed and executed a number of strategies designed to protect the research subjects from their own violence and the research staff and third parties from subjects’ violence in the course of the MacArthur Violence Risk Assessment Study (see Monahan, Appelbaum, Mulvey, Robbins, & Lidz, 1993).

The researchers found it important to be able to compare the rates of violence perpetrated the released psychiatric patients to the rates of violence of subjects with no recent history of psychiatric hospitalization who were living in the similar community.
setting ("The MacArthur Violence Risk Assessment Study", 2001). For that reason, the researchers collected data from a group of subjects living in the similar community setting as the psychiatric patients released from Western Psychiatric Institute and Clinic (Pittsburgh, PA). "The University of Pittsburgh’s Center for Social and Urban Research identified a community sample such that the distribution of the census tracts in which that sample resided was the same as the distribution of the census tracts in which the patients resided during the year following discharge" (Steadman et al., 1998, p. 395).

Pittsburgh (PA) was the only site where the community comparison data were collected. Similar demographic study enrollment criteria along with the 1990 Census data were used in recruitment of the stratified random community sample. The community group members and the collaterals they nominated were interviewed only once (Steadman et al., 1998). Principle assessment instruments given to the patients were administered to the community sample members, including the survey of violent behavior in the past 10 weeks ("The MacArthur Violence Risk Assessment Study", 2001). The same ethical guidelines were applied in the process of data collection from the community group members. Details on the sample selection process can be found in Steadman et al. (1998) and Monahan et al. (2001).

The current study uses data collected from the Pittsburgh site of the MacArthur Violence Risk Assessment Study. The data set used in the current analysis includes the data provided by the patients released from the Western Psychiatric Institute and Clinic (Pittsburgh, PA) at baseline and during the first 10 week follow-up interview and the data provided by the community group during their only interview. I did not use data collected
through collateral interviews or through obtainment of the official arrest records in the current analysis.

The use of the data for the current investigation was approved by the Internal Review Board for the Protection of Human Subjects in Research of the University of New Hampshire. For the purpose of drawing a clear comparison between the two study populations in the current document, the psychiatric patient group will be referred to as *patient group* and community comparison group subjects will be referred to as *community group* and the membership in the patient group is referred to as *patient status*.

The total of 391 patients were administered the baseline interview at the Pittsburgh site and 336 of those subjects have completed the first 10 week follow-up. The final community group sample consisted of 519 subjects who completed their interview (Steadman et al., 1998). Due to the list-wise deletion of the cases with missing data a total of 804 subjects were included in the current analysis. The means and proportions of the study variables in the patient group ($n=301$) and the community group ($n=503$) are depicted in Table 2. I have also conducted a supplemental analysis including a total of 346 cases in order to evaluate the alcoholism measure that was missing a large number of cases and for that reason was not included in the main analysis.

**Outcome Variable**

**Violent Acts**

The MacArthur Violence Risk Assessment Study was designed to provide researchers with a detailed report of violent and aggressive acts perpetrated by the study participants (Monahan et al., 2001). The community group subjects were interviewed
only once and were asked about the violent and aggressive behaviors perpetrated by them in 10 weeks prior to their interview. The patient group subjects were asked about their involvement in the same set of behaviors at each of the five 10 week follow-up periods.

To reduce the effects of the sample attrition occurring between follow-ups in the patient group, I used the data describing violent and aggressive behaviors reported by the patients during the first of the five 10 week follow-up interviews (first 10 weeks spent in the community after the release from the psychiatric hospital). It follows that the current investigation uses the self-reported involvement in violent and aggressive behaviors taking place 10 week prior to the interview as an outcome measure.

Though much previous research suggests that violence among psychiatric patients should be surveyed using triangulated reporting methods to account for the underreporting of socially undesirable behaviors (Borum, et al., 1997; Monahan et al., 2001; Swanson, et al., 1999; Swartz et al., 1998), the current study uses the self-reported records of violent and aggressive behaviors only.

The list of violent acts reported by the study participants in both groups was adopted from the Conflict Tactic Scales (CTS) originally developed by Straus (1979) and included in the violence screening section of the study (Monahan et al., 2001). The CTS are one of the best regarded and widely used instruments for surveying of violent and aggressive behaviors suitable for use in large scale surveys (Straus & Gelles, 1990). Though originally the CTS measures were designed to survey a variety of behaviors manifested in conflicts within a family, the CTS and the revised versions of the instrument were adopted and used successfully in research studies concerned with more
diverse interpersonal, social and national contexts of violent behavior (Boone & Flint, 1988; Straus, 2004; Sellers, 1999; Shook, Gerrity, Jnrich, & Segris, 2000).

CTS have been previously utilized in surveying of violent and aggressive behaviors perpetrated by mentally ill individuals (Monahan et al., 2001). The MacArthur Violence Risk Assessment Study researchers used the items describing physical aggression (one of the three types of conflict resolutions included in CTS) similar to the items used in the Form R of the CTS (Gelles & Straus, 1988). All items were administered through an interview process described above. The items similar to items “k” through “s” (Form R) meant to identify violent/physically aggressive behavior (see Straus and Geller, 1990) were included in the violence screening section in the MacArthur Violence Risk Assessment Study.

The content of the items and scaling of responses in the current dataset was mostly consistent with the original version of the CTS published by Straus (1979). However, a few minor changes were made to the CTS. While the items on the original CTS were designed to survey behaviors that took place over a course of a year, the study subjects were asked to refer their answers to the 10 week period preceding the interview. An item asking the subjects whether they have tried to force sex on anyone in the past 10 weeks (i.e. Have you tried to physically force anyone to have sex against their will?) was substituted for the item “p” from the original CTS (Straus, 1979). The subjects in both of the study groups were asked whether each violent/aggressive behavior included was perpetrated by them, against them and how many times.

In the current study, I used the items that asked the study subjects to report whether they have perpetrated any of the violent or aggressive actions (total of nine items)
against someone to compute a dichotomous measures of violent and aggressive behaviors. The content of the items used to measure violent behavior can be found in Appendix C. I chose to construct a dichotomous measure of violent and aggressive behaviors labeled: *any violent acts*, since a continuous measure based on the total number of incidents of violence was highly skewed.

The subjects who reported perpetrating any of the aggressive or violent behaviors included in the violence screening were coded as being *violent* (1) and the subjects reporting no involvement in any of the aggressive or violent behaviors were coded as being *non-violent* (0) during the 10 week study period. Such method of calculation of the violence measure was suggested by the author of the CTS as a satisfactory procedure to deal with skewness of response distributions attributed to CTS items describing fairly uncommon behaviors (Straus & Gelles, 1990). Indeed, Table 2 shows that only 27% of the patient group and 19% of the community group subjects acknowledged committing one or more violent acts during the study period.

In the current study I do not make a distinction between violent and aggressive behaviors. Though the items ask the participants to report the perpetration of behaviors ranging in the degree of aggression and in severity of potential legal and physical consequences, all behaviors described can be considered physically violent except for threatening another person with a weapon (i.e. Have you threatened anyone with a knife or a gun or other lethal weapon?). Nevertheless this method of constructing a violence measure was suggested by the author of the CTS (Straus & Gelles, 1990) and is methodologically sound given that it was used in previous research (Sellers, 1999).
Independent Variables

Self Control

No exact scale of self control published in previous research evaluating the
general theory of crime was administered in the process of the MacArthur Violence Risk
Assessment study. Nevertheless, both study groups were administered a number of
psychometric scales including the Barratt Impulsiveness Scale (BIS-11) (Barratt, 1994)
administered via interview (Monahan et al., 2001). The BIS-11 scale is a 30 items
measure of impulsivity constructed in the process of revision of the earlier impulsivity
measure BIS-10 (Barratt, 1994). All items were answered using a 4-point scale with
responses ranging from rarely/never to almost always/always with higher scores on items
generally reflecting high impulsivity, except for the items scored in reverse order to avoid
the response set (Patton, Stanford, & Barratt, 1995). Previous research showed that
combined scores on the BIS-11 scale are an internally consistent and psychometrically
valuable measure of impulsivity and that the scale can be administered to various
populations including general population members and psychiatric subjects (Barratt, 1994;
Patton et al., 1995).

I decided to select items from the BIS-11 scale to construct a self control measure
for the current analysis. This decision was guided by several factors determined from the
review of research on both impulsivity and self control.

First, while the BIS and its revised versions have been used in research in
psychology for quite some time, previous research suggests that it is still not clear what
sub-dimensions of impulsivity exist within the scale and what effects these dimensions
have on behavioral outcomes (Barratt, 1994; Haden & Shiva, 2008, Patten et al.,1995).
is possible that the process used in the current study to select items from the BIS-11 scales for the self control measure could be used for further revision of the BIS impulsivity scale.

Second, due to the ostensible conceptual and theoretical overlap between the self control and impulsivity constructs, the BIS-11 measure provided items that could be used to validly measure self control. For example, Barratt (1994, p. 61) includes self control as one of the concepts relevant to the research in impulsivity. In addition, a number of studies of the general theory of crime in criminology included impulsivity as one of the traits affecting self control (Grasmick et al., 1993; LaGrange & Silverman, 1999; also see Marcus, 2004). Furthermore, Arneklef et al. (1999) concluded that impulsivity was the strongest correlate of the overall self control construct.

Third, the recent critiques of measurement strategies used in research on self control and of studies using the Grasmick et al. (1993) scale, suggest new guidelines are needed for selection of items measuring self control consistently with Gottfredson and Hirschi's (1990) theorizing (Hirschi & Gottfredson, 1993, 2000; Marcus, 2003, 2004; Piquero & Bouffard, 2007). Upon closer examination of the contents of the BIS-11 items I concluded that these items could be used to construct a self control measure better withstanding the emerging criticisms (see Hirschi & Gottfredson, 1993, 2000). However, to insure some face validity, I examined a number of self control scales to verify if similar items selected for the current self control measure have been used in previous research (see Evans et al., 1997; Gibbs & Giever, 1995; Grasmick et al., 1993; LaGrange & Silverman, 1999; Marcus, 2003).
The initial choice of items used for the construction of the self control scale in the current study was based on the evaluation of contents of each item in the BIS-11 scale. The main goal was to construct a self control measure consistent with the original theory and the definitions of self control reiterated by the authors in their subsequent publications. Following the most recent definition of self control, the items were selected if they described a person who possesses or lacks the enduring predisposition to consider the long term consequences or full range of potential costs of his or her acts (Hirschi & Gottfredson, 1993; Hirschi, 2004). Item selection was also guided by a similar statement in the original formulation of self control describing low self control as a “tendency to respond to tangible stimuli in the immediate environment” versus high self control as “tendency to defer gratification” (Gottfredson and Hirschi, 1990, p. 89). Also, Marcus (2004) pointed out that behaviors or attitudes related to the domains of risk, sensation or thrill seeking, or preference for physical, or simple tasks commonly used in previous research are inappropriate as they suggest differential motivation towards acts contrary to the theory.

First, I selected a set of items that tapped into self control on the cognitive and decision making level. Such items as “I act on spur of the moment”, “I plan for the future”, “I am more interested in present than the future”, slightly differently worded, were included in the Grasmick et al. (1993) scale; other items selected (e.g. I do things without thinking, I say things without thinking, I am a careful thinker) are similar to items used by LaGrange and Silverman (1999); others were chosen if they also described a person’s level of behavioral restrain (e.g. I can on impulse).
Second, I attempted to address the issues of undesirable over-reliance on personality characteristics as indices of self control (Hirschi & Gottfredson, 1993; Marcus, 2004). This was accomplished by selecting items that described overt behaviors attributable to either high or low self control.

In the majority of studies, operationalization of self control has been conducted along the lines of the attitudinal or behavioral measurement strategies. Soon after the publication of *A General Theory of Crime*, Hirschi and Gottfredson (1993) expressed their dissatisfaction with attitudinal measures of self control (see also Hirschi & Gottfredson, 2000; Hirschi, 2004). Measurement of self control as a personality construct may have been motivated by the charges of tautology that pertain to the behavioral measures (Geis, 2000). Evaluation of both behavioral and attitudinal measures have led some researchers to conclude that neither approach had an advantage over the other (Tittle, Ward, & Grasmick, 2003; though see Pratt and Cullen, 2000). Yet the authors of the General Theory of Crime dismiss charges of tautology in their subsequent publications and urge the researchers to concentrate on overt behaviors as indicators of self control (Hirschi and Gottfredson, 1993, 2000).

A number of criticisms of the attitudinal self control scales, including the Grasmick et al. (1993) scale, have emerged in academic literature. According to Hirschi and Gottfredson (1993) personality traits can be byproducts or outcomes of self control but they are not necessary components of self control. In the later publication, Hirschi (2004) calls the personality based indices “confessions of delinquency” and laments the misinterpretation of the “elements of self control” section (Gottfredson and Hirschi, 1990; p. 98-91) that gave grounds to construction of the attitudinal measures.
Others agree that personality based measurement techniques distort the picture and produce measures of self control incongruent with the conception proposed in the original theory (Marcus, 2004). Perhaps most troubling findings regarding dimensionality of the Grasmick et al. (1993) scale were published by Marcus (2003) who correlated the scale items with the comprehensive measure of the Five Factor Model (FFM) of personality. Finding that the Grasmick et al. (1993) scale correlated with numerous facets on the FFM known to be largely independent of each other Marcus (2003, p. 693) concluded that the scale has a broad basis within the entire personality sphere.

To remedy the issues that pertain to attitudinal measures, Marcus (2004, p. 38) suggest that self control should be measured in a more direct way: by using overt behavioral indices, since self control is nothing more than a general latent factor underlying crime, analogous acts and negative social outcomes (see also Hirschi, 2004). Gottfredson and Hirschi (1990) argue that individuals with low self control may display their lack of self control by engaging in imprudent behavior or acts analogous to crime. Since analogues acts are one of the behavioral manifestations of low self control and are conceptually independent of crime as they bare no criminal sanctions, these acts can be used as indices of the construct.

In order to address the criticisms that pertain to purely attitudinal measures of self control I have included the items from the BIS-11 scale that asked the participants to report on the degree of involvement in behaviors that could be considered analogous to crime and be indicative of the level of self control. I have included such behaviors as residential instability (e.g. I change where I live), employment instability (e.g. I change jobs) lack of diligence in management of financial matters (e.g. I buy things on impulse, I
spend more than I earn, I save regularly) lack of diligence in management of regular tasks
e.g. I am restless at lectures and talks, I plan trips well ahead of time, I have regular
medical checkups) based on the discussion of possible outcomes of self control (Evans et
al., 1997; Gottfredson & Hirschi, 1990). It is also worth pointing out that all of the
behaviors are conceptually independent of the violent and aggressive actions included in
the outcome measure and so my measure of self control in the current study is expected
to be non-tautological.

Based on the interpretation of the general theory of crime (Gotfredson and Hirschi,
1990) and the review of subsequent criticisms of the instruments used to measure self
control I selected a total of 19 items from the BIS-11 measure for the construction of the
self control scale based on their content. All items were coded so that high scores on
each items indicated low self control. The set of selected items was subjected to Principle
Component Analysis (PCA) to confirm the uni-dimensionality of the construct (19 item
PCA is not shown in the current document).

While the distribution of the eigenvalues suggested one factor solution, two items
had extremely low factor loading scores (Items 20: I Change Where I live; Item 28: I am
more interested in present than the future). These items were dropped from the self
control measures, and a new PCA was preformed with the remaining set of 17 items
(Table 1).

Four factors with eigenvalues greater than 1 were extracted (see Appendix A for
the Scree plot). The difference between the eigenvalues of the first (4.920) and the second
factor (1.782) extracted via PCA suggest that a one factor solution was appropriate since
the difference between the eigenvalues of the second and the third factor (1.149) was
much smaller (see Scree plot in Appendix A). Though risks pertaining to under-extraction of factors in PCA have been previously identified (Wood, Tataryn, & Gorsuch, 1996), in adherence with the self control theory and previous research I chose to accept one factor solution.

One of the items (i.e. I change jobs) produced a considerably low factor loading score, yet was left in the scale due to the importance of such items to the maintenance of the content validity of the scale. This item was considered as an indicator of employment instability which is seen by the authors of the self control theory as an important indicator of self control (Gottfredson & Hirschi, 1990; Hirschi & Gottfredson, 1993; 2000). The overall Cronbach Alpha internal reliability of the 17 item instrument was moderate (alpha = .835). For the patient group members the reliability of the self control measures was (alpha = .821) and for the community group members (alpha = .807).

I used similar methodology as Tittle and Botchkovar (2005) to calculate the two final measures of self control. First measure was calculated by summing the raw scores on all of the 17 selected items. This measure was labels: raw score self control. The mean scores for the measure in each study group (patient and community groups) are illustrated in Table 2.

To construct the second measure, the z-scores for each study participant on each of the 17 items were calculated for the total sample that included all of the study participants with no missing data. The z-scores were multiplied by the factor loading score and summed to create the final continuous measure of self control. This measure was labeled: weighted self control and the mean scores in each study group are provided in the Table 2.
Finally, I have also used the sum of raw self control scores to determine *levels of self control* by disaggregating the total sample on to those with the total scores one standard deviation or lower below the mean (High Self Control) and those with scores of one standard deviation or higher above the mean (Low Self Control). The rest of the subjects were put in the “Medium Self Control” category.

**Psychiatric Patient Status.**

Use of history of psychiatric hospitalization as an indicator of mental illness has been adopted in the previous research on mental illness and violence and the resulting predictor variable was shown to correlate with violent and aggressive behavior (Link et al., 1992; Link & Stueve, 1994). For the current analysis, I have constructed a measure labeled- patient status- that is based on the study group membership, with membership in the patient group coded as (1), and membership in the community group coded as (0) (see Data section). I decided to use patient status as the main measure of mental illness/metal health in the current analysis for two reasons.

First, I wanted to make sure that all of the study categories contained a sufficient number of cases needed for the planned analysis. The patient status measure is based on the membership in the study groups known to have a sufficient number of cases while other measures such as principal diagnostic criteria (seemingly more appropriate measure of mental illness) had very few cases in some of the categories (see Appendix B).

Second, the DSM III-R check list was administered only to the patient group members in the study (Steadman et al., 1998) and so disaggregation of the whole sample by the principal diagnosis or by any other valid psychiatric criteria was not possible. Nevertheless, in the patient group the principal diagnosis, along with other clinical
characteristics, was obtained during the baseline interview conducted by the research clinician (Monahan et al., 2001). One can refer to the supplemental analysis in the Appendix B for the illustration of the distribution of the principal diagnosis in the patient sample and to view the mean scores of the raw score self control measure by diagnostic category.

While the Appendix B makes clear that a large number of the patient group subjects can be considered severely mentally ill based on their principal diagnosis (e.g. 9% of subjects diagnosed with schizophrenia, 9.6% bipolar, 48.5% depression), another question can be raised regarding the appropriateness of the comparison between the patients and community members. Even if the patient group can be considered mentally ill how can it be ascertained that the community group can be compared to them as mentally healthy? Though no confirmed clinical diagnosis was provided for the community group members in the study, the community group members reporting psychiatric hospitalization were dropped from the study.

Based on the review of previous research it seemed appropriate to use the patient status measure in the context of the current investigation. It is expected that findings that pertain to the effects of the patient status variable on the outcome and other study variables will meaningfully contribute to the research field. Mainly, it is possible that the risk of violence may pertain to the individuals requiring psychiatric care rather than to the individuals who fit certain diagnostic criteria for psychiatric disorders. Further explanation of how the patient status variable is used throughout the current study will follow in the Analysis section and the benefits and limitations of this approach will be further highlighted in the Discussion section.
Alcohol Consumption

Two measures are used in the current study to evaluate the effects of alcohol use on the study variables. The decision to construct two different measures was based on the review of literature on mental illness and criminal and violent behavior that suggested that some studies have used the amount of alcohol consumed while others used clinical diagnosis of alcohol use related disorders as predictors of violent behavior.

The first measure is based on self-reported consumption of alcohol. The study participants were asked how many drinks of each type of alcohol (i.e. beer, wine and liquor) they consumed in the last week (i.e. week before the interview). Every “1 bottle of beer”, “1 glass of vine”, “1 wine cooler”, “1 highball or shot glass of liquor” the study participant reported consuming was counted as one drink. Consumption of “1 case of beer” was counted as 24 drinks; “1 bottle of vine” was counted as 6 drinks; “half a pint”, “1 pint” “1 fifth”, “1 quart” of liquor were counted as 6, 12, 20, and 24 drinks respectively.

I have computed the alcohol consumption index, labeled: alcohol consumption, by summing the number of drinks consumed by each of the study participants during the past week across all three alcoholic beverage categories. Individuals who reported no alcohol consumption received a score of “0” while all other study participants received a score that reflects total number of drinks they reported consuming in the last week. Table 2 shows the mean number of alcoholic drinks consumed by the subjects in each study group.
Alcoholism Symptoms

Alcoholism symptoms were identified based on the responses to the Brief Michigan Alcoholism Screening Test (bMAST) (Pokorny, Miller, & Kaplan, 1972) provided by the community group and the patient group during the follow-up interview. The bMAST is a revised, 10 item version of the longer 25 item based Michigan Alcoholism Screening Test (MAST) used to detect alcoholism (Pokorny et al., 1972).

The MAST scale is one of the most widely used and studied instruments of its kind (Nathan, 1993). Previous research has confirmed that MAST and its revised versions have good reliability and validity and that the scores on these scales can help to identify problems associated with alcohol abuse in various populations including clinical and psychiatric subjects (Shields, Howell, Potter, & Weiss, 2007; Zung, 1984). Scholars have also concluded that the bMAST scores were significantly correlated with alcohol consumption, alcohol related blackouts, early morning shakes, memory loss, early morning and continuous drinking, loss of control and withdrawal seizures (Connor, Grier, Feeney, & Young, 2007). Other studies have concluded that bMAST was comparable in its reliability and in accuracy of predicting weekly alcohol consumption levels and presence of alcohol-related clinical diagnosis to other widely used alcoholism scales (MacKenzie, Langa, & Brown, 1996).

Unlike the previously discussed alcohol consumption measure, the bMAST utilizes social (e.g. Do friends or relatives think you are a normal drinker?), legal (e.g. Have you been arrested for drunk driving or driving after drinking?) and interpersonal (e.g. Have you lost friends or boyfriends/girlfriends because of drinking?) problems related to alcohol misuse as indices of alcohol related problems and alcoholism.
Nevertheless, previous research has shown that reporting any of the bMAST symptoms was associated with violence in both psychiatric patients and among those in a community comparison group (Steadman et al., 1998).

The original content of all bMAST items was maintained in the MacArthur Violence Risk Assessment Study with the exception of asking the subjects to report the behaviors, included in the retrospective assessment items, which took place during the 10 week study period. As was intended by the creators of the scale, the responses were given on the Yes/No response scale.

While a number of bMAST scaling methodologies have been suggested, I chose to construct a dichotomous measure of alcoholism labeled: any bMAST symptoms consistent with previous research (Steadman et al., 1998). Individuals in the study who reported any one of the bMAST symptoms received a score of “1” and individuals who reported none of the symptoms received a score of “0” on the any bMAST symptoms measure. A full list of items used to detect the alcoholism symptoms in the current study is available in Appendix C. Table 2 shows the percentage of subjects reporting any bMAST symptoms in each study group. I was not able to use the variable in the main analysis due to a large number of cases with missing information on some of the items. However the variable was included in the supplemental analysis (see Analysis section).

**Control Variables**

In the current analysis, I chose to control for variables that were expected, based on previous research, to affect the risk of violent behavior regardless of psychiatric status. Age had to be controlled since Gottfredson and Hirschi (1990) argue that this variable directly correlates with crime and violence. Age and gender have also been found to
strongly correlate with violent behavior among mentally ill individuals (Bonta et al., 1998).

Age of the subjects was recorded in years of age at the time of the study. Since age was one of the study recruitment criteria, participants in both study groups were between ages of 18 and 40. Mean age of subjects in each study group is illustrated in the Tables 2. Male study subjects were coded as (1) and female subjects as (0). The Table 2 illustrates the percent of male subjects in each study group.

Based on previous research, the effects of race and socio-economic status (SES) on violent behavior of psychiatric patients are equivocal when community context is taken in to account (Swartz et al., 1998; Silver 2000a; 2000b). However, I found it important to control for both race and SES since list-wise deletion of cases with missing data was likely to compromise the initial equivalence of community contexts in which the subjects in the two study groups resided. Since both racial and SES characteristics of psychiatric patients were found by Silver (2000a) to be associated with living in disadvantaged neighborhoods, including these variables in the analysis provided some opportunity for controlling for the community context.

Only subjects of White coded as (0) and Black coded as (1) races were recruited for the study at the Pittsburg site of the MacArthur Violence Risk Assessment Study. The percentage of White subjects in each study group is illustrated in the Tables 2. I did not construct an SES index but instead used years of education as a proxy measure. Similar strategy has been used in the previous research (Link & Stueve, 1994).

Given that most of the measures in the study are based on self-reports, I found it necessary to control for social desirability or willingness to disclose information about
socially undesirable behaviors. It was also important to control for the response bias since self control levels may affect survey responses (Hirschi & Gottfredson, 1993; Piquero, MacIntosh, & Hickman, 2000). Fifteen items from the Marlowe-Crowne Social Desirability scale (Crowne & Marlowe, 1960) were included in the study interviews in both study groups (Steadman et al., 1998). The items are definitions of culturally desirable behaviors (e.g. I never resent being asked to return a favor) that are, nevertheless, unlikely to occur and so subjects reporting more of these behaviors are likely to provide bias reporting on undesirable behaviors during interviews (Crowne & Marlowe, 1960).

In the study, the answers to the social desirability items were provide using false (0) don’t know (.5) and true (1) response scale slightly different from the original scale that only used true and false response categories. All items were recoded so that higher scores would reflect greater social desirability. Scores on each of the 15 items were summed for each study subject to create the social desirability variable. The mean scores on social desirability scale for each population are provided in the Table 2. A full list of items is provided in Appendix C.

**Analyses**

I began the analysis by examining the distribution of the study variables in the two study populations. For this I disaggregated the study sample into the patient group and community group. I calculated the mean values for continuous variables in each of the study groups and tested for statistically significant between group differences using independent samples t-tests. For the dichotomous variables I have calculated the relative frequency of each variable in each study group and tested for statistically significant
between group differences using the Pearson chi square test. The values for the patient
group (Column 1) and the community group (Column 2) and the outcomes of tests for
between group differences are illustrated in the Table 2.

Table 2 also includes relative frequency and Pearson chi square statistic for the
distribution of the any bMAST symptoms variable in the two study groups. However, the
number of cases included in this test is different from the number of cases used in the rest
of Table 2 due to the list–wise deletion of cases with missing data. Since a large number
of subjects had missing data on some of the key bMAST items, the bMAST variable was
excluded from the main analysis multivariate (Table 4) and was tested in the
supplemental analysis (Table 5) instead.

In the next step of the analysis, I further disaggregated the sample into subjects
with high, medium and low self control levels (see Measures). I then recalculated the rate
of violence for the patient group and the community group in each self control category. I
used Pearson chi square test to examine whether rates of violence were different for each
category of self control in each study group. The outcomes are illustrated in the Table 3.

Since the outcome variable is a dichotomous measure, the main analysis in the
current investigation was conducted using multiple logistic regression with four
multivariate models. Model 1 included patient status as a predictor variable and age,
gender, race and level of education as control variables. Model 2 introduced the measure
of alcohol consumption into the multivariate relationship. Model 3 introduced a weighted
17- item self control measure and Model 4 introduced the social desirability measure. The
outcomes for all four models are reported in Table 4.
I have also conducted a supplemental analysis, using the same multivariate models for the subjects who had no missing data on any of the bMAST items. The bMAST symptoms variable was integrated into the multivariate Model 2 replacing the alcohol consumption measure. Instead of the weighted 17 item self control measure in Model 3 of the supplemental analysis I use self control measure based on the sum of raw scores of the 17 self control items. The outcomes of the supplemental analysis are illustrated in the Table 5.
Table 1
17 Item Self Control Measure

<table>
<thead>
<tr>
<th>Item</th>
<th>Loading</th>
<th>Mean (SD)</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>I do things without thinking</td>
<td></td>
<td>2.06 (0.88)</td>
<td>.639</td>
</tr>
<tr>
<td>I say things without thinking</td>
<td></td>
<td>2.00 (0.87)</td>
<td>.547</td>
</tr>
<tr>
<td>I change jobs</td>
<td></td>
<td>1.80 (0.98)</td>
<td>.294</td>
</tr>
<tr>
<td>I act on impulse</td>
<td></td>
<td>2.23 (0.92)</td>
<td>.585</td>
</tr>
<tr>
<td>I act on spur of the moment</td>
<td></td>
<td>2.27 (0.89)</td>
<td>.563</td>
</tr>
<tr>
<td>I buy things on impulse</td>
<td></td>
<td>2.26 (0.97)</td>
<td>.385</td>
</tr>
<tr>
<td>I spend/charge more than I earn</td>
<td></td>
<td>2.02 (1.09)</td>
<td>.432</td>
</tr>
<tr>
<td>I am restless at lectures/talks</td>
<td></td>
<td>2.40 (0.97)</td>
<td>.362</td>
</tr>
<tr>
<td>I plan tasks carefully*</td>
<td></td>
<td>2.32 (0.94)</td>
<td>.571</td>
</tr>
<tr>
<td>I plan trips well ahead of time*</td>
<td></td>
<td>2.57 (1.12)</td>
<td>.526</td>
</tr>
<tr>
<td>I am self-controlled*</td>
<td></td>
<td>2.13 (0.94)</td>
<td>.624</td>
</tr>
<tr>
<td>I save regularly*</td>
<td></td>
<td>2.91 (1.06)</td>
<td>.514</td>
</tr>
<tr>
<td>I am a careful thinker*</td>
<td></td>
<td>2.13 (0.89)</td>
<td>.701</td>
</tr>
<tr>
<td>I plan for job security*</td>
<td></td>
<td>2.38 (1.15)</td>
<td>.662</td>
</tr>
<tr>
<td>I have regular medical/dental checkups*</td>
<td></td>
<td>2.35 (1.11)</td>
<td>.352</td>
</tr>
<tr>
<td>I am a steady thinker*</td>
<td></td>
<td>2.22 (0.93)</td>
<td>.556</td>
</tr>
<tr>
<td>I plan for the future*</td>
<td></td>
<td>2.33 (1.02)</td>
<td>.617</td>
</tr>
</tbody>
</table>

Alpha=.835
Alpha (Patient Group) =.821
Alpha (Community Group) =.807

Note: the PCA outcomes, means and standard deviations for each item are presented for the total study sample, including the patient group subjects (n= 301) and the community group subjects (n= 503), used in the main analysis
*Item recoded
CHAPTER III

RESULTS

As suggested by previous research (Link & Steuve, 1994) and hypothesized (see Hypothesis 1), a greater proportion of psychiatric subjects (27.2%) than community subjects (19.1%) reported perpetrating one or more violent acts during the 10 week study period. This between group difference in violence rates was statistically significant.

Another notable difference between the two study groups was in levels of self control. Higher scores on the weighted and raw score self control measures in the current study reflected lower self control. The patients’ means on both self control measures were significantly higher than means on same measures produced by community subjects, indicating that psychiatric subjects in the current study had lower self control.

I also found that the two groups differed significantly on a number of study variables illustrated along with violence and self control measures in Table 2. The patient group subjects were significantly more likely than community subjects to be of male gender (55.8% versus 38.2%), of White race (66.4% versus 59%), have completed fewer years of education (12.88 versus 13.94) and scored lower on social desirability scale. The two groups did not differ significantly in age or alcohol consumption. However, patients were more likely to report one or more bMAST symptoms (57.9% versus 20.7%).

Table 3 depicts the relationship between self control and violence in each study group in greater detail. The individuals in both groups whose combined self control
Table 2
Study Variables in Psychiatric Patient and Community Groups

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Patient Group (Valid Cases =301)</th>
<th>Community Group (Valid Cases=503)</th>
<th>χ² or t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (Males) a</td>
<td>55.8% (168)</td>
<td>38.2% (192)</td>
<td>23.705**</td>
</tr>
<tr>
<td>Age</td>
<td>30.21 (6.3)</td>
<td>31.03 (6.2)</td>
<td>1.799</td>
</tr>
<tr>
<td>Race (White) a</td>
<td>66.4% (200)</td>
<td>59.0% (297)</td>
<td>4.368*</td>
</tr>
<tr>
<td>Education</td>
<td>12.88 (2.2)</td>
<td>13.94 (2.4)</td>
<td>6.348**</td>
</tr>
<tr>
<td>Alcohol Use</td>
<td>7.02 (21.8)</td>
<td>6.59 (16.8)</td>
<td>-.314</td>
</tr>
<tr>
<td>Self Control (raw score)</td>
<td>42.48 (8.9)</td>
<td>35.98 (7.8)</td>
<td>-10.45**</td>
</tr>
<tr>
<td>Self Control (weighted)</td>
<td>2.2 (5.0)</td>
<td>-1.3 (4.3)</td>
<td>-10.12**</td>
</tr>
<tr>
<td>Low Self Control</td>
<td>29.2% (88)</td>
<td>8.5 % (43)</td>
<td>78.254**</td>
</tr>
<tr>
<td>Medium Self Control</td>
<td>63.5% (191)</td>
<td>68.0% (342)</td>
<td></td>
</tr>
<tr>
<td>High Self Control</td>
<td>7.3% (22)</td>
<td>23.5% (118)</td>
<td></td>
</tr>
<tr>
<td>Social Desirability</td>
<td>8.07 (3.12)</td>
<td>8.68 (2.64)</td>
<td>2.818**</td>
</tr>
<tr>
<td>Violent Acts (1 or more) a</td>
<td>27.2% (82)</td>
<td>19.1% (96)</td>
<td>7.269**</td>
</tr>
<tr>
<td>bMAST (1+ symptoms) b a</td>
<td>57.9% (77)</td>
<td>20.7% (67)</td>
<td>60.514**</td>
</tr>
</tbody>
</table>

Note. *p<.05, **p<.01 two-tailed

a Dichotomous variable, Pearson chi square (χ²) is reported for between group differences; otherwise variable is continuous and independent t-tests results (t) are reported.

b The statistics is shown for a smaller sample (patients n= 133; community n=324) of participants with no data missing on any bMAST (Brief Michigan Alcoholism Screening Test) items.
scores were one negative standard deviation or lower below the total sample mean were put in the high self control category, those with scores of one standard deviation or more above the mean were put in the low self control category and the rest were put in the medium self control group (see also Measures).

As Table 3 shows, the highest rates of violence were reported by the subjects in the low self control category while the lowest were reported by the subjects in the high self control category which was true for the subjects in both study groups. Within both the patient and community groups, violence rates were significantly different between self control levels based on Pearson chi square test. Patients reported significantly different rates of violence (18.2%, 23.0% and 38.6%) for the high, medium and low levels of self control respectively. Similarly, the community subjects reported significantly different rates of violence (10.2%, 20.2% and 34.9%) for the high, medium and low levels of self control. The results supported Hypothesis 2 and suggested that self control was associated with violence in both populations.

Finally, Table 4 depicts four multiple logistic regression models constructed in order to assess the effects of study variables, including self control, on violence in a multivariate setting. As shown in Model 1 in Table 4, the patient status (i.e. membership in the patient group) was a significant correlate of violent behavior (b = .352) net of the effects of age, gender, race and years of education completed. The positive correlation indicates that the psychiatric patients in the study were more violent during the study period than their community control group counterparts.
Some other variables included in Model 1 also significantly correlated with violence. Age (b = -.045) and education (b = -.177) were significantly and negatively correlated with violence meaning that subjects who were younger and who had completed fewer years of education had greater rates of violence during the study period. Race was not a significant predictor of violence in the Model 1 or in any of the subsequent models depicted in the Table 4.

In the current analysis being a female was significantly associated with higher risk of violence in all four multivariate models depicted in the Table 4. A number of previous studies that, similarly to the current analysis, measured violence with the CTS have found a similar correlation between gender and violence (Sellers 1999; Straus & Ramirez, 2007).

In the Model 2, the alcohol consumption measure was integrated in to a multivariate setting depicted in Model 1. The score on the alcohol consumption measure were based on the number of drinks each of beer, wine and liquor combined, consumed by the study participants in the week preceding the study interview. As expected (see Hypothesis 1), in the current analysis, greater alcohol consumption (b = .015) correlated with greater perpetration of violence at a highly significant level. The correlation between patient status (b = .380), age (b = -.048), gender (b = -.444), education (b = -.136) and violence remained significant when the alcohol consumption variable was introduced.

The weighted 17-item self control measure (z scores multiplied by factor loading and summed) was introduced in Model 3. As expected, self control correlated with violent behavior (b = .053) at a high level of statistical significance net of the effects of psychiatric patient status, age, gender, race, education and alcohol consumption.
Table 3
Rates of Violence by Study Group and Level of Self Control

<table>
<thead>
<tr>
<th>Study Group</th>
<th>Self Control Level a</th>
<th>Low Self Control</th>
<th>Chi Square b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent (number)</td>
<td>High Self Control</td>
<td>Medium Self Control</td>
<td></td>
</tr>
<tr>
<td>Patient Group</td>
<td>18.2% (4)</td>
<td>23.0% (44)</td>
<td>8.379*</td>
</tr>
<tr>
<td>Community Group</td>
<td>10.2% (12)</td>
<td>20.2% (69)</td>
<td>13.287**</td>
</tr>
</tbody>
</table>

Note. *p<.05, **p<.01 two-tailed

a Self control levels were calculated using the total raw scores on the 17 item self control measure: High Self Control < -1 SD, Medium Self Control= -1SD to 1SD, Low Self Control >1SD

b Pearson chi square is reported for the within group differences by level of self control
The positive correlation between self control and violent behavior illustrated in Model 3 in Table 4 suggests that the individuals with low self control had higher rates of violence during the 10 week study period. The outcomes of the multivariate regression depicted in Model 3 support Gottfredson and Hirschi's (1990) argument that low self control and age are associated with violence.

Also, consistently with the study Hypothesis 3, after the introduction of self control into a multivariate violence prediction model the patient status was no longer a significant correlate (b = .158) of violent behavior. Contrary to the study Hypothesis (3), the association between alcohol consumption (b = .013) and violence remained significant despite the introduction of self control into the multivariate model.

In Model 4 in Table 4 the composite measure of social desirability is introduced in order to check if any of the correlations found in the previous models (Model 3) can be attributed to response bias. As expected, the social desirability measure correlated negatively and significantly with self-reported violence rates suggesting that subjects who tried to appear more socially desirable were less likely to report violent behavior during the study period. Though the multiple logistic regression outcomes depicted in Model 4 may suggest that some under-reporting of violence may have occurred this did not appear to affect the findings of the previous model significantly. Mainly, controlling for social desirability, self control, alcohol consumption, age, gender and education were significantly correlated with the rates of violence in a multivariate setting, while the patient status was not.

Previous research suggests that careful attention must be devoted to the alcohol use patterns and alcohol related disorders in mental illness and violence research. In the
Table 4
Results of Logistic Regression Predicting Violence in 10 Weeks

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Status (Patient=1)</td>
<td>.352 (.187)*</td>
<td>.380 (.189)*</td>
<td>.158 (.200)</td>
<td>.164 (.202)</td>
</tr>
<tr>
<td>Age</td>
<td>-.045 (.014) **</td>
<td>-.048 (.014) **</td>
<td>-.049 (.014) **</td>
<td>-.047 (.014) **</td>
</tr>
<tr>
<td>Gender (Male=1)</td>
<td>-.325 (.181)*</td>
<td>-.444 (.188) **</td>
<td>-.463 (.189) **</td>
<td>-.519 (.191) **</td>
</tr>
<tr>
<td>Race (Black=1)</td>
<td>.241 (.191)</td>
<td>.212 (.193)</td>
<td>.233 (.196)</td>
<td>.312 (.199)</td>
</tr>
<tr>
<td>Education (in years)</td>
<td>-.177 (.046) **</td>
<td>-.163 (.046) **</td>
<td>-.122 (.048) **</td>
<td>-.140 (.048) **</td>
</tr>
<tr>
<td>Alcohol Consumption</td>
<td>.015 (.005) **</td>
<td>.013 (.004) **</td>
<td>.012 (.005) **</td>
<td></td>
</tr>
<tr>
<td>Self Control (weighted)</td>
<td>.015 (.020) **</td>
<td>.075 (.020) **</td>
<td>.053 (.022) **</td>
<td></td>
</tr>
<tr>
<td>Social Desirability</td>
<td>-.117 (.034) **</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chi-square (d.f)</td>
<td>49.484 (5)</td>
<td>61.259 (6)</td>
<td>75.212 (7)</td>
<td>87.149 (8)</td>
</tr>
</tbody>
</table>

Note. *p<.05, **p<.01 one-tailed

a Higher scores reflect low self control
The regression coefficients are un-standardized
main multivariate analysis depicted in the Table 4, I have used an alcohol consumption measure as an indicator of alcohol use. This measurement, however, suffers from several methodological limitations.

Primarily, the alcohol consumption measure was based on the self-reported number of drinks consumed by the study participants that may have not been recalled or calculated accurately for each type of alcohol; and the measure only covers the time period of a week preceding the interview while the violence is measured across the 10 week period. Also, a number of studies on mental illness and violence evaluate the effects of alcohol use on violence based on whether subjects in a study fit a certain diagnostic criteria related to substance abuse and dependence rather than based on the alcohol consumption.

While there are a number of diagnostic tests for alcohol use related disorders, the only diagnostic instrument administered in both study groups was the bMAST. The main reason bMAST was not used in the main analysis is because a large number of participants in both groups were missing data on one of more scale items. The outcomes of the supplemental analysis that includes all subjects with no missing information on any of the bMAST items are depicted in the Table 5.

Since the change in the number of cases from the main to supplemental analysis was likely to affect the weights of the self control items, I have used a self control measure that was based on a sum of raw scores on each of the 17 items. Other variables used in the supplemental analysis (i.e. patient status, age, gender, race, education and social desirability) are identical to those used in the main analysis in Table 4.
Table 5
Supplemental Analysis: Results of Logistic Regression Predicting Violence in 10 Weeks

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Status (Patient=1)</td>
<td>.909 (.257) **</td>
<td>.719 (.271) **</td>
<td>.543 (.281)*</td>
<td>.530 (.282)*</td>
</tr>
<tr>
<td>Age</td>
<td>-.043 (.019) **</td>
<td>-.044 (.019) **</td>
<td>-.041 (.019) *</td>
<td>-.037 (.019) *</td>
</tr>
<tr>
<td>Gender (Male=1)</td>
<td>-.328 (.243)</td>
<td>-.348 (.245)</td>
<td>-.445 (.250) *</td>
<td>-.469 (.251) *</td>
</tr>
<tr>
<td>Race (Black=1)</td>
<td>.473 (.258)*</td>
<td>.457 (.260)*</td>
<td>.529 (.267)*</td>
<td>.584 (.270)*</td>
</tr>
<tr>
<td>Education (in years)</td>
<td>-.185 (.063) **</td>
<td>-.172 (.064) **</td>
<td>-.116 (.066) *</td>
<td>-.132 (.066) *</td>
</tr>
<tr>
<td>bMAST Symptoms (1 or more)</td>
<td></td>
<td>.583 (.258) **</td>
<td>.448 (.265) *</td>
<td>.447 (.265) *</td>
</tr>
<tr>
<td>Self Control (raw score sum) b</td>
<td></td>
<td></td>
<td>.056 (.016) **</td>
<td>.046 (.017) **</td>
</tr>
<tr>
<td>Social Desirability</td>
<td></td>
<td></td>
<td></td>
<td>-.082 (.048) *</td>
</tr>
<tr>
<td>Chi-square (d.f)</td>
<td>45.643 (5)</td>
<td>50.700 (6)</td>
<td>62.969 (7)</td>
<td>65.874 (8)</td>
</tr>
</tbody>
</table>

Note. *p<.05, **p<.01 one-tailed
Regression coefficients are un-standardized

*a Only subjects with no missing data on any of the bMAST (Brief Michigan Alcoholism Screening Test) items were included in the analysis (patients= 133; community= 324)

*b Higher scores reflect low self control; the score was calculated by summing across all 17 self control items
Some of the multivariate outcomes in the supplemental analysis were different from the ones in the main analysis. Mainly, the patient status correlated significantly with violence rates even after the introduction of self control (Model 3) and social desirability (Model 4).

The gender variable did not correlate significantly with violence in the Model 1 and Model 2, however, being a females was associated with a greater risk of violence in the two subsequent models. Race (i.e. Black) was positively and significantly correlated with violence in all four models. Since the community context in which the subjects resided during the study was not controlled in any of the multivariate models, the association between race and violence in the current study maybe artificial. The correlation between race and violence in the supplemental analysis is likely due to the greater likelihood of minatory subjects being discharged into, or living in poor and disorganized neighborhoods with high prevalence of violence. Nevertheless, the correlations of age, education, social desirability and self control with violence remained significant as in the main analysis.

As expected (see Hypothesis 1), reporting of any of the bMAST symptoms was positively and significantly (b = .583) associated with perpetration of violence during the study period (see Model 2). When self control was introduced in the multivariate Model 3, the bMAST symptoms still correlated significantly with violence rates. However, the coefficient (b = .448) and the significance level were lower than in the previous Model 2 that did not include self control. After the introduction of the social desirability in the Model 4, patient status, bMAST symptoms, self control and the control variables still significantly correlated with violence rates.
CHAPTER IV

CONCLUSIONS AND DISCUSSIONS

After several decades of academic work, no theoretical framework capable of explaining the connection between mental illness and violence empirically was produced in the mental illness and violence research field. At the same time, new findings supporting the notion that mentally ill individuals are more violent than people with no mental disorders continue to emerge. The current study aimed to address both of these concerns: first, by introducing the general theory of crime as a new theoretical framework for mental illness and violence research; and, second, by examining violent behaviors perpetrated by both psychiatric patients and individuals with no recent history of psychiatric admissions as products of self control. Furthermore, I hypothesized that the disparity in the involvement in violent behavior between the psychiatric and the community subjects was fully or partially attributable to differences in self control between these two groups.

Since recent investigations in the mental illness and violence research field emphasize the importance of substance use variables as violence risk predictors, both alcoholism (bMAST symptoms) and alcohol use (alcohol consumption) were also examined in the current analysis. Following Gottfredson and Hirschi’s (1990) argument that abuse of substances and violence are both behavioral manifestations of low self control, I hypothesized that controlling for self control would reduce the association
between alcohol consumption, alcoholism symptoms and violence to statistically non-significant.

The association between psychiatric status and violent behavior emerged in both, the group comparisons analysis, and in the multivariate analyses even after controlling for social and demographic variables. Substance use and alcoholism symptoms were also correlated with violence net of the effects of the study control variables. However, when the entire sample was disaggregated into groups with self control levels- high, medium and low, the individuals with low self control in both groups had the highest rates of violence, and the individuals with high self control had the lowest. Furthermore, as expected, the psychiatric patients on average had lower self control than the community subjects. Introduction of the self control measure in the multivariate analysis that included the full study sample reduced the correlation between psychiatric patient status and violence to statistical non-significance (though see Table 5).

In the supplemental analysis (Table 5) that included a smaller sample with no missing bMAST data, the patient status correlated with violence even after self control was introduced. However both the significance and the correlation coefficients of patient status and alcoholism symptoms regressed on violence were visibly attenuated by the introduction of the self control variable.

Several important conclusions can be drawn from these results. The general theory of crime seems to be applicable in the studies of violent behavior perpetrated by the recently released psychiatric patients. This conclusion further supports Gottfredson and Hirschi’s (1990) notion that self control is an empirically valid correlate of deviant behaviors.
However, all of the psychiatric subjects in the current study were released from the Western Psychiatric Institute and Clinic (Pittsburgh, PA) which limited the generalizability of the outcomes of the current study. Mainly, the outcomes of the current study cannot be generalized to all released psychiatric patients or to all of the individuals with mental disorders in the United States. In the future research, samples collected from more than one psychiatric facility should be used. Facilities located in different geographic areas and serving different types of communities should be included in the future investigations. Also, previous research shows that individuals released from public psychiatric facilities may experience more social problems upon their release than the individuals released from private facilities (Markovitz, 2006). Future research should make a distinction between patients exiting private versus public psychiatric faculties and include outpatient facilities if possible.

The evaluation of self control in the current study was complicated by the absence of previously tested self control measures from the original data collection interview. The construction of the self control measure from a larger set of items pertaining to a psychometric scale designed for a different purpose than self control measurement came at the expense of reduced content validity of the self control instrument used here. Also, Marcus (2004) pointed out that a large number of items is needed in order to accurately measure self control by capturing the versatility of social outcomes. For this purpose a 17 item self control measure is certainly too short. This shortcoming can be addressed in future research by integrating a previously tested measure of self control such as the Grasmick et al. (1993) scale or the Retrospective Behavioral Self control scale (RBS).
constructed by Marcus (2003) into a questionnaire or an interview schedule when collecting data from the mentally ill or psychiatric patients.

In previous research self control was calculated as uni-dimensional trait (Grasmick et al., 1993). Based on the PCA of the 17 item measure of self control a one factor solution was accepted despite the fact that a total of four factors with eigenvalues greater than one were extracted. The decision to consider the self control measure uni-dimensional in the current study was guided by both differences between the eigenvalues of the extracted factors (the difference between the first and the second factor was much greater than the differences between the other factors) and by adherence to research methodologies used in previous studies of self control (Grasmick et al., 1993). Nevertheless, PCA is not the best procedure to confirm the uni-dimensionality of the construct because PCA is not a true form of factor analysis (see Arneklev et al., 1999; Piquero et al., 2000). I suggest that future research should aim to further support the assertion that self control is a valid construct in the population of psychiatric patients or mentally ill individuals by performing a Confirmatory Factor Analysis of an appropriate self control measure.

Furthermore, some differences in internal reliability of the self control measure were detected in the two study groups in the current analysis. In previous research, Arneklev et al. (1999) have evaluated the invariance of self control in two socio-demographically different populations (i.e. college students and a random sample of adults) by examining whether the parameter values in the second order factor models were equivalent in both samples. To further examine whether the self control construct is equally applicable in studies of mentally ill and non-disordered individuals, future
research should attempt to apply Arneklev et al. (1999) procedure to appropriate sample from each population (see also Williams, Fletcher, & Ronan, 2007).

The outcomes of the current study partially support the assertion that the psychiatric patients report higher rates of violence compared to the community subjects because the levels of self control are lower among the psychiatric patients than among the individuals in the community. Unfortunately, explaining why the psychiatric patients had lower self control than the community group members is beyond the scope of the current research. However, I extend three possible explanations for this difference along with ideas for how these explanations should be examined in subsequent research.

Self control may be affected directly by symptoms attributable to mental illness. Some researchers have argued that certain elements of self control can be attributed to presence of mental pathology and to the narcissistic traits in particular (Vaughn et al., 2007). However, this suggestion is contrary to the theory since, according to Gottfredson and Hirschi (1990), self control levels are established in early childhood and depend on the quality of parenting. Furthermore, self control is thought to be a life-stable trait resistant to changes after it is set in early childhood. Some overlap between self control and mental pathology domains may exist due to undesirable over-reliance on personality characteristics as indices of self control in previous research. The authors, however, emphasize the importance of treating self control as a behavioral construct (Hirschi and Gottfredson, 1993). Since some diagnoses of mental pathology (e.g. ASP) are also established based mostly on behavioral indices, more research is needed to contrast these constructs from self control.
In the current study I did not make a distinction between the psychiatric patients based on any diagnostic criteria, which limited the ability of the current research to determine if symptoms attributable to particular types of mental disorders could have affected the self control of the study subjects. Future research should make a more clear distinction between the diagnostic groups and investigate what symptoms attributable to certain types of psychiatric disorders may have effects on self control.

Mental pathology may affect self control by influencing the quality of parenting an individual receives in the early childhood. Previous research has confirmed that quality of parenting to a large degree determines the self control levels (Hay & Forrest, 2006; Perrone, Sullivan, Pratt, & Margaryan, 2004). If an individual starts to show symptoms of mental disorder during the early childhood, these symptoms may be misinterpreted by the caregivers as deviant and disrespectful behaviors. The caregivers may further respond to such behaviors with harsh disciplinary measures, by showing less affection towards and by paying less attention to a child. If the onset of these symptoms occurs during the life-stage when the levels of self control are established and, indeed, affects parental behavior, this may result in establishment of low self control.

In the current study I did not include measures of quality of parenting. For that reason, the current investigation cannot suggest that self control among the mentally ill is produced by the same etiological factors thought to produce it in the general population. Future research should investigate whether self control levels are associated with the quality of parenting among the mentally ill or psychiatric patients. An even greater insight into the etiology of self control among the mentally ill can be gained by controlling for the age of onset of a mental disorder and by comparing the individuals
whose symptoms manifested early enough to affect the development of self control via effect on parenting to the individuals with a later age of onset.

Finally, it is possible that mentally ill individuals with low self control have a harder time managing their psychiatric illness due to the effects of negative social and interpersonal factors thought to be associated with low self control. These factors may include poverty, deficient or hostile social networks, poor general health, alcohol and drug use, lack of education and lack of diligence in management of important tasks to name a few. Poor management of the psychiatric conditions may further result in frequent use of inpatient psychiatric services and in experiencing of more severe psychiatric symptoms. Low self control of the psychiatric patients in the current study may be associated with the recruitment of the subjects for the study in the psychiatric hospital setting rather than with the psychiatric characteristics of the patients. Though the effects of self control on the use of psychiatric services through a combination of mediating factors would be rather hard to depict in a single research study, the evidence produced by the mental illness and violence researchers suggest that it is worthwhile to investigate this process.

Hirschi and Gottfredson (1993) argue that, while self control is empirically associated with criminal and deviant behavior, individuals in certain social groups may have on average lower self control compared to individuals in other social groups and, so, violence and criminality would be more characteristic of the members of these groups. Studies show that in a few decades following the desinstitutionalization, the proportion of psychiatric patients with criminal records has increased (Melick, Steadman, & Cocozza, 1979). Studies show that the mentally ill individuals who were arrested were also more
likely to have been admitted into a psychiatric hospital during the same year that the arrest took place (Banks, Stone, Pandiani, Cox, & Morschauser, 2000). Previous research has also suggested that mentally ill individuals with histories of arrest are more likely to report having one or more psychiatric admission than those who do not report coming into contact with the criminal justice system (Fisher, Packer, Banks, Smith, Simon, & Roy-Bujnowski, 2002). Other studies suggest that admitted patients are more likely to be from poor communities (Silver, 2000a). The outcomes of the current study suggest the individuals released from a psychiatric hospital may have lower self control than community controls and that this difference may account for the disparity in perpetration of violence between these populations. More detailed investigation of the social and clinical outcomes of self control among mentally ill, preferably throughout the life-course, is needed for the better understanding of the etiology of violence and criminality of the mentally ill.

Future research should also examine if mentally ill individuals with low self control are at greater risk of psychiatric admissions and are in greater need of psychiatric services. If future research can further confirm that self control is a factor responsible for deviant and violent outcomes in mentally ill populations, studies should consider the effects of self control on psychiatric status when investigating whether the released psychiatric patients are more violent than the individuals in the general population. Furthermore, the general theory of crime may provide a framework able to incorporate the effects of social and demographic factors previously found to be associated with violence among the mentally ill. The future studies, however, should follow a different design than the one depicted in the current study.
First, the establishment of the temporal order of the events in such research is highly important and so future research should be conducted using a longitudinal research frame. The current research study follows a cross-sectional design and so the associations between the variables in the study cannot be considered casual. It must be noted that Hirschi and Gottfredson (1993) suggest that cross-sectional design is a fitting strategy for the testing of their theory. Mainly, this is because self control is seen be a life stable trait. However, since it is still not clear whether self control levels are directly or indirectly (through parenting) affected by mental pathology, it is important to measure self control at baseline and social and criminal outcomes during follow-up investigations.

Second, since the current investigation was conducted using a sample of psychiatric patients, the findings of the current research cannot be generalized to all of the mentally ill individuals. It is also likely that low self control is related to psychiatric treatment history and so psychiatric admissions should be examined as outcomes of self control rather than be used for the recruitment of the study participants. Future research should include an epidemiological sample of mentally ill individuals and differentiate between the types of psychiatric diagnosis.

Third, future research should explore whether a broader range of deviant and criminal outcomes can be attributed to self control among mentally ill. By using violence as an only outcome variable in the current study, I have limited the ability of the current investigation to illustrate the generality of self control’s effect on deviance. It is likely that a similar study using a broader range of deviant behaviors as outcome measures would lead to a better understanding of aberrant behaviors perpetrated by the mentally ill.
Since violent and aggressive behaviors are highly undesirable it is likely that certain individuals would under-report such behaviors. Fortunately, much research on mental illness and violence today uses triangulated violence reporting that adds collateral and official data to the information collected though self-report. I suggest the future research should use the triangulated violence or deviance reports instead of basing their measure on self-report.

Following the mentioned guidelines, future research should further investigate whether violent behavior among the mentally ill can be attributed to low self control rather than to effects of mental pathology. Furthermore, future research should examine whether the social characteristics of mentally ill argued to be risk factors of violence in previous research are associated with violent behaviors spuriously through self control.
LIST OF REFERENCES


APPENDICES
APPENDIX A

SCREE PLOT, EIGENVALUES, AND MSA OF THE SELF CONTROL MEASURE

Scree Plot

Note. Eigenvalues of first four factors = 4.920; 1.782; 1.149; 1.074
KMO Measure of Sampling Adequacy = .847

93
Table 6
Mean Raw Score Self Control by Principal Diagnosis* at Discharge

<table>
<thead>
<tr>
<th>Principal Diagnosis</th>
<th>Percent (number)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenia</td>
<td>9.0% (27)</td>
<td>39.85 (8.3)</td>
</tr>
<tr>
<td>Schizophreniform Disorder</td>
<td>0.3% (1)</td>
<td>47.00</td>
</tr>
<tr>
<td>Schizoaffective Disorder</td>
<td>7.3% (22)</td>
<td>44.40 (7.5)</td>
</tr>
<tr>
<td>Delusional (Paranoid) Disorder</td>
<td>0.3% (1)</td>
<td>26.00</td>
</tr>
<tr>
<td>Atypical Psychosis</td>
<td>4.3% (13)</td>
<td>42.53 (8.9)</td>
</tr>
<tr>
<td>Depression</td>
<td>48.5% (146)</td>
<td>42.39 (8.9)</td>
</tr>
<tr>
<td>Dysthymia</td>
<td>0.3% (1)</td>
<td>45.00</td>
</tr>
<tr>
<td>Mania</td>
<td>2.7% (8)</td>
<td>37.87 (7.4)</td>
</tr>
<tr>
<td>Bipolar</td>
<td>9.6% (29)</td>
<td>38.75 (8.7)</td>
</tr>
<tr>
<td>Psychoactive Sub Dependence</td>
<td>2.0% (6)</td>
<td>47.16 (7.3)</td>
</tr>
<tr>
<td>Psychoactive Sub Abuse</td>
<td>1.3% (4)</td>
<td>51.00 (2.94)</td>
</tr>
<tr>
<td>Alcohol Dependence</td>
<td>3.3% (10)</td>
<td>49.00 (7.9)</td>
</tr>
<tr>
<td>Alcohol Abuse</td>
<td>0.3% (1)</td>
<td>39.00</td>
</tr>
<tr>
<td>Drug Dependence</td>
<td>5.6% (17)</td>
<td>46.11 (8.4)</td>
</tr>
<tr>
<td>Drug Abuse</td>
<td>2.7% (8)</td>
<td>48.75 (8.1)</td>
</tr>
<tr>
<td>Cyclothymia</td>
<td>0.3% (1)</td>
<td>45.00</td>
</tr>
<tr>
<td>Personality Disorder</td>
<td>2.0% (6)</td>
<td>35.33 (5.9)</td>
</tr>
<tr>
<td>Community Subjects</td>
<td></td>
<td>35.98 (7.8)</td>
</tr>
</tbody>
</table>

Note. *Chart diagnosis was confirmed by a research clinician using DSM-III-R Checklist or Structured Interview for DSM-III-R Personality if Axis I diagnosis was not present (Monahan et al., 2001)
APPENDIX C

MEASURES

Violent Acts
... In a last 10 weeks (Yes/No)

- Have you thrown at anyone?
- Have you pushed anyone?
- Have you slapped anyone?
- Have you kicked/bitten/choked anyone?
- Have you hit anyone with fist or object?
- Have you forced anyone to have sex?
- Have you threatened anyone w/weapon?
- Have you used a knife or a gun on anyone?

Alcoholism Symptoms
(Yes/No)

- Do you feel you are a normal drinker*
- Do friends/relatives think you are a normal drinker*
- Attended an AA meeting in last 10 weeks
- Lost girl/boyfriend due to drink in last 10 weeks
- Had trouble at work due to drink in last 10 weeks
- Neglected obligations/family/work for >2 days in a row due to drink in last 10 weeks
- In the last 10 weeks, have you had a delirium tremens (DT), sever shaking, heard voices, or seen things that weren't there after heavy drinking?
- Arrested for drunk driving in last 10 weeks
- Sought help for drinking in last 10 weeks
- Been in hospital because of drinking in last 10 weeks

Social Desirability
(Yes/ Don't Know/No)

- Never hesitate to go out of way to help someone in trouble
- Sometimes irritated by people who ask favors*
• Never intensely disliked anyone
• Sometimes try to get even*
• Sometimes jealous of others' good fortune*
• Always willing to admit when makes mistakes
• Always try to practice what you preach
• Occasionally you have taken advantage of others*
• Would never think of letting others be punished for your wrongs
• Never resent being asked to return a favor
• Sometimes think people get what they deserve when have misfortune*
• Sometimes like to gossip*
• Never been annoyed when others express idea different from yours
• Never deliberately said something to hurt another's feelings
• Sometimes resentful when don't get your way*

Note: *Recoded items
26-Oct-2009

Gostjev, Feodor  
Justice Studies, Huddleston Hall  
438 South Border Road  
Winchester, MA 01890  

IRB #: 4694  
Study: Self Control in Severely Mentally Ill  
Approval Date: 23-Oct-2009

The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved the protocol for your study as Exempt as described in Title 45, Code of Federal Regulations (CFR), Part 46, Subsection 101(b). Approval is granted to conduct your study as described in your protocol.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the attached document, Responsibilities of Directors of Research Studies Involving Human Subjects. (This document is also available at http://www.unh.edu/osr/compliance/irb.html.) Please read this document carefully before commencing your work involving human subjects.

Upon completion of your study, please complete the enclosed Exempt Study Final Report form and return it to this office along with a report of your findings.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or Julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,  

Julie F. Simpson  
Manager

cc: File  
    Tucker, James