Université de Montréal

**Potential Predictors of Serious Violence among**

**Psychiatric Offenders**

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# SUMMARY

The purpose of this thesis is to investigate the nature of the relationship (functional form) between mental illness and violence by accounting for: the specificity of the violent acts committed, the specific psychotic symptoms associated with each particular violent act, the motors that drive persons with psychotic symptoms and/or mental disorder to commit crime (s) and the contextual and demographic factors. Further, this thesis assesses, whether persons afflicted with mental disorders are only associated with violent offences, as is suggested by most researchers, or with other forms of non-violent offence. To fulfill these general objectives, data is collected from 85 mentally disordered offenders incarcerated at the Regional Mental Heath Centre (RMHC). A bivariate analysis is administered to yield the most relevant variables associated with violence among our psychiatric study sample. A multivariate analysis (multiple linear regression and logistic regression) is then performed to identify the most relevant violent predictors.

According to our bivariate analysis: 1) Mentally disordered offenders engage in violent and non-violent behaviors; 2) The functional form of the relationship between the threat-control/override symptoms (TCO) and violence varies according to the violent offence under investigation;
3) The only psychotic symptoms associated with violent behavior—assault and armed aggression—are auditory and visual hallucinations, bizarre behavior, thought disruption, suspiciousness, belief that others are hostile towards them and belief that others wanted to deliberately inflict harm upon them. 4) the *Rationality-Within Irrationality* theory is validated; 5) the TCO psychotic symptoms are important predictors even when we account for other clinical and criminological variables; 6) substance use contributes to criminality among psychiatric offenders.

## SOMMAIRE

L'objectif de ce mémoire est d'analyser la nature de la relation entre la maladie mentale et la violence, tout en tenant compte de la spécificité des gestes violents posés, des symptômes psychotiques liés à chaque type d'acte violent, du motif qui conduit les détenus qui vivent des symptômes psychotiques à commettre un crime, ainsi que des facteurs contextuels et démographiques associés au crime. De plus, on se demande si les personnes souffrant d'une maladie mentale commettent seulement des crimes violents, comme il est suggéré par la majorité des études antérieures, ou s'ils commettent aussi des crimes non-violents. Pour atteindre ces objectifs généraux, une collecte de données a été effectuée au sein du Centre Régional de la Santé Mentale (CRSM) auprès de 85 détenus psychiatrique. Une analyse bivariée a été réalisée afin de générer les variables les plus pertinentes associées à la violence de détenus psychiatrisés. Par la suite, des analyses multivariées (régression linéaire multiple et régression logistique) ont été effectuées dans le but d'identifier les meilleurs prédicteurs de la violence.

Selon nos analyses multivariées: 1) Les personnes atteintes de maladies mentales commettent des crimes violents et non-violents; 2) La nature de la relation entre les symptômes psychotiques (threat-control/override [TCO]) et la violence varie en fonction du type de délit (i.e. utilisation d'un arme à feu, assaut, meurtre, agression sexuel, agression armé). 3) Les seuls symptômes psychotiques associés à la violence, plus particulièrement, à l'assaut et à l'agression armée, sont les hallucinations visuelles et auditives, un comportement bizarre, les troubles de la pensée, la méfiance, la conviction que les autres sont hostiles envers eux et la conviction que les autres veulent leur faire du mal délibérément. 4) La théorie de « rationality-within-irrationality » est supporter; 5) la puissance prédictive des symptômes psychotiques TCO (threat/control-override) demeure significative même en contrôlant les variables criminologiques et cliniques pertinentes ; 6) l'abus de substance a un impact sur la criminalité des détenus psychiatriques.

**Mots Clés:** Maladie mentales, Trouble de la personnalité, Abus de substance, Violence, Criminels, Symptômes psychotiques, « Threat-Control/Override Symptoms », la théorie de « Rationality-within-irrationality ».

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# Introduction

On December 6th 1989, at approximately 4 pm, a young man named Marc Lepine sought out the engineering wing of the polytechnic school of Montreal, ordering the female students to segregate themselves from the male students. He then went on a deadly rampage—shooting at and murdering women. When he realized that he only had one bullet left he then turned the gun onto him and fired. By the end of the rampage, fourteen women died (13 engineering students and 1 data processor) and as many as 27 were injured (Montreal Gazette Dec 8th 1989).

Lepine was formerly rejected from the engineering program at the polytechnic school of Montreal. The killing spree subsequent to his rejection was viewed by the media and the public as an act of vengeance directed towards women for his rejection. He was portrayed as a demonic, sick individual suffering from a mental illness although he was never clinically diagnosed as one (Champagne & Chabot, 1989). In effect, the premeditated murders of the fourteen young women were primarily blamed on Lepine's "supposed" mental illness in spite of the absence of such a diagnosis.

Throughout recorded history, violence or dangerousness, was a strong component of the stereotype of mental illness (Monahan 1992) and was the principal reason for which people with mental illness were rejected by society (Link, Cullen, Frank and Wozniak 1987). "The mentally ill are portrayed in the media and other forms of public discourse not only as ineffectual in the performance of various social roles but also as threats to community and individual safety" (Gerbner, Gross, Morgan, and Signorelli 1981; Scheff 1984 cited in Link, Andrews, Cullen p.275, 1992). Considering the implications as well as the connotations of the stereotype, the labelling theorists questioned its validity by asking whether persons with mental illnesses were, indeed, more prone to violent behavior (Link and Cullen, 1990; Link, Cullen, Struening, Shrout and Dohrenwend, 1989; Link et al. 1987).

In 1987, the Mental Health Association pamphlet reported that mentally ill persons do not pose more threat to society than the general public, thus disconfirming the stereotype normally associated with mental disorder (Link and Stueve, 1994). Nonetheless studies that examined the relationship between mental illness and violence found mentally discharged patients more likely to be arrested (no distinction was made between violent and non-violent arrests) when compared with the general public (Sosowsky, 1974; Zitrin, Hardesty, Burdock and Drossman, 1976; Harry

and Steadman, 1988; Shore, Filson and Rae, 1980; Holcolm and Ahr, 1988). Subsequent studies conducted between 1965 and 1979, demonstrated consistent results: discharged patients in both the United States (Rabkin, 1979) and Europe (Eronen, Tiihonen, and Haola 1996; Hodgins et al. 1996; Wessely 1997) when compared with the general public had higher general arrest rates. According to a study conducted by Hodgins (1998), the greater proportion of persons who suffered from major mental disorders committed violent crimes and behaved aggressively towards others, when compared with non-disordered persons. In consequence of these results, further research on discharged mental patients supported the public's "misperception" and thus concluded that there is an association between mental illness and arrest likelihood but whether it is causal remained unknown (Sosowky, 1986).

Studies predating 1990, that investigated the relationship between patient status and arrest rate lacked specificity. Researchers did not account for the different types of mental disorders. It was assumed that all forms of mental disorder equally lead to violent behaviors. Link, Andrews and Cullen (1992) are among the first researchers to account for the heterogeneity existent in each mentally disordered group and to investigate the specific types of psychotic symptoms. In their view, previous arrest studies are subject to substantial bias. To support their view, they offered three alternative explanations, which are discussed in more details in the literature review section, for the artificial relationship between mental illness and arrest rate: 1) the process of "criminalization"; 2) social or demographic bias; 3) the "medicalization" or "psychiatrization" of deviance (Link, Andrews, & Collins, 1992).

Following Link, and colleagues (1992), researchers attempted to overcome such biases. The more interesting studies found that: psychotic symptoms, (Link and colleagues 1992; Link and Stueve, 1994; Swanson, Borum, Swartz and Monahan, 1996; Swanson, Estroff, Swartz, Borum, Lachicotte, Zimmer and Wagner, 1997) substance abuse disorders, (Swanson and al., 1996; Swanson and al., 1997) as well as personality disorders to be the strongest and most significant predictors of violent behaviors.

Although, new empirical evidence suggests that mental illness is associated with violence, there are still many research avenues that need further in depth investigation. As mentioned earlier, the majority of prior studies lacked specificity: all violent behaviors were treated in the same manner and were presented under the same variable. Effectively, no distinctions were made in terms of forms and frequency of violence. In consequence of the generalization of violence,

there were not enough specific results to draw valid theoretical interpretations. Further, the motives leading to the commission of crime were not considered (Swanson and al., 1997) except in very few studies. Link and Stueve' study (1994), for instance, used the principle of *Rationality-within-Irrationality* to explain the motors behind violence in a psychiatric population. They argued, that when a person sensed a threat, the self-control mechanism weakened; violence became a justifiable response to the threatening object. Similarly, Monahan (2002) used a *conflict* theory to explain the motors that drove mentally disordered persons to violence. However, in Link and colleague's study (1994), the psychotic symptoms (visual hallucinations, auditory hallucinations, belief that others wanted to inflict harm upon them, etc...) were summed up into a scale and therefore, it was not possible to identify the specific symptoms that were directly related to violent behavior.

In an attempt to overcome earlier research limitations, the present thesis investigates the nature of the relationship (functional form) between mental illness and violent acts and accounts for: the specificity of the violent acts committed, the specific psychotic symptoms associated with each particular violent act, the motors that drive persons with psychotic symptoms and/or mental disorders to commit crimes and the contextual and demographic factors. Further, this thesis assesses whether persons with mental disorders are only associated with violent offences, as is recommended by most researchers, or with other forms of non-violent offence as is suggested by Gottfredson and Hirschi's *General theory of crime* (1990). According to this general theory of crime, mental illness, impulsive behavior, and polymorphous criminality characterize the "typical" delinquent. Research pertaining to crimes committed by mentally ill offenders, on the other hand suggests that they generally perpetuate more violent than non-violent offences. To fulfill these general objectives, data is collected from the files of 85 mentally disordered offenders incarcerated at the Regional Mental Heath Centre (RMHC).

The thesis is divided into 4 main components. The first chapter is a literature review on violence and mental disorders. The results, the methodological limitations and the theoretical models adopted in earlier research that have examined crimes committed by mentally disordered offenders are also discussed. The second chapter describes the methodological approach applied in our research. Within this section, the independent, the dependent variables, the concepts validity and the methods of analysis are described. Chapter 3 presents the results from the analysis. Chapter 4 discusses the results, compares them with earlier research findings and

elaborates on their theoretical implications. A conclusion is also drawn out, and future research avenues are proposed in the latter chapter.

# Chapter 1: Literature Review

Studies prior to 1965, that examined the relationship between mental illness and violence found that mentally discharged patients were less likely to be arrested than the general public thus disconfirming the public's "perception"(mentally ill individuals are violent persons in nature). Subsequent studies conducted between 1965 and 1979, however, demonstrated conflicting results: discharged patients in both the United States (Rabkin 1979) and Europe (Eronen, Tiihonen, and Haola 1996; Hodgins, Toupin & Cote in press cited in Hodgins 1996; Wessely 1997) when compared with the general public demonstrated higher arrest rates. In consequence of these results, further research on discharged mental patients supported the public's "perception" and concluded that the association between mental illness and arrest likelihood is causal (Sosowky, 1986).

It is important to note, that until 1990, earlier studies investigated the relationship between patient status and arrest rate without accounting for the different types of mental disorders. Since then, studies mainly focused on schizophrenic disorder, psychotic symptoms and the content and themes of delusions and hallucinations in relation to crime. The majority of these studies either, investigated the association between different mental disorders and violent criminal behavior by examining the general diagnosis of a mental disorder (i.e. schizophrenia, major depression), or by investigating the more specific types of symptoms associated with mental illnesses (i.e. paranoid delusions in schizophrenic patients).

## 1. Mental Disorders, Psychotic Symptoms, Violence and Violent Recidivism

### 1.1. Violent Recidivism among Mentally Disordered Offenders

1.1.1. Bonta, Law, and Hansen (1998)

Although it is not the objective of this thesis to identify the potential predictors of violent recidivism, it is worth noting the findings of the most important studies in this domain since it is related to our field of interest (potential predictors of the frequency of violence in a psychiatric population). Bonta, Law, and Hansen (1998), are among the most recognized researchers in the field of violent recidivism. Their meta-analysis study that contained a series of follow up studies identified the most significant predictors of general recidivism and violent recidivism. Sixty-eight sample studies were included in the meta-analysis with a total of 15 245 subjects. The predictors were classified into four categories: demographic factors; criminal history; deviant way of living; and clinical factors (including psychiatric diagnoses). Their results indicated, that the most significant predictors of violent recidivism are the demographic variables as well as the

criminal history variables. Clinical variables, on the other hand, were irrelevant when predicting violent recidivism in a psychiatric population. In other words the diagnoses of mental disorders had no effect on the recidivism rate of criminality among psychiatric offenders. The factors that best predicted violence in a general population were the same as those that predicted violence in the psychiatric population. In fact, the overall tendency of the results was the same for the mentally disordered offenders and their non-mentally disordered counterparts (Bonta et al. ,1998).

### 1.1.2. Harris, Rice and Quinsey (1998)

A second important research, in the domain of violent recidivism is the study conducted by Harris, Rice and Quinsey, Violent Recidivism of Mentally Disordered Offenders, in 1998. In a retrospective review of treatment records of 292 Canadian inmates (146 inmates who received specialized treatment while in prison, and 146 inmates who did not receive specialized treatment while in prison), the following twelve predictors of violent recidivism were identified: "Hare Psychopathy Checklist-Revised score" (PCL-R; Hare 1990); elementary school maladjustment; age at first offence for which they were incarcerated at the time of the study; diagnosis of personality disorder; separation from parents when the participant was under age 16 years; failure on prior conditional release; criminal history for property offences; not married at the time of the study; diagnosis of schizophrenia; history of alcohol abuse; and male victim in index offence. Amongst all the clinical predictors, the most significant ones were the diagnosis of schizophrenia, the diagnosis of personality disorder and history of alcohol abuse" (Harris et al., p.330, 1998).

### 1.1.3. Cirincione, Steadman, Robbins and Monahan (1992)

Likewise, Cirincione, Steadman, Robbins and Monahan's study (1992) attempted to predict the violent recidivism rate among ex-mentally disordered offenders, once released from institution, in the community. Two cohort groups were used: the first group consisted of 255 former patients who were admitted in 1968 and the second group consisted of 327 former patients (admitted to hospital in 1978). However, the results from the 1968 cohort differed from the results generated from the 1978 cohort because "the mental health and criminal justice systems are dynamic rather than static hence the factors that accurately predict who will be violent vary by the composition of the persons in the system at particular points in time" (Cirincione et al., p.357, 1992). A logistic regression was used to build a predictive model that integrated both demographic

variables (i.e. age, ethnicity and marital status) and diagnostic variables (i.e. substance abuse disorder, personality disorders) with schizophrenia disorder being the reference group (not included in the regression equation). For the 1968 cohort group that had no prior history arrest, the schizophrenia diagnosis was a sufficient predictor for, violent arrest subsequent to the patient's institutional release. Further, schizophrenia disorder was more important than substance abuse disorder and personality disorder when predicting violent recidivism (even when accounting for age, race and marital status)[1]. In the prior arrest history group, the diagnosis of schizophrenia was positively associated with violent behavior and was a significant predictor of violence, once released from institution when, compared with other variables such as age, ethnicity, and marital status. However, when compared with other personality disorders, schizophrenia had the least predictive power (Cirincione et al., 1992).

Although, the results from the Cirincione and colleagues' study (1992) revealed a statistically significant relationship between schizophrenia and violence recidivism, among the no prior history arrest group, many relevant issues remained blurred. For instance, with regards to the diagnosis of schizophrenia, little is known about which manifestations (i.e. cognitive distortions, delusions and hallucinations) are related to violence and what kind of violent behavior (Blomhoff, Feim, & Freis, 1990; Craig, 1982; Taylor, 1985).

## 1.2. Psychotic Symptoms

Active psychosis is often claimed as the central link between violence and mental illness. In fact, several studies found that many of the crimes committed by mentally ill persons are motivated by hallucinations and delusions. In Bartels, Drake, Wallach and Freeman (1991) study for instance, it was observed that hallucinations or delusions were significant predictors of hostility in a 133 outpatients diagnosed with schizophrenia. In Taylor and Gunn's study (1985), "20% of mentally ill offenders were directly driven by hallucinations or delusions, and an additional 62 % were indirectly influenced by these same symptoms" (Taylor & Gunn, p.494, 1985). More specific findings were yielded from D'Obran and O'Connors (1989) and Strazbucjas and colleagues' research (Strazbucjas, McNeil, & Binder, 1993). Their results indicated that patients with persecutory delusions were more prone to violent behavior specifically, homicide to "protect" themselves in comparison to those without such delusions. This type of conduct was

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[1] Cirincione and colleagues (1992) regrouped all subjects with prior arrest history (violent or non-violent) into one group because the sample in each group was too small to be representative.

considered as a psychotic type of "self-defence" (D'Obran et al., 1989). Their findings also revealed that "the patient's hallucinated voices sometimes demanded a precise course of violent activity" (D'Obran et al, p.29, 1989). Further, in Krakowski and Czobor's study (1994), an important relationship between "paranoid" symptoms and transient ward violence in a study of 38 psychiatric patients was established (Krakowski et al., 1994). Once again, the most common psychotic symptoms associated with violence were delusions and hallucinations. Link, Andrews and Cullen (1992) also examined the relationship between the specific types of delusional symptoms and violence, while accounting for the heterogeneity existent within each diagnostic group. Further, they were among the first researchers to propose a theoretical model to help explain how individual experiences of hallucinations and/or delusions may influence violent behavior (Link, Andrews and Cullen, 1992).

### 1.2.1. Link, Andrews and Cullen (1992)

As mentioned briefly, previous arrest studies are subject to substantial bias. To support this view, Link and colleagues (1992) offered three alternative explanations for the "supposed" relationship between mental illness and arrest rates: 1) mentally ill individuals were more likely than the rest of the public to be arrested by police officials (Teplin, 1984). "The higher arrest rates found in studies comparing mental patients to the general public could, in part, be the result of differential police treatment and not to underlying rates of dangerous or illegal behavior" (Link, Andrews and Cullen, p. 277, 1992); 2) earlier studies failed to control for social and/or demographic bias. In fact, subjects were mainly selected from state mental health hospitals located in poor and "violence-prone" neighbourhoods; 3) the ongoing trend, during that time period, were of "medicalization" or "psychiatrization" of deviance over other forms of retribution. (Monahan, 1973; Steadman, Cocozza, & Melick, 1978).

To overcome these biases, Link and colleagues (1992) compared the arrest rates and self-reported violence of approximately 400 subjects[2] who had never been in a mental hospital, with samples of former mental patients within the same geographic region. The samples were randomly assigned to either a one-month versus a one-year time frame for questions. To avoid earlier research bias, they controlled for a number of contextual and demographic factors such as age, gender, educational level, ethnicity, socioeconomic status, family composition, homicide

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[2] Subjects were selected from the Washington heights area of New York City. Data were originally gathered by Dohrenwend, Shrout, Egri and Mendelsohn between 1979 and 1981.

rate of the census tract in which a subject lived, and the subject's "need for approval"[3]. Six measures of violent or illegal behavior were used in their study: "self-reported arrests, official arrest (assault, rape, sodomy, robbery, arson, and burglary causing injury or involving the use of a weapon), and hitting, fighting, weapon use and ever hurting someone badly" (Link et al., p.279, 1992). The Psychiatric Epidemiology Research Interview (PERI) was used to measure symptoms and life events.

Four groups were composed according to the PERI measure: the first group included first contact patients with mental health professionals (during the year previous to the interview); the second group incorporated the repeat contact patients group; the third group included former patients who were no longer undergoing treatment during the previous year; and the fourth group regrouped the never treated community (control group) (Link et al., 1992).

The study found that when accounting for the six measures of violent/illegal behavior, the patients groups was more violent than the never-treated community sample (two or three times more violent). More specifically, patients who experienced psychotic symptoms in the previous year, were more violent than the never treated group. However, no significant differences appeared between the first three patients' samples. Further, when all the demographic and personal factors were considered, the significant differences previously observed between the patients and the never-treated community residents remained in effect. In view of these results, Link and colleagues (1992) hypothesized that patients who experienced psychotic symptoms were likely to engage in deviant /illegal behaviors when compared with those who did not exhibit such symptoms. To test this hypothesis, they used the psychotic symptoms scale of the PERI. However, no differences in rates of recent violent behavior remained significant between patients and community residents when current psychotic symptoms were controlled. "This finding is consistent with the reasoning of those who believe that active psychotic symptoms are involved in the violent/illegal behavior of the mentally ill" (Link, Andrews and Cullen, p.288, 1992). Further, when additional factors, such as alcohol and drug use were taken into account, the psychotic symptoms scale continued to be significant. Hence, all of the differences in rates of violence observed between the patients and non-patients samples were explained by the level of active psychotic symptoms.

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[3] The need for approval measurement was used to control for the possibility that patients might be more willing to report socially undesirable behavior [i.e. Violence] than non-patients.

### 1.2.2. Link and Stueve (1994)

Link and Stueve (1994) reanalyzed the data used in Link and colleagues study (1992). The principle of Rationality-Within-Irrationality was invoked in their study to explain patient-community differences.

> The principle of rationality-within-irrationality posits that once one suspends concern about the irrationality of psychotic symptoms and accepts that they are experienced as real, violence unfolds in a "rational" fashion. By rational we do not mean reasonable or justified but rather understandable. (Link & Stueve, p. 143, 1994).

More specifically, it is suggested that when an individual "suspects personal harm or feels endangered by others, the internal controls, that usually inhibit the expression of violence, weakens" (Link & Stueve, p. 144., 1994). As a result, interpersonal violence becomes more probable. For instance, when a psychotic experience involves loss of self-control through, "thought insertion" or "mind domination" by external forces, violence becomes probable. Similarly, violence is more likely when the individual is convinced that his life is threatened by another or that someone deliberately wants to cause him harm (Link & Stueve, 1994).

Based on the principle of rationality-within-irrationality, the researchers hypothesized that the only reason the other psychotic symptoms were associated with violence was because they were correlated with the "threat\control-override" symptoms. It was posited, that little if any association between other psychotic symptoms and violence would persist when the "threat\control-override" symptoms were controlled (Link & Stueve, 1994).

In comparison to earlier research, Link and Stueve (1994) gave a more detailed presentation of the psychotic symptom scale and used the rationality-within-irrationality theory to support their hypothesis. The PERI psychotic symptoms were divided into two scales: the first scale—the threat\control-override symptoms scale contained three items while, the second scale—the other psychotic symptoms scale consisted of 10 items. Each item was scored between 0 and 4 depending on the prevalence of the symptoms. The 13 items included in the PERI psychotic symptoms scale are illustrated in Table 1.

In an attempt to identify which of the 13 psychotic symptoms best explained the association between mental patient status and the indicators of violence, a logistic regression was used. Link and Stueve (1994) found that the only items related to recent self-reported violence—hitting, fighting, and weapon use—were the three items listed under the threat/control override symptoms scale. Furthermore, the threat/control-override psychotic symptoms (TCO) accounted for differences in rates of violence between patients and community controls while, the other 10 psychotic symptoms did not. In fact, no association was found between the other psychotic symptoms and violence when TCO symptoms were controlled.

**Table 1: List of the Psychotic Symptoms Used by Link and Stueve in their Study (1994).**

| *Threat/Control-Override Symptoms* |
| --- |
| During the past year ...<br><br>1. How often have you felt that your mind was dominated by forces beyond your control?<br>2. How often have you felt that thoughts were put into your head that were not your own?<br>3. How often have you felt that there were people who wished to do you harm? |
| *Other Psychotic Symptoms* |
| During the past year ...<br><br>1. How often have you felt that you do not exist at all that you are dead, dissolved?<br>2. How often have you heard things that other people say they can't hear?<br>3. How often have you felt that your unspoken thoughts were being broadcast or transmitted, so that everyone knows what you are thinking?<br>4. How often have you thought that you were possessed by a spirit or a devil?<br>5. How often have you had visions or seen things that other people say they cannot see?<br>6. How often have you felt you have special powers?<br>7. How often have you thought something odd was going on?<br>8. How often have you felt your thoughts were taken away from you by some external forces?<br>9. How often have you had ideas or thoughts that nobody else would understand if you talked about them?<br>10. How often have you seemed to hear your thoughts spoken aloud -- almost as if someone standing nearby could hear them? |

(Link & Stueve, p. 147,1994)

The results from Link and colleagues study, supported the view that mental illness status was not the only variable related to violent offences. When psychotic symptoms, and the patient status were included in their predictive model, the relation between mental illness and violence disappeared, suggesting that psychotic symptoms were more relevant than the patient status, when predicting violent acts. Moreover, control variables such as gender, (men) and ethnicity (black) were significantly related to violent/illegal behavior and were more efficient predictors of violence than some psychotic symptoms. Similarly, in Bonta and colleagues' study (on violent recidivism (1998) among mentally ill offenders), variables related to demographic and

criminal history factors were found as the most significant predictors of recidivism. However, Bonta and colleagues concluded, that variables related to clinical factors were irrelevant when predicting violent recidivism in a psychiatric population. Perhaps because variables pertaining to the subjects' specific psychotic symptoms were not included among the variables related to the clinical factors; the general mental diagnosis was the only clinical variable included.

Although Link and colleague's research (1994) provides valuable insights about the TCO psychotic symptoms-crime relationship, the lack of standard diagnostic measures in their data limits the use of their findings. Further, since Link and colleagues used a 13-items scale, it was not possible to detect which items best predicted violence. Also, since TCO psychotic symptoms are also experienced by persons who suffer from substance abuse disorder, cognitive disorder, delusional disorder and severe personality disorder, they should also be included in the analysis (Swanson, Borum, Marvin, and Swartz, 1996). Substance use, for instance, is known for its ability to alter perceptions and hinder judgement and thus affects ones' ability to correctly distinguish threatening signals from non-threatening signals. (Swanson et al., 1996). Further, certain substances, particularly alcohol use, may act as "chemical disinhibitors" of aggressive impulses (Collins & Schlenger, 1988). Therefore, both psychotic symptoms and substance use can hinder judgment, and or alter perception, both of them may independently contribute to violent behavior (Swanson et al., 1996).

### 1.2.3. Swanson, Borum, Marvin and Swartz (1996)

Swanson, Borum, Marvin and Swartz (1996) build on earlier studies. Likewise, their interest lied in the identification of the specific psychotic symptoms (Swanson et al. 1996). Similarly to Link and colleagues (1992) and Link and Stueve (1993), Swanson and colleagues (1996) applied the principle of rationality-within-rationality. Link & Stueve's concept of TCO psychotic symptoms was also used in their study but with modification. A fourth item—belief that others are following him—was added to the TCO psychotic symptoms scale that originally, contained three items (Swanson et al., 1996). They posited that there is a stronger relationship between TCO psychotic symptoms and violence than with any other diagnosis (i.e. schizophrenia).

Following closely Link and colleagues' earlier studies (1992; 1994), Swanson and associates (1996) performed a logistic regression analysis and controlled for demographic and contextual variables. They found that individuals with TCO psychotic symptoms to be twice as likely as

those with only non-TCO psychotic symptoms to report violence and, six times as likely as those without any mental disorder diagnosis. Further, when Swanson and colleagues (1996) introduced two additional items in their predictive model—major mental disorders diagnoses (schizophrenia or affective disorder) and alcohol/drug abuse disorder—the TCO psychotic symptoms lost their significance power. In fact, "individuals with alcohol/drug abuse disorder were six (6.6 times) times more likely than those without them to report violence in the past year" (Swanson et al., p.334, 1996). Moreover, "male (odds ratio = 1.7; p < 0.001) individuals who reported a history of psychiatric treatment (odds ratio = 2.4; p < 0.001) were more likely to be involved in criminal behavior when compared with the females without a history of psychiatric treatment" (Swanson et al., p. 346, 1996). Also, the "younger and less educated subjects were more likely to report violence in the past year when compared with the older and more educated subjects" (Swanson et al., p. 346, 1996). Although since the age of 18 years, TCO psychotic symptoms were positive predictors of violence, alcohol/drug abuse disorder was the most significant predictor. Nonetheless, the results suggest that over a long period of time individuals with TCO psychotic symptoms will be significantly more violent. This effect was not the result of the co-variation of substance abuse or contextual and demographic factors.

### 1.2.4. Swanson, Estroff, Swartz, Borum, Lachicotte, Zimmer and Wagner (1997)

In a more recent study, Swanson, Estroff, Swartz, Borum, Lachicotte, Zimmer and Wagner (1997) provided more evidence to support the link between psychotic symptoms and violent offences. Based on three different logistic regression models, they found that violence was more likely to occur when more people were in the mental patient's household and when the he had a substance abuse disorder, with at least two symptoms from the agitation/psychotic scale[4]. TCO psychotic symptoms, on the other hand, were not relevant predictors in their models. In their third model, they introduced two additional variables that were related to the use of mental health services. Controlling for socio-demographic characteristics, they found: a positive relation between TCO psychotic symptoms and the perpetration of violent offences (odds ratio=3, 08; p < 0, 05); the relation between violent offences and the number of persons in the household disappeared as well as the curvilinear relation between violence and the

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[4] Swanson and colleagues (1997) suggest that persons who exhibit excessively severe psychotic symptoms become too disorganized to execute a crime. Thus, they suggest a curvilinear relation between the psychotism/agitation scale and the percentage of persons having committed violence offences. The rate of violence shifts from 39% to nearly 70% between groups reporting 0, 1 and 2 symptoms. Among those reporting 3, 4, or more symptoms, however, the rate of violence is reduced to 45%.

"psychotism/agitation" scale (Swanson et al, 1997). The 10 items selected to compose this scale included:

> 1)Attack of sudden fear or panic; 2) feelings of restlessness; 3) trouble concentrating; 4) nervousness, being fidgety or tense; 5) so much energy no one could keep up; 6) people staring at you; 7) heard things others say they can't hear; 8) thoughts broadcast, 9) visions of seeing things; 10) special powers (Swanson et al., p.18, 1997).

The absence of treatment increased the chance of reporting violence by 2.62 times. "This suggests that receptivity to treatment distinguishes a group less likely to be violent when experiencing the threat/control-override symptoms" (Swanson and al., p.19, 1997).

Up to know, studies that have examined the nature of the relationship between violent behavior and mental disorder found schizophrenia diagnosis, personality disorder, particularly antisocial personality disorder and delusional and hallucinations symptoms as important violent predictors. According to the literature, two alternative theoretical frameworks are proposed to explain violence among mentally disordered offenders—personality disorder theory and drug theory. A number of researchers have shown evidence that the highest rate of violence are not among Axis I diagnoses, but rather among Axis II diagnoses (Tardiff, Marzuk, Leon, & Portera, 1997; Wallace, Mullen, Burgess, Palmer, Ruschena, & Brown, 1998). Both, personality disorders and drug use disorders are conceptualized into control variables in the literature to assess whether the significant relation between violence and mental disorders remains constant when they are included in the statistical model. Further, a comprehensive theory elaborated by Monahan, that examines the association between mental disorders and violence is investigated.

## 2. Personality Disorders

According to the DSM-IV-TR,

> A Personality Disorder is an enduring pattern of inner experience and behavior that deviates markedly from the expectations of the individual's culture, is pervasive an inflexible, has an onset in adolescence or early adulthood, is stable over time, and leads to distress or impairment (DSM-IV-TR, 2000 685).

Personality disorders are divided into three clusters. Cluster A encompasses the *Paranoid, Schizoid, and Schizotypal* Personality Disorders. Persons with these disorders are usually odd or eccentric. Cluster B regroups the *Antisocial, Borderline, Histrionic and Narcissistic* Personality Disorders. Persons with these disorders are typically dramatic, emotional and erratic. Cluster C includes the *Avoidant, Dependent, and Obsessive-Compulsive* Personality Disorders. Persons suffering from these disorders are often anxious and fearful (DSM-IV-TR, 2000).

Violent behavior is mainly attributed to the borderline and antisocial personality disorders (Reid & Balis 1987). Antagonistic, hostile traits are also common among *paranoid, antisocial, borderline, histrionic, narcissistic, passive-aggressive, schizotypal, and obsessive-compulsive* personality disorders; whereas traits of non-hostility, non-antagonistic and agreeableness are only apparent in the dependent personality disorder (Widiger & Trull, 1994).

The first studies to consider the role of personality in crime were conducted in 1950. Schuessler and Cressey found that 42% of the "personality tests" reviewed reported significant differences between criminals and non-criminals. Similarly, Waldo and Dinitz (1967) found that 81 % of research that examined the crime-personality relation differentiated between criminal and non-criminal groups. Tennenbaum (1977) study, which reviewed research conducted between the years of 1966 and 1975, concluded that 80% of the personality tests reported significant differences between criminals and non-criminals (Hodgins, 2000).

In addition, many research, often found personality disorders to co-morbid with other mental illnesses. In fact, a significant proportion of the violent mentally disordered offenders had suffered from other personality disorders (Krakowski, Volavka, and Brizer, 1986; Millon, Simonsen, Birket-Smith & Davis 1998). In a study conducted by Hodgins and colleagues (1996), antisocial personality disorder was 13 times more likely to co-occur with schizophrenia diagnosis (in three samples of schizophrenic patients) than with non-mentally disordered persons (the general public) (Hodgins 1996). And hence concluded that violent behavior in schizophrenic patients could be caused by the co-existence of personality disorder (i.e. antisocial personality traits) (Hodgins, 1996).

Existing research has demonstrated a strong association between schizophrenia and antisocial personality disorder. As evidenced by the Epidemiologic Catchment area Study data, "schizophrenia occurs at a rate seven times higher ( and in females, 12 times higher) than the

expected rate in males diagnosed with antisocial personality disorder" (Robins, Tipp & Przybeck, p. 260, 1991).

The more recent studies suggest that persons with co-morbid antisocial personality disorder to incur more violent convictions than persons with a singular Axis I mental disorder. Consequently, some researchers propose that the diagnosis of schizophrenia, on its own may not be related to violent behavior.

## 3. Drug and Criminality

Similarly, it is widely acknowledged by criminological researchers that a relationship exists between substance abuse—whether it is illicit (i.e. cocaine) or licit substances (i.e. alcohol)— and violent behavior. This association has been demonstrated in a number of studies (Bureau of Justice Statistics, 1992 a; Chaiken & Chaiken, 1990; Collins 1981; Fagan 1990; Gandossy, Williams, Cohen, & Harwood, 1980; Gropper 1985; Hunt 1990; Inciardi, 1981; MacKenzie & Uchida, 1994; Tinklenberg, Murphy & Pfefferbaum, 1981; Stewart, Gossop, Mardsen, Rolfe 2000; Corbett, Duggan, & Larkin 1998; White 1990). However, the nature of that relationship has not yet been established. Many competing hypothesis have been advanced to help explain the drug-crime relationship:

> 1) substance use causes crime; 2) crime causes substance use; 3) substance use and crime directly influence one another in a pattern of mutual causation; 4) the relationship between substance use and crime is spurious; 5)substance use and crime may be influenced by the same or a similar set of causes, but, may also exert some direct influence on one another (Menard & Mihalic, p. 906, 2001).

For the purpose of our study, the focus is on the first hypothesis—drugs lead to criminality. Goldstein proposes the tripartite conceptual framework—psychopharmacological, economic-compulsive and systemic—to explain the drug-crime relationship (Goldstein 1985; Goldstein, Brownstein, & Ryan, 1992; Brownstein & Goldstein, 1990). It is important to note that Goldstein recognizes that the tripartite conceptual framework is not a complete explanation for the link between drugs and crime; and that there are other factors (demographic regions, employment income, age gender, personality traits) that may also influence this relationship. In the present research, emphasis is placed on the first two patterns of the tripartite conceptual framework: the psychopharmacological and the economic-compulsive models since we did not

have enough data collected to adequately measure systemic violence. Also, we consider the auto medication principle, mainly elaborated by Klantizian (1997) for explaining how substance use can lead to criminal behavior among mentally disordered offenders.

### 3.1. Psychopharmacological Model

According to the psychopharmacological model, the effects of the consumed substances themselves induce criminal activity. Individuals, for instance, who use substances such as alcohol, cocaine, amphetamines (Wright and Klee 2001), PCP (phencyclidine) and barbiturates become irrational, and as a result exhibit violent behavior (Bean 2000). Substance use can also cause impairment of reasoning; reduction of inhibitions of aggressive impulses; and paranoid thoughts (Brochu, 2000; Davis, 1996; Lang and Sibrel, 1989; Menard and Mihalic 2001; Sprint, Goldstein, Brownstein, Fendrich & Langley, 1994).

The psychopharmacological effect of alcohol on violence has been demonstrated in a number of studies. Results from these studies indicate that in approximately half of violent offences—homicides, sexual assaults and incidents of spousal abuse—the offender consumed alcohol prior to or during the perpetration of their offence (Brochu, 1995; Cousineau, Brochu & Schneeberger, 2000; De La Rosa, Lambert & Gropper, 1990; Goldstein, 1985; Tremblay, 1999). The ingestion of alcohol has also been shown to be directly related to illegal behavior in Menard and Mihalic (2001) study. Their results provide "support for the psychopharmacological effects involving alcohol on violence, vandalism, and public disorder" (Menard and Mihalic, p. 929, 2001).

Similarly, in a study conducted by Brochu (1999), that explored the psychopharmacological effects of specific drugs on crime, it was found that in 80% of the sample, subjects consumed illicit substances on the day of their most recent offence (s); 16% among them consumed certain drugs in a "psychopharmacological functional manner" (to help them perpetrate their offence). Of those subjects, 83.1% reported that their judgments were distorted as a result of drug consumption; 33.6 % stated that their drug consumption increased their tendency to fight while 37% documented that their use of drugs made them more aggressive and consequently more violent (Brochu, 1999).

According to this model, drug use may also have a "reverse psychopharmacological effect" which, instead decreases violent behavior (Brochu, 1999). In such cases, individuals who are prone to violence often consume substances such as heroin, tranquilizers and marijuana to calm their violent impulses (Brochu, 1999).

Although many studies have demonstrated the psychopharmacological effect of certain substances (specifically alcohol) on violent offences, they have failed to explain why most substances users (illicit and licit substances) do not engage in violent offences. Some researchers have suggested that "very often these drugs merely catalyze already present aggressive energies" (Brochu, p.87, 1995) thus, insinuating that the psychopharmacological effects of drugs, on their own, are not sufficient when examining the drug-crime relationship. Some individuals are for instance, pathologically more prone to violent behavior (i.e. persons with antisocial personality traits) (DSM-IV-TR, 2000).

## 3.2. The Economic-Compulsive Model

The second model—economic compulsive model—elaborated by Goldstein, suggests that some drug consumers engage in economically oriented (acquisitive) violent crimes (i.e. robbery) to support the cost of their drug use (Menard and Mihalic 2001). The most relevant substances in this category include heroin, cocaine and opioid as a result of their high cost and their physiological dependence; and exclude alcohol, which is more financially affordable (Brochu 2000; Kinlock and colleagues 2003). In a study of arrestees, Bennett (1998) found that higher levels of illegal income were associated to the use of crack and heroin. According to their results, approximately 50 % of their study sample's use of drugs was related to their offending. Further, in a study of Chaiken and Chaiken (1990) it was found that the rates of criminality were influenced by the incidence of drug use, and the levels of drug use, (which fluctuated over time), when the frequency of criminal acts was examined. In fact, "clients committing high levels of acquisitive crime were three times more likely to have used cocaine regularly compared with those who reported no criminal involvement" (Stewart et al., p. 11, 2000). In a study conducted by Brochu and colleagues, approximately two-third of their sample reported to have been under the influence of drugs when they committed theft (83%); robbery (78%); fraud (70%); and breaking and entering (68%) to finance their drug use. More specifically, roughly 68% of cocaine users claimed to have perpetuated their offence because they needed to satisfy their addiction (Brochu, 1999). Similar findings were yielded from Kinlock and colleagues (2003)

research, which suggested that individuals with increased use of opioid and/or cocaine were associated with a greater frequency of crimes committed. The use of opioid and cocaine was significantly related to "older age, female gender and an increased frequency of theft" (Kinlock and colleagues p. 19, 2003). Consistent with earlier research findings (Chaiken & Chaiken 1990; Inciardi 1986; Nurco et al 1991) they found that individuals who were addicted to drugs, were more likely to engage in illegal drug selling to support the cost of their drug dependence (Kinlock and colleagues 2003).

According to this model, individuals are not driven to violence through impulse but rather through the lack of money to finance their drug addiction. Further, it is important to emphasize that not all drug addicts commit economic crime to finance their addiction, some addicts use other means such as, social assistance (friends and family) while others, reduce their spending and increase their income (Brochu, 1995).

### 3.3. Drugs and Alcohol as a Self-Medication

In addition to the models proposed by Goldstein, Klantizian (1985), and Swanson (1990), Swanson and colleagues (1994) propose additional explanations for the increase rate of substance abuse/dependence among mentally disordered persons. They suggest that the use of alcohol and drugs by mentally disordered persons is to self-medicate for difficult feeling state (i.e. depression and anxiety). Klantizian (1997), more specifically found that the use of substance (alcohol and or drugs) by mentally disordered persons was shown as an attempt to cope with painful feelings (i.e. depression and anxiety) and personality vulnerabilities and suggests that until this function of drug use has been recognized and addressed in another way, many people are unable to consider modifying their drug use. A more in depth investigation is necessary to establish the true nature of the relationship between drug use and violence among mentally disordered persons (Corbett, Duggan & Larkin, 1998).

### 4. Comprehensive Theory

According to Monahan and Steadman, existing risk research used "impoverished predictor variables" (Monahan and Steadman, 1994). Each investigation tended to study only one or a few factors (i.e. diagnosis, symptom severity scores or past history). Monahan and Steadman instead, wanted to combine a set of risk factors and thus develop a comprehensive theory. They selected a set of risk factors which include the following four domains: 1) dispositional factors—the

demographic factors of age, race, gender, social class, certain personality variable and neurological variables; 2) the historical factors incorporate work history, mental hospitalization history, history of violence, and criminal and juvenile justice history; 3) contextual factors refer to the indices of current social support, social networks, and stress and physical aspects of the environment; 4) the clinical domain includes type and symptoms of mental disorder and personality disorder, drug and alcohol abuse and level of functioning (Monahan and Steadman, 1994). Note that in the majority of studies, the first three domains were mainly used as covariates and were almost always considered as important indicators of violence in their research (Swanson et al., 1996; Swanson, Estroff, Swartz, Borum, Lachicotte, Zimmer and Wagner 1997).

For instance, many researchers in criminology recognize the fact that prior violence and criminality are strongly associated with future violence and offending (Blumstein, Cohen, Roth & Visher, 1986). A similar relationship has been proposed for persons with mental disorders. (Steadman & Cocozza, 1974; Klassen & O'Conner, 1988). Similarly, prior adult offending has been shown to be highly predictive of future offending. Measures of prior offending have integrated: the number of prior arrests (Cocozza & Steadman 1974), prior arrest for violent crimes (Thornberry & Cocozza, 1976), gravity of prior offences (Thornberry & Jacoby 1979), and self-reports of violent episodes (Tardiff, Marzuk, Leon & Portera, 1997; Klassen & O'Conner 1988 a). In point of fact, criminology literature considers previous offending as the most important factor when predicting future offending. Prior offending "repeatedly appears as the strongest correlated in actuarial studies of violence and related phenomenal" (Gutheil & Appelbaum, p. 68, 2000). Melton, Petrila, Polythress, and Slobogin (1997) suggest that "for assessing baseline level of risk, historical factors such as adult criminal record and delinquency history are among the mot important factors that may inform clinical judgment (p.289). Finally, McNeil (1998) concludes, "a history of violence has been consistently shown to be the best predictor of future violent behavior" (p.96). Furthermore, recent studies have shown a willingness of patients to self-report a history of violence..." (p.97).

Likewise, it is widely recognized within the behavioural sciences that exposure to disorderly and abusive family surroundings is linked to violent behavior (Bandura, 1973; Widom 1989a, b; Earles & Barnes, 1997). Some researchers have posited that "violence breeds violence" while others have hypothesized that violence is the result of a lack of self-control and discipline during childhood (Sampson & Lauristen 1994). The existent relationship between "negative" family

surrounding, particularly in childhood and adolescence and violence in adulthood applies to all individuals (persons with or without a mental illness). In fact, excessive parental discipline has been demonstrated as an important predictor of in-hospital violence among male schizophrenic persons (Yesavage, 1984).

Additional negative experiences within the family have been found to influence future violent conduct. Parental loss, for instance, as a result of death, separation, divorce, etc... has been shown to correlate with subsequent adult violence (Quinsey, Warneford, Pruesse, & Link 1975); Klassen and O'Conner 1988b; 1990). Further, parental psychiatric hospitalizations, arrest, and drug and alcohol abuse has been associated with adult violence among individuals suffering from a mental disorder (Convit, Jaeger, Lin, Meisner, & Volvaka, 1988).

## 5. Conclusion

Given the important role these criminological variables play in offending, we chose to incorporate them in our analysis. Like Monahan and Steadman (1994), we use a comprehensive approach in our research project. However, our thesis is predominantly guided by the principle of rationality within irrationality, elaborated by Link and colleagues (1992; 1994). In fact, we follow the same model used by Link and colleagues (1992), Link and Stueve (1994), Swanson and colleagues (1996) and Swanson and colleagues (1997) in their study regarding the link between specific psychotic symptoms and violent behavior.

## 6. Problematic

The relationship between violence and mental disorder has long been confused and conflicted. Before 1965, studies rarely found an association between mental illness and violence. Subsequent studies conducted between 1965 and 1979, however revealed contradictory findings: mentally discharged patients were found to be more violent than the general public (Eronen, Tiihonen, & Haola., 1996; Hodgins et al., 1996; Wessely, 1997).

As mentioned previously, earlier studies were subjected to many criticisms. All violent offences were for instance treated in the same manner and were presented under the same variable. Effectively no distinctions were made in terms of severity and or frequency of violence. Likewise, all mental disorders were treated homogeneously. In consequence of the generalization of violence and mental disorder diagnoses, there was not enough specific data to

draw valid theoretical interpretation. Also, as a result of the lack of specificity and sample biases, the nature and the mechanisms of the link between violence and persons with psychiatric disorders remained unknown. Further, the motives leading to the commission of crime were rarely considered (Swanson et al., 1997).

To overcome such biases, Link and Stueve (1994) were the first researchers to account for the specificity and the heterogeneity among mental disorders. In an attempt to uncover the true relationship between mental illness and violence and thus identify the motors that drive violent behavior, they not only accounted for the person's mental status, as earlier studies have, but also the symptoms experienced as a result of certain psychotic disorders. However, it is not yet clear how and which psychotic symptoms exactly contribute to violent behavior. Does one of the symptoms for instance increase the risk of violence more than the other? Do the symptoms interact in a manner that multiplies the risks associated with the individual symptom? Is the relationship only linear?

In an attempt to answer these questions, Swanson and colleagues (1997) completed a research that tested the exact nature of the relationship. They found the relationship between psychotic symptoms and violent behavior to be curvilinear in nature (the relationship between psychotic symptoms and violence becomes negative once a certain threshold is exceeded). More specifically, they suggested that mentally disordered persons who exhibited many severe psychotic symptoms to be disorganized to perpetuate an offence. Swanson and colleague were the first and the only researches to propose a curvilinear relation between psychotic symptoms and violent behavior.

Our research project is built on these previous studies specifically, those conducted by Link and colleagues (1992), Link and Stueve (1994), and Swanson and colleagues (1997). Our purpose is to overcome earlier research limitations and clarify some of the links between violence and persons with various mental disorders. We investigate the nature of the relationship (functional form) between mental illness and violent acts by accounting for: the specificity as well as the frequency of the violent act committed by the various forms of mental disorder, psychotic symptom, specifically the threat-control/override psychotic symptom (TCO) associated with each particular violent act and by controlling for the developmental factors. Gathering detailed information regarding the specific characteristics and circumstances surrounding the most recent offence of 85 psychiatric detainees, admitted to the Regional Mental Heath Centre (RMHC) at

the Archambault Medium Security Federal prison, enables us to determine which of these predictors are more strongly related to the commission of their most recent and serious offence and, allows us to identify which mentally ill persons with which disorders and symptoms are more likely to behave violently. Further, we compare the circumstances surrounding the most recent offence for persons with and without TCO psychotic symptoms to assess whether they vary contextually.

The methodological approach applied in our research to attain our objectives is the following: we begin by considering the bivariate associations between mental illness and indicators of violence. The bivariate analysis is tested on all predictors to identify the most important variables in predicting violence. This is necessary since, the number of independent variables incorporated in our explicative model are limited to the size of our sample—85 subjects. Once the most relevant predictors of violence are yielded, a multivariate predictive model which includes the most relevant independent variables (predictors) is developed. Than, we integrate all mental disorders and risk factors that are associated with violence in a multiple linear and logistic regression model to assess their predictive powers, as Monahan and Steadman (1994) have done in their own comprehensive research. Also, similarly to Link and Stueve (1994), Swanson and colleagues (1996), and Swanson and colleagues, (1997) the principle of rationality within rationality is applied in our study to explain the violent behavior exhibited by the RMHC population.

The following are the specific objectives of this research:

1: To examine whether persons afflicted with mental disorders engage in only violent offences, as is suggested by most researchers, or in other forms of non-violent behavior. This objective is based on the way in which the dependent variables (violent/non violent) were previously measured in research. The concept of non-violent behavior was not adequately measured in earlier studies.

2: To assess the nature (the functional form) of the relationship between psychotic symptoms and violence and determine whether it is linear (the more psychotic symptoms, the more violent offences) or curvilinear with a bell shape (the more psychotic symptoms the more violent

behavior are exhibited until a certain threshold. Once this threshold is exceeded, violent behavior decreases) (Swanson et al., 1997).

**3**: To identify the most common form (s) of crime committed by persons who exhibit TCO symptoms. Are most crimes, committed against the person, (i.e. murder) for instance, or against property (i.e. robbery)? This objective is based on the principle of rationality-within-irrationality, originally invoked by link and colleagues (1994).

# Chapter 2: Methodology

The methodological chapter is divided into three main sections. The first section—*the data set*—describes the procedure used to gather the data and its provenance. The second section—*measurement*—defines the variables selected and the methods used for their operationalization. The third section focuses on the *methods of analysis* used to attain the main objectives of this thesis.

Our variable selection is based on earlier empirical research findings. Currently, there is not a single theory linking each of the multiple causes of violence to mental illness (Monahan, 2001). Since no such theory of violence or of mental disorder yet exists, a broader approach to the variable selection process was taken. We sought cues that had been validated in existing research literature, as predictive of violence and from different theoretical approaches: the principle of *rationality-within-irrationality, personality disorder* approach, *tripartite* model, and *comprehensive risk factor* approach.

We examine variables that had been considered in the criminological literature to be important risk factors for violence as well as the variables advanced by clinicians as key risk factors (Wesselly & Taylor, 1991). The criminological variables include: prior violence and criminality; childhood experiences while the clinical variables include: diagnoses (Axis I an Axis II), substance misuse and dependence, psychotic symptoms and the threat/control-override symptoms (Link & colleagues, 1992; Link & Stueve, 1994; Swanson & colleagues, 1997).

## 1. The Data Set

### 1.1. The Quebec Regional Mental Heath Centre (RMHC)

The study sample is selected from psychiatric detainees admitted to the Regional Mental Heath Centre (RMHC) at the Archambault Medium Security Federal prison. The RMHC is a multi-level centre that offers specialized assessment and treatment services to all federal offenders suffering from mental disorders in Quebec. This center's mission is to help this psychiatric clientele achieve a stable mental state and develop the necessary skills for successful reintegration into society.

# Figure 1: Clinical and Criminological Violent Predictors

## Clinical Variables

| Diagnoses | Psychotic Symptoms | Substance Abuse |
|---|---|---|
| **Axis I** | Auditory hallucinations | **Alcohol Consumption** |
| Substance | Visual hallucinations | |
| | Bizarre behavior | **Drogue Consumption** |
| **Psychotic Disorder** | Thought disruption | Marijuana |
| Schizophrenia | Disorganization | Hash |
| Schizoaffective | Delusions of people wanting | Crack |
| Delusional disorder | to deliberately inflict harm | Heroine |
| | Feelings of hostility | Barbiturates |
| **Affective Disorder** | | Sedative |
| Depression | | Cocaine |
| | | Amphetamine |
| **Axis II** | | Hallucinogen |
| **Cluster A** | | Glue/solvent |
| Paranoid | | |
| Schizoid | | |
| Schizotypal | | |
| **Cluster B** | | |
| Antisocial | | |
| Borderline | | |
| Histrionic | | |
| Narcissistic | | |
| **Cluster C** | | |
| Avoidant | | |
| Dependent | | |
| Obsessive-Compulsive | | |

## Criminological Variables

| Personal family History | Personal History |
|---|---|
| Familial criminal history | Age at first offence |
| Familial psychiatric history | Victim of physical or psychological abuse |
| Familial suicide or attempted suicide | Intra-familial |
| | Witness of physical or psychological abuse |
| | intra-familial |
| | Victim of physical or psychological abuse |
| | extra-familial |
| | witness of physical or psychological abuse |
| | extra-familial |
| | Parental abandonment |
| | General Stressors |
| | Marital Status |

To be admitted to the RMHC, offenders must suffer from functional or integration problems as a result of their psychiatric state; be diagnosed with a severe personality disorder; present a double diagnoses (psychiatric and severe personality disorder); have suicidal and/or self-destructive tendencies; require intensive psychological support and nursing, apart from physical care (i.e. AIDS, Hepatitis C).

## 1.2. RMHC Client Profile

The RMHC's population consists of offenders with the most acute needs in the Quebec Region. These include low functioning offenders, at a very high risk of self-inflicted injury or suicide, suffering from psychiatric and or severe personality disorders diagnosed according to the classification in the "Diagnostic and Statistical Manual Disorders (DSM-IV)—Axis 1 and Axis II". The average offender admitted to the RMHC is 39 years of age, a second–time federal offender serving a sentence of 8 years, with a medium-security classification, with a low reintegration potential, suicidal tendencies and with a high co-morbidity rate (multiple diagnoses, including drug-related disorders) (RMHC, 2003).

The most common diagnoses on Axis I is schizophrenia and bipolar disorders and on Axis II, antisocial and borderline personality disorders. As mentioned previously, few are diagnosed with a single disorder, and most have a co-occurring disorder (s) (multiple diagnoses, including drug-related disorders). In fact, 80% of this population have alcohol and other drug-related problems. A small minority of this clientele also suffers from a number of other medical diseases including HIV (5%) and Hepatitis C (13 %) (SCC-CSSR, 2003 in Lévesque, 2003) for which intensive psychological support and nursing care is required. Evidently, the profile of offenders admitted to the RMHC presents deep challenges to the mental health professionals as a result of the high co-morbidity rate.

Two third of offenders possess a suicide history. Further, the majority of the RMHC's psychiatric clientele have committed violent offences (80%). In fact, the most common form of crime for which offenders are incarcerated is murder (37%), sexual aggression (12 %), and drug related offences (30 %) (RMHC, 2003).

## 1.3. Data Set and Information Collection

The study sample is selected from psychiatric detainees admitted to the RMHC. The sample comprise a total of 85 male psychiatric offenders aged 23 to 66, with an average age of 40 years, all of whom had committed an offence at the federal level. Data is gathered from the Offender Management System (OMS) which is a database of information that includes standardized structured interviews with detainees during admission, and from the detainee's medical history files, medical records, criminal records, police records, correctional plans, psychiatric and psychological reports. Note there is no selection criterion for subjects' inclusion in our research. All subjects that were incarcerated at the RMHC unit of the Archambault Federal prison either before or on January 28th 2003 are included in our study sample.

Data collection is conducted from two forms of questionnaire: (1) a computerized questionnaire pertaining to offenders with a mental disorder diagnosis (CQO-MD)[5] which covered a wide range of background data including official records, hospital records, institutional behavior reports, psychological and psychiatric reports, and correctional plans (2) a Psychotic Symptoms Interview (PSI[6]) by clinicians to administer clinical scales pertaining to specific psychotic symptoms.

The CQO-MD covers a wide range of clinical characteristics, criminological characteristics and specific information relating to violent behavior and its surrounding context. It elicits extensive data regarding (1) violent and non-violent institutional violence; (2) previous violent, non-violent, sexual conviction (s) (3) specific information on the most recent offence (s) and its surrounding context; (4) data pertaining to childhood history including sexual, physical and psychological abuse, delinquent behavior, socio-economic stressor; (5) parents history (including data on psychiatric and criminal antecedents); (6) information on lifetime and recent use of alcohol and illicit substances, including sedatives, cocaine, hallucinogens, cannabis, stimulants, opioid, inhalants, and other substances; (7) and mental disorder diagnoses (including personality disorder diagnoses).

The PSI is administered by trained lay clinicians (psychologists and nurses). As mentioned earlier, it elicits more extensive data on the psychotic symptoms experienced by the subjects at

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[5] The CQO-MD was inspired by the computerized questionnaire on sexual delinquency (QIDS) developed by St-Yves, Proulx & Mckibben (1996).

[6] The PSI was produced by Randa Saweers (2003).

two interval levels: during the commission of the most recent offence and currently. The following items measuring psychotic symptoms are identified: auditory hallucinations, visual hallucinations, bizarre thoughts, thought disorder, disorganisation, suspiciousness, delusions of people wanting to deliberately inflict harm, and feelings of hostility.

## 2. Measurement

### 2.1. Mental Disorders and Threat/Control-Override (TCO) Symptoms

2.1.1. Mental Disorders Diagnoses

Mental disorder diagnoses are generated by clinicians' formal assessments following the criterions of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). The diagnoses are scored according to the most recent psychiatric and psychological files. For the majority of the sample, agreement existed between the most recent diagnoses and the initial diagnoses given at admission to the RMHC unit.

The subjects are scored on Axis I—Mental Disorder and Axis II—Personality Disorder. Within each group there are many different subgroups. As a result of the high heterogeneity existing in each group, the general diagnoses as well as the more specific symptoms are taken into account during the formulation of the variables.

*Axis I—Mental Disorders.* The principal types of Mental Disorder are *Psychotic* and *Major Affective* Disorders (DSM-IV). Psychotic Disorders incorporate *Schizophrenia, schizophreniform, Schizoaffective, and Delirious. Schizophrenia* is a severe form of mental with four subtypes: *paranoid, disorganized, catatonic, undifferentiated,* and *residual.* The main symptoms of schizophrenia include hallucinations, delusions, and disorganized speech or disorganized behavior. *Affective disorders* include *alterations of mood, motor disturbances* and *vegetative states.* Although there are 12 different types of affective disorder, emphasis in our research is placed on the more serious forms of mood disorder—*Major Depression* and *Bipolar Disorder* (DSM-IV-TR, 2000; Hodgins, 2000).

*Axis II—Personality Disorders.* Personality disorders include three independent clusters: Cluster A—*Paranoid, Schizoid,* and *Schizotypal* Personality Disorders; Cluster B—*Antisocial, Borderline, Histrionic* and *Narcissistic* Personality Disorders; Cluster C—Avoidant, *Dependent,* and *Obsessive-Compulsive* Personality Disorders (DSM-IV-TV, 2000).

### 2.1.2. Threat/Control-Override Symptoms (TCO)

Link & Stueve's concept of TCO psychotic symptoms is investigated in this analysis for 82% of the sample in spite of their diagnoses, since they can apply to any persons suffering from a mental disorder. Fifteen subjects are excluded as a result of, a lack of information regarding their psychotic states. Invoking the principle of *rationality-within-irrationality* in our study, allows us to assess how persons with mental illnesses and/or alcohol or drug dependence reason when they feel threatened and when their internal controls are weakened (Link & Stueve, 1994).

Earlier studies, which have investigated the impact of TCO psychotic symptoms on psychiatric violent behavior, used different items to measure the psychotic symptoms scale. The variables, included to create the TCO psychotic symptoms scale, in Link and colleagues study (1992) for instance, was different from the scale used to measure the same concept in Link and Stueve (1992) study and Swanson and colleagues (1997) study. Similar variables included in the previous research studies, with an addition of a few other relevant items are included in our research project, to measure the TCO psychotic symptoms.

As mentioned earlier, a PSI is administered by clinicians (psychologists and nurses) to elicit extensive data on the psychotic symptoms experienced by the subjects at two interval levels: during the commission of the most recent offence and currently. The following items measuring psychotic symptoms are included: auditory hallucinations, visual hallucinations, bizarre behavior, thought disorder, disorganisation, suspiciousness, delusions of people wanting to deliberately inflict harm and feelings of hostility. A "yes" and a "no" answer are recorded for each symptom. A value of 1 is coded when the subject exhibited a specific symptom and the value of 0 is attributed when the subject did not manifest this symptom. As Figure 2 illustrates, the symptoms are analysed independently and, in a scale. Some of the symptoms, included in the PSI are general while others are more specific. For instance, only a few symptoms measured the TCO psychotic symptoms. As a result, a factorial analysis is performed to identify the different concepts associated with the symptoms included in the PSI. Three concepts emerged. All ten symptoms positively loaded on one factor with a coefficient of 0.350. All ten items are found to be significantly inter-correlated. The overall degree of inter-correlations among the ten items are shown by a Cronbach's alpha = 0.848, indicating a high level of internal reliability. All ten items are summed as a composite construct that we termed the *general psychotic*

*symptom scale*, with values distributing in the range of 0 to 10 and an average score of 2.29. Fifty six per cent of the subjects exhibited at least one psychotic symptom on the general psychotic symptoms scale. The general psychotic symptoms scale is broken down into a dichotomous measure due to a lack of normal distribution of the cases. Subjects, who reported none of these symptoms or only one of them during their most recent offence, are coded at the low-medium level (scores between 0 and 1); subjects who reported two or more of these symptoms are coded at the medium-high level (scores between 2 and 10). Thirty six subjects scored low on the general psychotic symptoms scale (between 0 and 1) compared with 34 who scored high.

**Figure 2: List of the Psychotic Symptoms**

| *General Psychotic Symptoms* |
| --- |
| Hallucinations:<br>    1.  Did you experience auditory hallucinations?<br>    2.  Were they command hallucinations?<br>    3.  Did you obey the commanded hallucinations?<br>    4.  Did you experience visual hallucinations?<br>Disorganization:<br>    5.  Did you decompensate (disorganized state)?<br>    6.  Did you exhibit bizarre behavior?<br>    7.  Were your thoughts disrupted?<br>Suspiciousness:<br>    8.  Were you suspicious?<br>    9.  Did you think that others were hostile towards you?<br>    10. Did you think that others wanted to deliberately harm you? |
| *Auditory and or Visual Hallucinations* |
|     1.  Did you experience visual hallucinations?<br>    2.  Did you experience auditory hallucinations?<br>    3.  Were they command hallucinations?<br>    4.  Did you obey the commanded hallucinations? |
| *Threat/Control-Override Symptoms (TCO)* |
|     1.  Did you experience auditory hallucinations?<br>    2.  Were they command hallucinations?<br>    3.  Did you obey the commanded hallucinations?<br>    4.  Were you suspicious?<br>    5.  Did you think that others were hostile towards you?<br>    6.  Did you think that others wanted to deliberately harm you? |

The second scale—*visual/auditory hallucinations* scale regroups the four items related to the visual and auditory hallucinations, with values distributing in the range of 0 to 4, an Alpha value of 0.843 (high internal reliability) and an average score of 0.51. The distributions of cases are

not normal in both scales; there are a lot of variations between the values; the standard deviations (0.00) are substantial with a mean of 0.5143. In our study sample, 22.9% exhibited auditory and or visual hallucinations.

Finally, the TCO psychotic symptoms scale is composed of the six items related to auditory hallucinations, visual hallucinations and suspiciousness (delusions of people wanting to deliberately inflict harm, feelings of hostility). All six items are found to be significantly inter-correlated. The overall degree of inter-correlation among the items are shown by a Cronbach's alpha = 0.814, indicating a high level of internal reliability. The six component items are summed to form the *TCO psychotic symptom scale*. Our scale differs from Link and colleagues (1992), Link and Stueve (1994) and Swanson and colleagues in two important ways. In previous studies, the values attributed to the TCO psychotic symptoms ranged from zero to four. In our study, the values of the TCO psychotic symptoms are binary. Further, in earlier studies, three items were used to construct the TCO psychotic symptoms scale, whereas in our research, six items are used to construct the latter scale.

In this study sample, the average score of 1.46 is generated for the TCO psychotic symptoms scale. Initially, the six component items are summed up to form a scale ranging from 0 to 6. However, due to a lack of normal distribution of the cases there is a lot of variation between the values, the standard deviations (1.82) are substantial and the mean is 1.45. In the second version of the TCO psychotic symptoms scale, we collapsed the scale into a dichotomous measure: low medium and medium high level. Subjects who reported none of these symptoms or one of them, during their most recent offence is coded at the low-medium level (scores between 0 and 1) and those who reported two or more of these six TCO psychotic symptoms are coded at the medium-high level (scores between 2 and 6). Thirty six subjects scored low on the TCO psychotic symptoms scale (between 0 and 1) versus 34 who scored high. The second version of the TCO psychotic symptoms scale is created so it can be included in the logistic regression model. This scale is operationalized into dummy variables: no TCO psychotic symptoms, low-medium level (1 or 2 TCO symptoms), medium-high level (3 or more TCO symptoms).

## 2.2. Violence Coding

In past research, the concept of violence was measured very generally; all types of violent offence were grouped under a single variable—general violence. Thus, only the general index of the presence or absence of any violent behavior was measured; the frequency of the offence was

not accounted for and the context in which the violent offence was committed was not included in the measurement of violence. To overcome previous research methodological shortcomings, for the present analysis, an attempt is made to approximate indicators of the severity, frequency and the context surrounding the violent offence. Moreover, by adding precisions to the measurement of violence we can better understand the nature of the relationship between psychotic symptoms (including TCO symptoms), mental disorders and psychiatric violent offences (Swanson and al., 1997); investigate whether there is a relationship between mental illness and all types of violent offence including economically oriented types of crime. The indicators of economically oriented offences are tested in this section to see if the set of variables that predict violent behavior can also be used to predict acquisitive forms of crime (economic compulsive violence).

Six measures of violent behavior are used in our study: murder (including first and second degree, attempted murder, and homicide), assault, weapon use, robbery, armed aggression and sexual aggression. All of which are considered on a binary and a continuous form which permits us to not only, assess the incidence of the independent variables in the presence or absence of convictions for specific types of violent offence but, also indicates the frequency rate. Our measures of violence are based on existing research literature pertaining to psychiatric violence. Similar to Swanson and colleague's study (1997), we consider all official violent offences committed during the offender's adult life—since age 18. Convictions are used but not arrest data. All criminal convictions integrated in this study are gathered from official data reports. A value of 1 is attributed to all subjects convicted for a specific offence and they are all coded according to the Canadian criminal code.

*Murder.* The murder variable incorporates four subtypes of crime: $1^{st}$ and $2^{nd}$ degree murder, attempted murder, and homicide. The number of convictions range from 0 to 4; the average score being 0.86 and the modal value of 2. When all past convictions are cumulated, the score varied from 0 to 19 with an average score of 1.36 convictions per subject

*Assault.* This variable integrates all types of assault. The mean of the number of assault is not calculated because of the large variation in the cases (standard variation = 2.94). The variable distribution is positively skewed (skewness = 4.25) and the data is concentrated in compact group with a kurtosis coefficient of 21.52. More than 95% of our subjects have been convicted for 5 assaults or less.

*Use of Weapon.* This measure includes various forms of weapon like a knife, a gun, a stick or anything else that could be used as a weapon during the commission of the offence. The distribution of the variable is characterized by a high variation between the observation and the concentration of the analysis (mean = 0.75; standard deviation = 1.0). Five per cent of the subjects are responsible for the high variation observed between the cases

*Armed Robbery.* This variable incorporates all robberies committed with the use of a fire arm. The average number of robbery conviction is 6.34. However, a small number of subjects are convicted for this offence (40) with a standard deviation of 12.43 and a high skewness coefficient.

*Armed Aggression.* This variable is coded when the subject incurred a conviction for armed aggression (according to the criminal code). The values for this continuous variable range from 0 to 5 with a mean of 0.36. However, a small number of subjects committed the majority of armed aggression thus explaining the high variation coefficient in the distribution.

*Sexual Aggression.* The sexual aggression variable integrates any offence with a sexual connotation (according to the Criminal code) (i.e. rape, incest, pedophile, aggression). In consequence of the low occurrence rate of this offence, all sexual offences are regrouped under a single variable. The number of convictions range from 1 to 32 sexual aggressions.

On the whole, violent offences are very common among our sample of psychiatric offenders. As a result of the large incidence of violent crimes, the measure of association between mental illness and a general indicator of violence would yield irrelevant results. Consequently, we examined the specific forms of violent crime and their respective frequency to assess the relation between mental disorders and violent offences (Swanson and al., 1997).

According to earlier literature, theory suggests a causal relationship between the experience of psychotic TCO symptoms and violent behavior. Consequently, details surrounding the context of the offence such as: victim-aggressor relationship, level of premeditation (if any) and the use of substance before and/or during the offence are gathered to distinguish violent offenders who exhibit TCO psychotic symptoms from violent offenders who do not exhibit such symptoms. These variables refer to contextual factors.

For the most part, existing research have focused their attention on the relationship between mental illness and violent offences predominantly because they did not find any significant relationship between mental illness and non-violent offences. Generally, offenders engage in various forms of illegal behavior throughout their criminal life span. In effect, typical offenders engage in polymorphic illegal activities. Mentally disordered offenders engage in polymorphic illegal behavior and therefore do not only engage in violent offences.

The non-violent offence types include: 1) arson, 2) drunk driving and 3) larceny. As mentioned previously, the contextual variables integrate: 1)premeditation; 2)intoxication before or during the commission of the offence; 3) medication use prior or during the offence; 4)substance co-morbidity; 5)victim known; 6)victim-aggressor relationship; 7)coercive approach; 8)weapon use; 9)use of contention; 10)acknowledgment of offence.

## 2.3. Developmental Risk Factors

According to earlier research, developmental factors (sometimes referred to as demographic factors) encompass factors related to the offender's personal and historical characteristics. They are operationalized in the following manner:

*Age at First Offence.* This variable refers to the age at which the subject began criminal (violent/non-violent) activity. As a result of a lack of precision in questionnaire, a dichotomous variable that distinguishes early starters from late starters is coded. Those who began their criminality before the ages of 18 are referred to as the "early starters" while those who began their criminal activity during their adulthood are classified as the "late starters". The value of 1 is coded for early starters and 0 for the late starters.

*Victim of Psychological and/or Physical Violence Intra-Familial.* This variable refers to any form of physical and or psychological abuse by the subjects' immediate family members. This variable is also dichotomized. The value of 1 is attributed to persons victimized while the value of 0 is coded for all those who did not experience abuse.

*Exposure to Psychological or/and Physical Violence Intra-Familial.* The variable is operationalized in the same manner as *the victim of Psychological and/or Physical Violence*

*Intra-Familial* variable except, instead of having to be victimized, the simple exposure to psychological and/ or physical violence is sufficient. The value of 1 is attributed to all persons exposed to violence and the value of 0 is given to those who were not exposed. Two additional variables are coded: 1) *Victim of Psychological and/or Physical Violence Extra-Familial* and 2) *Exposure to Psychological and/or Physical Violence Extra-Familial.*

*Parental Abandonment.* Parental abandonment includes all forms of parental physical separation during childhood and adolescence: death, divorce, separation, suicide and adoption. The value of 1 is attributed when a person was abandoned by their parent (s) and the value of 0 is coded when there was no separation between the child and the parent(s).

*General Stressors.* General stressors refer to various stressful situations such as, growing up in a disadvantageous home, with parents earning a relatively low income, or being raised by a single parent. The value of 1 is coded for all subjects who experienced different stressful situations and the value of 0 when there was not any.

*Familial Criminal History.* This variable incorporates all official and non official criminal activity perpetuated by the subjects' immediate family members. Information about the frequency and the gravity of the criminalized act are excluded from this variable (because of the lack of available information in the subjects' files). When the subjects' parents or siblings had a criminal history, the value of 1 is coded. The value of 0 is given when there was no prior criminal history.

*Familial Psychiatric History.* This variable refers to the family's psychiatric history (patients and outpatients) of each subject. The majority of the subjects' parents had been hospitalized for a fixed period of time. A small number among them occasionally frequented professional counselling (i.e. psychologist). Those with a familial psychiatric history are coded as 1, while those without any familial psychiatric history is coded as 0.

*Familial Suicide or Attempted suicide.* There is a very low prevalence of familial suicide and or suicide attempt in our sample; as a result, both variables are combined together under Familial Suicide or Attempted suicide. The value of 1 is coded for all subjects with a history of familial suicide or attempted suicide and 0 is coded for all subjects without a history of suicide in their families. A binary approach is applied when coding this variable.

*Marital status.* Marital status refers to all forms of intimate relationship: married, cohabitants, and or common law cohabitants. Non marital status includes single, divorced and separated persons. The value of 1 is coded for all persons who were single during the time they committed the offence and the value of 0 is coded for all those who were involved in a relationship when they committed their offence.

*Developmental Factors Scale.* This scale encompasses the factors related to the offenders' personal and historical characteristics: *Age at First Offence, Exposure to Psychological or/and Physical Violence Intra-Familial, Victim of Psychological and/or Physical Violence Intra-Familial, Victim of Psychological and/or Physical Violence Extra-Familial, Exposure to Psychological and/or Physical Violence Extra-Familial, Parental Abandonment, General Stressors, Familial Criminal History, Familial Psychiatric History, Familial Suicide or Attempted suicide, Marital status.*

The items are summed as a composite construct that we termed developmental factors scale. To ensure the internal reliability of these items, a reliability analysis including 11 items, measuring the developmental factors is performed. The internal consistency of the scale is a little below the acceptance margin of 0.700 with a Cronbach's alpha value of 0.685. However, an adequate level of internal reliability with a Cronbach's alpha value of 0.713 with a mean of 3.75 (the standard-deviation is 2.38) is obtained when the marital status item is excluded (it negatively correlated with the rest of the items). The values of this scale range from 0 to 10 and are normally distributed.

Further, to ensure the validity of the scale, a factor analysis is performed. The scale is validated if the 10 items are found to be statistically significant with a loading on a single factor. However, the principal components factor analysis shows that the items loaded primarily on three factors. As a result of the multiple factor solution, three other independent scales are suggested to better represent the sub-concepts associated with the developmental factors. The first subscale *victims of psychological and or psychical violence* regroups 4 items related to the victimization of psychological and physical violence intra and extra-familial with values distributing in the range of 0 to 4, with an excellent internal consistency (Alpha value of 0.817). Although, the majority of subjects (42.4%) scored 0 on this scale, there is a lot of variation (a mean of 1.45 and a standard deviation of 1.52). The distribution of the cases in this scale is not

normal; it is heavily skewed to the left with a portion of the cases (17.6%) at the upper born (score 4). The scale is kept intact and the possibility to perform a transformation may still be possible depending on the type of future statistical analysis required.

The second subscale—*stressful/adverse situations*—regroups the following items: *familial suicide or attempted suicide, familial criminal history, parental abandonment*, and *general stressors* with values typically ranging from 0 to 4. The Alpha value of 0,489 for this scale demonstrates a medium level inter-correlation among the items with a mean of 1.41 and a standard deviation of 1.04. Nevertheless, we kept this scale since the Turkey estimate increased the validity of the initial alpha value to 0.557. The scores are highly concentrated around values 1 and 2 with only 3 subjects with the highest score, and 8 subjects reporting 3 stressful/adverse situations.

The third subscale suggested by the factorial analysis regroups the following three items— *Marital status, age at first offence* and *Family psychiatric history*. However, we decided to treat these three items as independent variables because the loadings are not in the same direction.

## 2.4. Drug/Alcohol Abuse and or Dependence

Drug and alcohol consumption are often associated with a diminution of inhibitions and consequently, increase the likelihood of involvement in interpersonal conflict. Sometimes they are consumed by the perpetrator to help him commit a criminal act and in other cases to simply support the cost of their drug use. Other times, drugs and alcohol are consumed as a form of self-medication to escape feelings of despair and depression. Because of all the different interactions between drug use and crime, the variables' conceptualization must take into account all the theoretical interpretations.

*Drug and/or Alcohol Abuse or Dependency.* Although earlier studies, that have investigated the relationship between substance use and violent behavior analyzed alcohol independently from other forms of drug, we operationalized all illicit (i.e. cocaine, heroin, opioid etc...) and licit substances (i.e. alcohol) together under a single variable. The psychological and psychiatric reports did not always make the distinction between the two forms of substances, as a result it was not always clear whether the subjects consumed drugs or alcohol or both. Generally, it was only indicated they consumed substances.

This variable refers to persons who abused or were dependent on drugs, alcohol or both according to the DSM-IV. Seventy five per cent among our subjects abused or were dependent on alcohol and or drugs. The value of 1 is coded for 75% of our subjects and the value of 0 is given to all those who were not dependent on either substances.

*Use of Drugs and/ or Alcohol in an Economic Compulsive Functional Manner.* This binary variable corresponds to all subjects who engaged in economically oriented violent offences to support the cost of their drug use. In our sample, 20 % of the subjects committed their offence for utilitarian reasons. The value of 1 is attributed to all those who perpetuated their offence to support the cost of their drug use. Thus when the offender admitted to having committed an offence to gain money to later purchase drugs, or when it is clearly stated in any of the official correctional reports (police files, criminal profile reports, psychiatric, and psychological reports) the way in which alcohol and drugs contributed to the offence, we coded the value of 1. The value of 0 is given when the subjects did not commit the offence to support their drug habits.

*Use of Drugs and or Alcohol in a Psycho Pharmacological Manner.* This variable refers to all subjects who consumed drugs and or alcohol to lower their inhibitions and thus execute a violent offence. The value of 0 is attributed to all subjects who did not consume drugs and or alcohol in a psychopharmacological manner and the value of 1 is coded to all those who consumed drugs and or alcohol as a form of a disinhibitor. This value (1) is attributed when the offender admits to having consumed these substances to help him execute the offence during the initial psychological interview; or when it is stated in the psychological and or psychiatric reports that drugs and or alcohol are consumed immediately prior to or during their most recent offence. Forty per cent of our sample used drugs and or alcohol to lower their inhibitions.

*Use of Drugs and or Alcohol to Self-Medicate.* This variable refers to all offenders who consumed drugs and or alcohol as auto-medication, in an attempt to cope with painful feelings (i.e. depression and anxiety) and personality vulnerabilities. Once again, this information is gathered from the psychiatric and psychological reports. When it is clearly stated by the psychiatric that the use of drugs and or alcohol are a way of escaping their reality (their disorder), we attributed the value of 1 to the subject. Nine per cent of the subjects used drugs or and or alcohol to self-medicate difficult feelings. The value of 0 is coded when such substances were not consumed to self-medicate and the value of 1 is given when drugs and or alcohol were consumed to self-medicate painful feelings.

### 3. Sample Profile

Most subjects committed violent offences (N = 79). Some committed more then 30 violent offences since the age of 18 years. Of these 79, 37 (47.1 %) were convicted for robbery, the most common offence perpetuated with the highest incidence level (9 subjects committed 20 or more robberies since the age of 18 years), 38.8% were convicted for an offence related to murder (7.1% for 1st degree murder; 23.5% for 2nd degree murder; 12.9% for homicide, and 3.5% for attempted murder), 48% for assault, 23.5% for weapon use, 18.8% for armed aggression, and 13.5% for sexual offence.

With regards to the clinical characteristics, 49.4% (N = 42) were diagnosed with a mental disorder. Of these 42 subjects, 37.6% were diagnosed with a psychotic disorder, schizophrenia being the most common type of psychotic disorder (21.2%), and 14.1% with an affective disorder. Ninety five per cent were diagnosed with a personality disorder. Cluster B personality disorders were the most common disorders among our study sample (71%) followed by Cluster A (38.8%) and Cluster C (8.2%) personality disorders. Seventy five per cent among our subjects abused or were dependent on alcohol and or drugs. Twenty per cent engaged in economically oriented violent offences to support the cost of their drug use, 40% used durgs and or alcohol to lower their inhibitions and thus execute the offence and 9% consumed drugs and or alcohol as auto-medication, in an attempt to cope with painful feelings (i.e. depression and anxiety) and personality vulnerabilities.

With regards to the criminological characteristics, 43 subjects began their criminal activity before the age of 18; 44% ( N = 37), were victimized by a member of their family (psychologically and/or physically); 47% (N = 40) were exposed to one form of violence by an immediate family member; 51% (N = 43) were abandoned by their parents, 67% (N = 55) were raised in a disadvantage home environment; 34% (N = 29) had at least one member of their family treated for psychiatric disorder; 15 % (N = 13) had a familial criminal history, 8% (N = 7) had a history of a family suicide or attempted suicide, 16.5% (N = 14) were involved in a couple relationship and over 75% were either addicted to drugs, alcohol, or both.

## 4. Methods of Analysis

The methodological strategy employed to investigate the relation between violence and mental disorders is developed in two steps. Bivariate analysis is first performed to assess the relationship between the independent variables and the indicators of violence. Although, the bivariate statistical methods do not account for potential covariates, they identify the most relevant predictors of violence. Before we build our final explicative model, we ensured that all the independent variables are not collinear.

The numbers of the independent variables that can be incorporated in our explicative model are limited to the size of our sample-85 subjects. Thus including all of the independent variables in a multivariate model would yield bias results. A bivariate analysis is then performed in an attempt to prevent the exclusion of relevant variables. Such an analysis would in fact identify which variables are best associated with violence. The variables that are yielded from the bivariate analysis are then incorporated in our explicative model. Chi-square tests, t test and correlation tests are used. The fact that there is a significant bivariate relation between two independent variables does not constitute a direct relationship. One way to ensure that the relation (s) is not artificial is controlling for other factors to see the results change (i.e. eliminating previous significant relationship or changing the direction of the relationship).

The second step in the analysis is to construct the multivariate models. Since our dependent variables (violence) are operationalized dichotomously and continuously, two methods of analysis are performed: the multiple linear regressions (which are used to predict the continuous variables) and the logistic regression (used to predict the dichotomous variables).

### 4.1. Logistic Regression

Multivariate logistic regression analysis is used to model the risk of violent acts attributable to two domains of independent variables: clinical and criminological domains. Logistic regression is a statistical technique especially well suited for the analysis of epidemiological research questions. The general purpose of a logistic regression analysis is to predict the probability of a particular outcome for each subject. "The primary statistic on which this method is based is the odds ratio occurring in a group with a given risk factor or characteristic, compared with another group without the risk factor" (Swanson et al. 1997, p.12). For instance, while holding constant

other covariates, are subjects with certain delusions more likely to commit violent offences than those without such symptoms (Swanson et al. 13, 1997).

The logistic coefficient "estimates the average change in the log odds of a discrete event (e.g. violent behavior), per unit change in a predictor variable (e.g. the presence of threat-control-override symptoms), holding constant the other variables included in the model" (Swanson, et al, 13, 1997). When the exponential form is applied, the logistic coefficient generates the estimated odds ratio by which a given risk factor may be related with the event being statistically predicted. "The square of this parameter divided by its standard error produces the Wald chi-square statistic, which can be applied to test the probability of a true population effect attributable to each independent variable" (Swanson et al, p.13, 1997). Also, the logistic regression equation yields a predicted probability of the dependent variable (violence), within 95% confidence intervals, for every grouping of independent variables integrated in a model. The rank order correlation ( c ) between rates of violent behavior and probabilities predicted by the model is then noted for each logistic model. And we also report an overall chi-square statistic test to assess the statistical significance of each model and a percentage of improvement based on the first theoretical distribution of the subjects (Hosmer and Lemeshow, 1989).

## 4.2. Multiple Linear Regression

Similar to logistic regression analysis, linear regression analysis seeks the same objective: to determine if there is a relation between the independent and dependent variables. The linear regression analysis describes the form of the relation between the independent and the dependent variables and transcribes it into a mathematical equation which is used to determine the predictive capacity of the explicative variables. In contrast to logistic regression analysis, linear regression analysis estimates are calculated by the least square principle which assumes linearity between the variables (Lewis-Beck, 1980). This technique produces least square estimates by minimizing the sum of the squares of the prediction errors (Lewis-Beck, 1980). Each regression equation produces non-standardized regression coefficients for all variables included in the model. In order to obtain a prediction, we multiply the value obtained for each variable, for the subjects with its respective non-standardized regression coefficient; we repeat this same process for each variable included in our model. We, then add all the values obtained from the multiplication to get a predicted value. The multiple linear regressions equation is the following:

$$y = a + b1(x1) + b2(x2) + b3(x3) + e.$$

Y = the predicted value, (violence), a = the intercept, b = the coefficient estimate and x = the independent variable. In the end of the equation the value of e –error (the expression of the predicted value minus the observed one) is added since, when making a prediction it is possible to make an error. To interpret the strength of the relation between the variables, a standardized coefficient is calculated to account for the different values of each independent variable (Lewis-Beck, 1980).

To assess the goodness of fit of our linear regression equation, and to know how well our regression equation accounts for the variation in the dependent variable, a coefficient of determination ($R^2$) is employed. The coefficient of determination, $R^2$ indicates the explanatory power of the bivariate regression model. It measures the proportion of variation in violent behavior (dependent variable) accounted for by the independent variables included in our multiple regression equation (Lewis-Beck, 1980). To make sure that our regression models are accurate, we made sure that the error term is normally distributed and that there was no problem of heteroskedasticity (the variance of the error is constant for all the values of our independent variables). Further, to prevent multicolinearity (the independent variables measured specific concepts), a tolerance coefficients is also computed for each model (Lewis-Beck, 1980).

**Chapter 3: Analysis**

# Chapter 4: Interpretations and Discussion

The main purpose of this analysis is to identify which mentally ill persons with which disorders and symptoms are likely to behave violently and in what circumstances. More specifically, its objectives are threefold: 1) what is the functional form of the relationship between psychotic symptoms and violence? Is it curvilinear or linear? 2) Do mentally disordered offenders only engage in violent offences, or also in other forms of non-violent offences? 3) What are the most common forms of crime committed by persons with TCO psychotic symptoms (persons versus property crimes)? We begin by considering the bivariate association (s) between mental illness and indicators of violence. The bivariate analysis is tested on all predictors to see which of these variables are important in predicting violence. The multivariate predictive model is then created with the most relevant independent variables.

The bivariate analysis begins by examining the association between general diagnosis of mental disorder and violence and then analyzes the association between specific psychotic symptoms and violence. Our analytical strategies are both vertical and horizontal: vertical because the bivariate analysis leads to the multivariate analysis and horizontal because the analysis is based on two levels of measurements of mental disorders—general diagnosis and specific psychotic symptoms.

## 1. Clinical Variables

The clinical variables addressed in this study—diagnoses (Axis I an Axis II), substance misuse and dependence, psychotic symptoms and the threat/control-override symptoms (TCO)—have been advanced by clinicians as key risk factors for violence (Wessely and Taylor 1991). Axis I and Axis II are treated as two distinct groups in the analysis thus, we did not account for the co-morbidity existent in each group.

## 1.1. Relation between the DSM-IV Diagnoses and Violence

Table 2 presents, for persons with a mental disorder, the percentages of specific forms of violent offence (murder, assault, weapon use, armed robbery, armed aggression and sexual crimes). For example, 45% of persons diagnosed with a mental disorder were convicted for murder in comparison with 32.6% without this disorder. On the whole, the results indicate only a few statistically significant relations between the specific form of violent offence and the general mental disorder diagnosis (Axis I). In fact, persons with a mental disorder committed the same proportion of violent offences as those without any mental disorder (on Axis I). A difference

however appeared between persons with and without psychotic disorder and murder conviction: 50.0% of those with a psychotic disorder were convicted for murder in comparison with 32.1% without this disorder (phi = 0.178; p < 0.10). Similarly, 58.3% of the subjects diagnosed with an affective disorder were convicted for weapon use compared with 17.8% without this diagnosis (phi = 0.333; p < 0.01).

**Table 2: Association between Violence and General Diagnosis of Mental Disorders According to the DSM-IV**

| | Murder | Assault | Weapon Use | Armed Robbery | Armed Aggression | Sexual Offence |
|---|---|---|---|---|---|---|
| **Axis I—Mental Disorder** | | | | | | |
| Yes | 45.2% | 42.9% | 31.0% | 45.2% | 16.7% | 14.3% |
| No | 32.6% | 46.5% | 16.3% | 48.8% | 20.9% | 16.3% |
| Phi | 0.130 | 0.037 | 0.173 | 0.036 | 0.055 | 0.028 |
| **Psychotic Disorder** | | | | | | |
| Yes | 50.0% | 46.9% | 21.9% | 43.8% | 18.8% | 18.8% |
| No | 32.1% | 43.4% | 24.5% | 49.1% | 18.9% | 13.2% |
| Phi | **0.178*** | 0.034 | 0.030 | 0.052 | 0.001 | 0.075 |
| **Affective Disorder** | | | | | | |
| Yes | 33.3% | 33.3% | 58.3% | 41.7% | 16.7% | 0.0% |
| No | 39.7% | 46.6% | 17.8% | 47.9% | 19.2% | 17.8% |
| Phi | 0.046 | 0.093 | **0.333***** | 0.044 | 0.022 | 0.172 |
| **Axis II—Personality Disorder** | | | | | | |
| Yes (n=81) | 37.0% | 45.7% | 22.2% | 45.7% | 18.5% | 14.8% |
| No (n=4) | 75.0% | 25.0% | 50.0% | 75.0% | 25.0% | 25.0% |
| Phi | 0.165 | 0.088 | 0.139 | 0.124 | 0.035 | 0.060 |
| **Cluster A** | | | | | | |
| Yes (n=7) | 14.3% | 71.4% | 14.3% | 71.4% | 42.7% | 14.3% |
| No (n=78) | 41.0% | 42.3% | 24.4% | 44.9% | 16.7% | 15.4% |
| Phi | 0.151 | 0.161 | 0.065 | 0.146 | **0.184*** | 0.008 |
| **Cluster B** | | | | | | |
| Yes | 36.1% | 50.8% | 23.0% | 47.5% | 19.7% | 16.4% |
| No | 45.8% | 29.2% | 25.0% | 45.8% | 16.7% | 12.5% |
| Phi | 0.090 | **0.196*** | 0.022 | 0.015 | 0.035 | 0.049 |
| **Cluster C** | | | | | | |
| Yes | 36.4% | 39.4% | 21.2% | 45.5% | 6.1% | 15.2% |
| No | 40.4% | 48.1% | 25.0% | 48.1% | 26.9% | 15.4% |
| Phi | 0.040 | 0.085 | 0.044 | 0.026 | **0.260**** | 0.003 |

* p < 0.10
** p < 0.05
*** p < 0.01

Similarly, few significant differences appeared among persons diagnosed with an Axis II personality disorder: 1) offenders with a Cluster A disorder, compared with their counterpart group were convicted in greater proportion for armed aggression (phi = 0.184; p < 0.10); 2) offenders with a Cluster B disorder were more likely to be convicted for assault than their counterpart group (50.8% vs. 29.2%) (phi = 0.196; p < 0.196). Although, the results indicate a significant relation between Cluster A personality disorders and armed aggression and between

Cluster B personality disorders and assault, the statistical association between the two is weak. A moderate strength of association is however, observed between Cluster C personality disorders and armed aggression convictions (phi = 0.260; $p < .05$). Six per cent of those with a personality disorder in Cluster C committed armed aggression versus 26.9% without this personality disorder. Note that Cluster C personality disorders are the only disorders negatively associated with violent convictions.

The average number of violent convictions incurred by persons with a mental disorder and or personality disorder is presented below, in Table 3. Once again, few significant relations are generated. Subjects with an affective disorder were, on average, more frequently convicted for weapon use (eta = 0.244; $p < 0.05$) than their counterpart group. Further, the most frequent form of crime committed by persons with Cluster A and B personality disorders were armed aggression and assault (respectively). More specifically, persons diagnosed with a personality disorder in Cluster A perpetuated a higher level of convictions for armed aggression (eta = 0.383; $p < 0.01$) than those without this disorder. Persons diagnosed with a Cluster B personality disorders, in contrast, incurred a higher level of convictions for assault than those without it (eta = 0.206; $p < 0.10$). Persons diagnosed with a Cluster C disorder, in contrast, perpetuated the lowest level of convictions for armed aggression (eta of 0.206; $p < 0.10$) in comparison to those without Cluster C diagnosis.

*Synthesis.* Table 2 presents for each general category of mental disorder, the percentages of the various forms of violent offence and Table 3 indicate the average number of violent convictions. In terms of relation between our results and earlier research findings, we found similar statistical association between psychotic disorder and the incidence of murder conviction. Taylor (1999), and D'Obran and colleagues (1989) for instance, suggested that persons with a psychotic disorder experience persecutory delusions and or hallucinated voices that may demand a precise form of a violent act, specifically homicide, to "protect themselves".

**Table 3: The Average Number of Violent Convictions Perpetuated by Persons with a Mental Disorder and Personality Disorder**

| | Murder | Assault | Weapon Use | Armed Robbery | Armed Aggression | Sexual Offence |
|---|---|---|---|---|---|---|
| **Axis I—Mental Disorder** | | | | | | |
| Yes | 0.9 | 1.6 | 1.0 | 5.0 | 0.4 | 0.4 |
| No | 0.8 | 1.1 | 0.5 | 7.7 | 0.3 | 1.3 |
| Eta | 0.060 | 0.090 | 0.123 | 0.111 | 0.067 | 0.114 |
| **Psychotic Disorder** | | | | | | |
| Yes | 1.1 | 2.0 | 0.8 | 4.3 | 0.5 | 0.5 |
| No | 0.7 | 1.0 | 0.7 | 7.6 | 0.3 | 1.0 |
| Eta | 0.138 | 0.174 | 0.012 | 0.132 | 0.111 | 0.063 |
| **Affective disorder** | | | | | | |
| Yes | 0.6 | 0.7 | 1.8 | 6.0 | 0.3 | 0.0 |
| No | 0.9 | 1.5 | 0.6 | 6.4 | 0.4 | 1.0 |
| Eta | 0.097 | 0.098 | **0.244\*\*** | 0.011 | 0.049 | 0.090 |
| **Axis II—Personality Disorder** | | | | | | |
| Yes (n=81) | 0.8 | 1.4 | 0.7 | 6.6 | 0.4 | 0,8 |
| No (n=4) | 1.8 | 0.5 | 1.0 | 2.0 | 0.5 | 1.0 |
| Eta | 0.172 | 0.067 | 0.031 | 0.078 | 0.032 | 0.010 |
| **Cluster A** | | | | | | |
| Yes (n=7) | 0.3 | 2.4 | 0.6 | 10.7 | 1.6 | 0.4 |
| No (n=78) | 0.9 | 1.3 | 0.7 | 5.9 | 0.3 | 0.9 |
| Eta | 0.149 | 0.108 | 0.030 | 0.106 | **0.383\*\*\*** | 0.033 |
| **Cluster B** | | | | | | |
| Yes | 0.8 | 1.8 | 0.8 | 6.8 | 0.3 | 0.9 |
| No | 1.0 | 0.4 | 0.6 | 5.1 | 0.6 | 0.8 |
| Eta | 0.100 | **0.206\*** | 0.045 | 0.065 | 0.145 | 0.014 |
| **Cluster C** | | | | | | |
| Yes | 0.8 | 0.8 | 0.6 | 6.4 | 0.1 | 0.4 |
| No | 0.9 | 1.7 | 0.9 | 6.3 | 0.5 | 1.1 |
| Eta | 0.049 | 0.152 | 0.079 | 0.001 | **0.206\*** | 0.100 |

\* p < 0.10
\*\* p < 0.05
\*\*\* p < 0.01

Our results also indicate a statistical relation between psychotic disorder and murder conviction. However, on the whole we are unable to draw any specific conclusions from the findings yielded in these tables as a result of the uneven number of subject distribution and the lack of precise diagnoses. In some cases, for instance, only 7 subjects were diagnosed with a certain disorder (e.g. Cluster A personality disorder). The distribution is often characterized by unequal variation, which may be responsible for the absence of statistically significant relations. Further, the diagnoses are general and heterogeneous. The different forms of mental disorder diagnosis and symptoms are not distinguished. Further, the personality disorders regrouped in Cluster A, which have different traits and symptoms and therefore, do not necessarily contribute to violent behavior in the same manner, are also not differentiated in these tables. In consequence of the generality of the diagnoses, and the uneven subject distribution, there is not enough specific data to draw valid theoretical interpretation. Therefore we are not able to

discriminate the subject's mental illness by the specific form of violent offence. In order to shed some light on the relation between specific mental disorders and violent crimes, it is important to breakdown the different categories of mental disorders into specific forms of diagnosis.

### 1.1.1. Mental Disorder and Violence

Dissimilar to Table 2 and 3, the following two tables (4 and 5) account for the different forms of disorder classified under the major categories of mental disorders and personality disorders. Table 4 indicates the prevalence of violent behavior according to specific forms of mental disorder while table 5 presents the average number of violent convictions. As illustrated in Table 4, Axis I incorporates 8 forms of mental disorder (4 major mental disorders, i.e. schizophrenia / schizophreniform disorder, delusional disorder and depression disorder)

Among them, the only three disorders associated with a high prevalence of specific violent behavior are the psychoactive substance abuse disorder, schizophrenia and/or schizophreniform disorder and the sexual paraphilia disorder. Sixty per cent among those diagnosed with a psychoactive substance abuse disorder were convicted for assault (phi = 0.237; p < 0.05) versus 36.4% of subjects without such a disorder. Schizophrenic offenders (61.1%), compared with their counterpart group (31.1%) were convicted in greater proportion for murder. Also, offenders diagnosed with a sexual paraphilia disorder were convicted, in greater proportion for sexual offence when compared with those who do not have this mental illness (60% versus 12.5%).

Further, it is noteworthy to mention that few negative relations are yielded between two forms of mental disorder and violence. Persons suffering from sexual paraphilia disorder were less likely to be convicted for the other forms of violent crime specifically armed robbery (phi = 0.236; p < 0.05) compared with those without this disorder. Similarly, offenders diagnosed with an adaptation disorder, show a lower proportion rate of murder conviction than those without this disorder (phi = 0.199; p < 0.10).

**Table 4: The Prevalence of Violent Crimes with Specific Mental Disorder Diagnosis**

| | Murder | Assault | Weapon Use | Armed Robbery | Armed Aggression | Sexual Offence |
|---|---|---|---|---|---|---|
| **Axis I—Mental Disorder (Specific Disorders)** | | | | | | |
| **Psychoactive Substances Disorder** | | | | | | |
| Yes | 43.3% | 60.0% | 23.3% | 46.7% | 26.7% | 20.0% |
| No | 36.4% | 36.4% | 23.6% | 47.3% | 14.5% | 12.7% |
| Phi | 0.068 | 0.227** | 0.003 | 0.006 | 0.148 | 0.097 |
| **Schizophrenia/ Schizophreniform Disorder** | | | | | | |
| Yes | 61.1% | 27.8% | 27.8% | 44.4% | 11.1% | 16.7% |
| No | 31.1% | 49.3% | 22.4% | 47.8% | 20.9% | 14.9% |
| Phi | 0.237** | 0.176 | 0.052 | 0.027 | 0.102 | 0.020 |
| **Schizoaffective Disorder** | | | | | | |
| Yes | 50.0% | 50.0% | 0.0% | 50.0% | 16.7% | 33.3% |
| No | 38.0% | 44.3% | 25.3% | 46.8% | 19.0% | 13.9% |
| Phi | 0.063 | 0.029 | 0.153 | 0.016 | 0.015 | 0.138 |
| **Delusional Disorder** | | | | | | |
| Yes | 40.0% | 60.0% | 0.0% | 20.0% | 40.0% | 20.0% |
| No | 38.8% | 43.8% | 25.0% | 48.8% | 17.5% | 15.0% |
| Phi | 0.006 | 0.077 | 0.139 | 0.136 | 0.135 | 0.033 |
| **Depression Disorder** | | | | | | |
| Yes | 33.3% | 22.2% | 44.4% | 44.4% | 22.2% | 0.0% |
| No | 39.5% | 47.4% | 21.1% | 47.4% | 18.4% | 17.1% |
| **Anxiety Disorder/ Trait** | 0.091 | 0.123 | 0.154 | 0.009 | 0.011 | 0.077 |
| Yes | 66.7% | 16.7% | 16.7% | 33.3% | 16.7% | 0.0% |
| No | 36.7% | 46.8% | 24.1% | 48.1% | 19.0% | 16.5% |
| Phi | 0.157 | 0.155 | 0.045 | 0.076 | 0.015 | 0.117 |
| **Sexual Paraphilia Disorder/Trait** | | | | | | |
| Yes | 40.0% | 40.0% | 0.0% | 0.0% | 20.0% | 60.0% |
| No | 38.8% | 45.0% | 25.0% | 50.0% | 18.8% | 12.5% |
| Phi | 0.006 | 0.024 | 0.139 | 0.236** | 0.008 | 0.311*** |
| **Adaptation Disorder/ Trait** | | | | | | |
| Yes | 0.0% | 20.0% | 40.0% | 40.0% | 40.0% | 20.0% |
| No | 41.3% | 46.3% | 22.5% | 47.5% | 17.5% | 15.0% |
| Phi | 0.199* | 0.124 | 0.097 | 0.035 | 0.135 | 0.033 |

\* p < 0.10
\*\* p < 0.05
\*\*\* p < 0.01

Table 5, illustrates the average number of violent convictions and the specific forms of mental disorder. As is illustrated in this table, schizophrenic offenders were not only convicted for murder in greater proportion but also incurred a higher average of convictions for murder than non schizophrenic offenders (eta = 0.214; p < 0.05). Further, it is noteworthy to mention that some of the relation previously observed in Table 4 lost their significance power in Table 5 (i.e. the relation between psychoactive substance abuse disorder and assault) while some remained significant: (1) offenders diagnosed with an adaptation disorder committed fewer murders than those without this disorder (phi = 0.187; p < 0.10); (2) persons diagnosed with a sexual paraphilia disorder committed, on average, more sexual aggressions than those without this

paraphilia (9.2 vs. 0.3) (eta = 0.558; p < 0.01) thus suggesting these persons are specialized in sexual offences (60.0% vs. 12.5% with a phi = 0.311; p < 0.01).

**Table 5: The Association between the Average Number of Violent Convictions and Specific Mental Disorders**

| | Murder | Assault | Use of Weapon | Armed Robbery | Armed Aggression | Sexual Offence |
|---|---|---|---|---|---|---|
| **Axis I—Mental Disorders (Specific Disorders)** | | | | | | |
| **Psychoactive Substances Disorder** | | | | | | |
| Yes | 0.9 | 1.9 | 0.7 | 6.0 | 0.3 | 0.9 |
| No | 0.8 | 1.1 | 0.8 | 6.5 | 0.4 | 0.8 |
| Eta | 0.026 | 0.141 | 0.022 | 0.020 | 0.025 | 0.006 |
| **Schizophrenia/ schizophreniform Disorder** | | | | | | |
| Yes | 1.3 | 1.4 | 1.0 | 5.6 | 0.3 | 0.4 |
| No | 0.7 | 1.4 | 0.7 | 6.5 | 0.4 | 1.0 |
| Eta | **0.214\*\*** | 0.002 | 0.071 | 0.031 | 0.105 | 0.062 |
| **Schizoaffective Disorder** | | | | | | |
| Yes | 1.0 | 1.0 | 0.0 | 2.3 | 0.5 | 1.2 |
| No | 0.8 | 1.4 | 0.8 | 6.6 | 0.4 | 0.8 |
| Eta | 0.034 | 0.036 | 0.116 | 0.089 | 0.040 | 0.024 |
| **Delusional Disorder** | | | | | | |
| Yes | 0.8 | 5.4 | 0.0 | 6.0 | 0.4 | 0.6 |
| No | 0.9 | 1.1 | 0.8 | 6.4 | 0.4 | 0.9 |
| Eta | 0.013 | **0.344\*\*\*** | 0.105 | 0.007 | 0.009 | 0.016 |
| **Depression Disorder** | | | | | | |
| Yes | 0.6 | 0.3 | 1.6 | 6.7 | 0.3 | 0.0 |
| No | 0.9 | 1.5 | 0.7 | 6.3 | 0.4 | 0.9 |
| **Anxiety Disorder/Trait** | | | | | | |
| Yes | 1.3 | 0.2 | 0.2 | 1.3 | 0.2 | 0.0 |
| No | 0.8 | 1.5 | 0.8 | 6.7 | 0.4 | 0.9 |
| Eta | 0.114 | 0.114 | 0.091 | 0.112 | 0.058 | 0.061 |
| **Sexual paraphilia Disorder/Trait** | | | | | | |
| Yes | 0.8 | 0.6 | 0.0 | 0.0 | 0.2 | 9.2 |
| No | 0.9 | 1.4 | 0.8 | 6.7 | 0.4 | 0.3 |
| Eta | 0.013 | 0.066 | 0.105 | 0.128 | 0.044 | **0.558\*\*\*** |
| **Adaptation Disorder/Trait** | | | | | | |
| Yes | 0.0 | 0.4 | 1.8 | 5.2 | 0.6 | 0.4 |
| No | 0.9 | 1.4 | 0.7 | 6.4 | 0.4 | 0.9 |
| Eta | **0.187\*** | 0.084 | 0.146 | 0.023 | 0.062 | 0.029 |

\* p < 0.10
\*\* p < 0.05
\*\*\* p < 0.01

A significant relation is however yielded between delusional disorder and assault. Subjects diagnosed with the latter disorder were 5.1 more likely to have been convicted for assault compared with those without this diagnosis (1.1) (eta = 0.344; p < 0.01).

*Synthesis.* It is important to recognize the differences in the results yielded from table 4 and 5 in comparison with the results generated from Table 2 and 3. Incorporating the different forms of mental disorder in Table 4 and 5 provides more detailed information on the nature of the association between the kinds of mental disorders and specific violent offences. For instance, offenders afflicted with a delusional disorder had a significantly higher incidence of assault convictions compared with their counterpart group; while schizophrenic offenders committed murder, more frequently and with a greater proportion (compared with those who did not have this disorder). Our findings are consistent with earlier research findings which found schizophrenic persons to have higher rates of violence than persons with other Axis I diagnosis (Baxter, 1997). Further, existing research found drugs and or alcohol to contribute to violent behavior, especially among mentally disordered persons. The same result is found in our sample for, at least one form of violent offence. Sixty per cent among those diagnosed with a psychoactive substance abuse disorder were convicted for assault (phi = 0.237; $p < 0.05$) versus 36.4% of subjects without such a disorder.

## 1.1.2. Personality Disorders and Violence

Tables 6 and 7 provide the same information as Table 4 and 5 for Axis 2 personality disorders. Table 6 indicates the prevalence of violent behavior according to specific forms of personality disorder while table 7 presents the average number of violent convictions.

According to our results, there is an association, although not always positive between particular kinds of personality disorder and specific forms of violent offence. Subjects without an antisocial personality disorder, for instance, showed a higher prevalence rate of murder conviction (phi = 0.187; $p < 0.10$) than those with this disorder. While those diagnosed with an antisocial personality disorder displayed a higher prevalence rate of assault convictions (phi = 0.251; $p < 0.05$) than their counterpart groups.

Similarly, a negative relationship is observed between the borderline personality disorder and a low proportion rate of crime. When compared with persons without this disorder, offenders diagnosed with the latter disorder showed a lower proportion rate of armed aggression convictions (phi = 0.195; $p < 0.10$). A similar negative relationship is observed between the narcissistic personality disorder and weapon use convictions (phi = 0.179; $p < 0.10$) and between the avoidance personality disorder and weapon use convictions (phi = 0.179; $p < 0.10$).

**Table 6: Prevalence of Violent Crime for each Axis II Disorder**

| | Murder | Assault | Weapon Use | Armed Robbery | Armed Aggression | Sexual Offence |
|---|---|---|---|---|---|---|
| **Axis II—Personality Disorder** | | | | | | |
| **Antisocial Disorder/Trait** | | | | | | |
| Yes | 31.4% | 54.9% | 23.5% | 51.0% | 21.6% | 15.7% |
| No | 50.0% | 29.4% | 23.5% | 41.2% | 14.7% | 14.7% |
| Phi | **0.187*** | **0.251**** | 0.000 | 0.096 | 0.086 | 0.013 |
| **Borderline Disorder/Trait** | | | | | | |
| Yes | 33.3% | 58.3% | 33.3% | 66.7% | 0.0% | 25.0% |
| No | 39.7% | 42.5% | 21.9% | 43.8% | 21.9% | 13.7% |
| Phi | 0.046 | 0.111 | 0.094 | 0.159 | **0.195*** | 0.109 |
| **Narcissistic Disorder/ Trait** | | | | | | |
| Yes | 12.5% | 50.0% | 0.0% | 25.0% | 0.0% | 0.0% |
| No | 41.6% | 44.2% | 26.0% | 49.4% | 20.8% | 16.9% |
| Phi | 0.174 | 0.034 | **0.179*** | 0.142 | 0.155 | 0.137 |
| **Avoidance Disorder/Trait** | | | | | | |
| Yes | 12.5% | 50.0% | 0.0% | 25.0% | 0.0% | 0.0% |
| No | 41.6% | 44.2% | 26.0% | 49.4% | 20.8% | 16.9% |
| Phi | 0.174 | 0.034 | **0.179*** | 0.142 | 0.155 | 0.137 |
| **Dependent Disorder/Trait** | | | | | | |
| Yes | 20.0% | 60.0% | 20.0% | 50.0% | 10.0% | 20.0% |
| No | 41.3% | 42.7% | 24.0% | 46.7% | 20.0% | 14.7% |
| Phi | 0.141 | 0.112 | 0.030 | 0.022 | 0.082 | 0.048 |
| **Mixed Personality Disorder/Trait** | | | | | | |
| Yes | 35.7% | 50.0% | 21.4% | 50.0% | 14.3% | 28.6% |
| No | 39.4% | 43.7% | 23.9% | 46.5% | 19.7% | 12.7% |
| Phi | 0.028 | 0.047 | 0.022 | 0.026 | 0.052 | 0.164 |
| **Limited intelligence Disorder/Trait** | | | | | | |
| Yes | 50.0% | 50.0% | 30.0% | 50.0% | 10.0% | 30.0% |
| No | 37.3% | 44.0% | 22.7% | 46.7% | 20.0% | 13.3% |
| Phi | 0.084 | 0.039 | 0.056 | 0.022 | 0.082 | 0.149 |

\* $p < 0.10$
\*\* $p < 0.05$
\*\*\* $p < 0.1$

As you may have already noticed, most of the significant differences previously observed in Table 6 are no longer significant in Table 7 (the average number of convictions for violent offences, for each personality disorder). There are two possible reasons for the lack of significant relationship in Table 7: one, there is no causal/direct relationship between the crime's proportion rate and the frequency rate. Thus, persons who commit violent offences in greater proportion do not necessarily commit them more frequently. A second probable explanation for the lack of significant relationship is the unequal variation between the comparison groups—those with and without the disorder, for instance (the results drawn from t-test analysis are more sensible to extreme values).

Nonetheless, one significant relation found in Table 6 remained constant in Table 7: subjects with an antisocial personality disorder committed assaults more frequently when compared with their counterpart group (eta = 0.245).

*Synthesis*. The results generated from Table 6 and 7 although preliminary, show consistency with earlier research findings. For instance, many researchers found an association between offenders with an antisocial personality disorder and crime (in terms of proportion rate). In fact, subjects diagnosed with an antisocial personality disorder demonstrated a greater proportion of convictions rate for assault, in comparison with subjects diagnosed with other forms of personality disorder such as narcissistic, borderline, and avoidance (Stoff, Breiling and Maser, 1998).

According to Hodgins, Cluster C personality disorders can disinhibit criminal tendencies (Hodgins, 2002). Some studies, suggest as an explanation for the increased conviction rate of assault among antisocial offenders, the difficulties of interpersonal relationships. Violent behavior is generally exhibited when the individual is unable to solve the conflict without violence. For instance, in contrast to persons with an antisocial personality disorder, those with an avoidance personality disorder tend to avoid conflicts. Consequently, certain forms of violent behavior are more common among certain types of personality disorders because of the differences in the personality disorder dynamic.

Likewise, different symptoms are exhibited according to different forms of mental disorder. Consequently, persons with certain mental illnesses engage in different kinds of violent behavior. Persons afflicted with a psychotic disorder, for instance, are generally more significantly associated with greater proportions of murder convictions than those without this disorder. These persons probably committed the murder during a psychotic state, in an attempt to remove the perceived threat (the victim).

**Table 7: Average Number of Violent Convictions for each Personality Disorder**

| | Murder | Assault | Use of Weapon | Armed Robbery | Armed Aggression | Sexual Offence |
|---|---|---|---|---|---|---|
| **Axis II—Personality Disorders (Specific Disorders)** | | | | | | |
| **Antisocial Disorder/ Trait** | | | | | | |
| Yes | 0.7 | 2.0 | 0.9 | 7.6 | 0.3 | 1.0 |
| No | 1.1 | 0.5 | 0.6 | 4.4 | 0.5 | 0.6 |
| Eta | 0.142 | **0.245\*\*** | 0.088 | 0.129 | 0.092 | 0.041 |
| **Borderline Disorder/Trait** | | | | | | |
| Yes | 1.0 | 1.1 | 0.5 | 7.0 | 0.2 | 0.4 |
| No | 0.8 | 1.5 | 0.9 | 6.1 | 0.4 | 1.0 |
| Eta | 0.102 | 0.057 | 0.084 | 0.034 | 0.085 | 0.068 |
| **Narcissistic Disorder/Trait** | | | | | | |
| Yes | 1.0 | 1.3 | 0.7 | 9.7 | 0.3 | 0.2 |
| No | 0.8 | 1.4 | 0.8 | 5.9 | 0.4 | 0.9 |
| Eta | 0.045 | 0.010 | 0.011 | 0.099 | 0.025 | 0.062 |
| **Avoidance Disorder/ Trait** | | | | | | |
| Yes | 0.3 | 1.3 | 0.0 | 5.1 | 0.0 | 0.0 |
| No | 0.9 | 1.4 | 0.8 | 6.5 | 0.4 | 0.9 |
| Eta | 0.171 | 0.014 | 0.135 | 0.032 | 0.125 | 0.072 |
| **Dependence Disorder/Trait** | | | | | | |
| Yes | 0.5 | 1.4 | 0.7 | 5.3 | 0.2 | 0.5 |
| No | 0.9 | 1.4 | 0.8 | 6.5 | 0.4 | 0.9 |
| Eta | 0.114 | 0.003 | 0.011 | 0.031 | 0.064 | 0.033 |
| **Mixed Personality Disorder/Trait** | | | | | | |
| Yes | 0.8 | 1.2 | 0.4 | 10.1 | 0.3 | 1.4 |
| No | 0.9 | 1.4 | 0.8 | 5.6 | 0.4 | 0.7 |
| Eta | 0.028 | 0.025 | 0.080 | 0.137 | 0.037 | 0.070 |
| **Limited intelligence Disorder/Trait** | | | | | | |
| Yes | 1.1 | 1.1 | 0.6 | 2.1 | 0.2 | 0.8 |
| No | 0.8 | 1.4 | 0.8 | 6.9 | 0.4 | 0.8 |
| Eta | 0.077 | 0.035 | 0.031 | 0.125 | 0.064 | 0.003 |

\* $p < 0.10$
\*\* $p < 0.05$
\*\*\* $p < 0.01$

## 1.1.3. Relation between Psychotic Symptoms and Violence

As mentioned previously, three scales are created to measure the latent concepts associated with psychotic symptoms: *the general psychotic symptoms* scale; *visual and/or auditory hallucinations* scale; *TCO psychotic symptoms* scale. Since the main theoretical framework applied in this research project is the rationality-within-irrationally principle, most of our attention is concentrated on the latter two scales, especially the TCO psychotic symptoms scale. The items included in the scales are also tested independently of one another.

This section has three main objectives: 1) to study the effect produced by each specific psychotic symptom on all violent crimes; 2) to assess the nature of the relationship between psychotic symptoms and violent offences; 3) present an analysis based on the scales and the violent forms of crime.

The analysis begins by presenting the results yielded from the chi-square and mean tests. The psychotic symptoms (initially continuous) are operationalized into dichotomous variables before running the chi-square analysis. As shown in Table 8, only one significant relation is generated between the general psychotic symptoms scale and violent offences: those who scored high on the general psychotic symptoms scale were convicted in greater proportion for armed aggression than those who scored low (29.4% versus 11.1%).

However, more significant results are observed when the average number of violent convictions is measured. This is perhaps because psychotic symptoms are a better subject discriminator when examining the frequency rate of violent offences. Offenders for instance, who scored high on the general psychotic symptoms scale were 2.15 more likely to have been convicted for assault than those who scored low (0.83) (eta = 0.212; $p < 0.10$). On the other hand, persons who exhibited more then one psychotic symptom from the general psychotic symptoms scale committed armed robberies less frequently (eta = 0.251; $p < 0.05$) than those who exhibited none or one psychotic symptom. Offenders who experienced visual and/or auditory hallucinations incurred on average 2.86 assault convictions in comparison to those without these symptoms (1.06 ) (eta = 0.246; $< 0.05$). Those who exhibited one or more TCO psychotic symptoms committed more assaults (eta = 0.203; $p < 0.10$) and armed aggression (eta = 0.205 $< 0.10$) than those without these symptoms.

*Synthesis.* To reiterate, the results generated from Table 8 indicate: a strong relation between psychotic symptoms, assault and armed aggression. Although anticipated, no statistical relation is observed between psychotic symptoms and murder, as is suggested in earlier studies (Taylor 1999). Further and as expected, no association is yielded between psychotic symptoms and utilitarian forms of crime (i.e. robbery). TCO psychotic symptoms are not associated with a higher proportion conviction rate for any violent offences but with a higher frequency rate for assault and armed aggression. Thus far however, the nature of the relation between TCO psychotic symptoms and violence is unclear. More analysis is required to better understand the nature of the relationship between TCO psychotic symptoms and crime.

**Table 8: Dichotomized Psychotic Symptoms Scales and Violent Offences (Frequency and Prevalence).**

| | Murder | Assault | Use of Weapon | Armed Robbery | Armed Aggression | Sexual Offence |
|---|---|---|---|---|---|---|
| **Prevalence of Violent Offences** | | | | | | |
| | | | | | | |
| **General Psychotic Symptoms** | | | | | | |
| Low | 44.0% | 41.7% | 22.2% | 50.0% | 11.1% | 13.9% |
| High | 35.3% | 35.9% | 20.6% | 47.1% | 29.4% | 17.6% |
| Phi | 0.093 | 0.142 | 0.020 | 0.024 | **0.229*** | 0.052 |
| **Visual and/or Auditory Hallucinations** | | | | | | |
| Yes | 31.3% | 56.3% | 25.0% | 62.5% | 31.3% | 18.8% |
| No | 42.1% | 46.3% | 20.4% | 44.4% | 16.7% | 14.8% |
| Phi | 0.097 | 0.084 | 0.047 | 0.152 | 0.153 | 0.045 |
| **Threat Control-Override Symptoms** | | | | | | |
| Yes | 37.5% | 56.3% | 21.9% | 50.0% | 28.1% | 18.2% |
| No | 42.1% | 42.1% | 21.1% | 47.4% | 13.2% | 13.2% |
| Phi | 0.047 | 0.141 | 0.010 | 0.026 | 0.186 | 0.077 |
| | | | | | | |
| **Average Number of Violent Offences** | | | | | | |
| **General Psychotic Symptoms** | | | | | | |
| ■ Low-Medium level (1-2) | 0.92 | 0.83 | 0.75 | 10.25 | 0.22 | 0.28 |
| ■ Medium-High level (3-6) | 0.91 | 2.15 | 0.65 | 3.59 | 0.59 | 1.65 |
| Phi | 0.002 | **0.212*** | 0.029 | **0.251**** | 0.182 | 0.167 |
| **Visual and/or Auditory Hallucinations** | | | | | | |
| Yes | 0.81 | 2.86 | 0.69 | 6.50 | 0.50 | 0.50 |
| No | 0.94 | 1.06 | 0.70 | 7.17 | 0.37 | 1.07 |
| Phi | 0.046 | **0.246**** | 0.004 | 0.021 | 0.054 | 0.059 |
| **Threat Control-Override Symptoms** | | | | | | |
| Yes | 0.97 | 2.16 | 0.69 | 4.63 | 0.63 | 1.75 |
| No | 0.87 | 0.89 | 0.71 | 9.02 | 0.21 | 0.26 |
| Phi | 0.042 | **0.203*** | 0.006 | 0.165 | **0.205*** | 0.181 |

\* p < 0.10
\*\* p < 0.05
\*\*\* p < 0.01

Table 9 presents, for each psychotic symptom, the percentages of specific forms of violent offence. In fact, both groups were convicted for each form of violent crime in the same proportion rate with only a few statistical differences. Offenders who hallucinated visually committed murder in greater proportion (100%) than those without such hallucinations (38.7%) (phi = 0.210; p < 0.10). The statistical relation yielded between visual hallucinations and murder is not representative since only two subjects experienced this symptom (out of 85 subjects). In fact, if a size effect analysis was to be performed, the Cohen coefficient would most probably reject the significance of this relation.

As Table 9 shows, additional significant relations are generated between persons who exhibited bizarre behaviour and weapon use (36.8% versus 15.7% who did not behave in a bizarre way) (phi = 0.229; p < 0.10).

Further, persons who believed that others wanted to deliberately inflict harm upon them were convicted in greater proportion for armed aggression (31.8% vs. 14.6%) than those who did not share these same beliefs (phi = 0.200; p < 0.10). Recall that a similar relation is observed in table 8 between the TCO psychotic symptoms scale and armed aggression.

While Table 9 presents for each specific psychotic symptom, the percentages of subjects convicted for all different forms of violent offence, Table 10 presents the rate of incidence for each violent offence. Table 10 yielded many more significant relations when compared with Table 9. Subjects with auditory hallucinations for instance, were more likely to commit assault than those without these hallucinations (eta = 0.246; p < 0.10). Those who behaved in a bizarre way incurred more convictions for weapon use (eta = 0.264; p < 0.05) and armed aggression (eta = 0.268; p < 0.05) compared with those who did not. Those who exhibited visual hallucinations committed on average, more murder (eta = 0.228; p < 0.10) and assault (eta = 0.361; p < 0.05) than those without such hallucinations. However, once again, it is hard to interpret the significance of this relationship since only two subjects from our entire sample, reported visual hallucinations. Further, those who experienced thought disorder incurred an average of 0.83 convictions for armed aggression in comparison to an average of 0.25 convictions for those without this disorder (eta = 0.254; p < 0.10). Offenders who were suspicious of others, committed assault more frequently (2.56 versus 0.87) than those who were not suspicious of others (eta = 0.262; p < 0.05). Offenders who believed that others were hostile towards them committed on average more armed aggressions (eta = 0.205; p < 0.10), assaults (eta = 0.262; p < 0.05) and sexual offences (eta = 0.260; p < 0.05) when compared with those who did not share this belief.

Likewise, those who believed that others wanted to deliberately cause them harm committed on average more armed aggressions (eta = 0.220; p < 0.10), assaults (eta = 0.264; p < 0.05) and sexual offences (eta = 0.219; p < 0.05) when compared with their counterpart group.

## Table 9: Prevalence of Violence, for each Specific Psychotic Symptom

| | Murder | Assaults | Use of Weapon | Armed Robbery | Armed Aggression | Sexual Offences |
|---|---|---|---|---|---|---|
| **Psychotic Symptoms** | | | | | | |
| **Auditory Hallucinations** | | | | | | |
| Yes | 31.3% | 56.3% | 25.0% | 44.4% | 31.3% | 18.8% |
| No | 42.6% | 46.3% | 20.4% | 62.5% | 16.7% | 14.8% |
| Phi | 0.097 | 0.084 | 0.047 | 0.152 | 0.153 | 0.045 |
| **Command Hallucinations** | | | | | | |
| Yes | 40.0% | 50.0% | 30.0% | 50.0% | 20.0% | 20.0% |
| No | 40.0% | 48.3% | 20.0% | 48.3% | 20.0% | 15.0% |
| Phi | 0.000 | 0.012 | 0.085 | 0.012 | 0.000 | 0.048 |
| **Obeyed Command Hallucinations** | | | | | | |
| Yes | 50.0% | 50.0% | 12.5% | 37.5% | 12.5% | 25.0% |
| No | 38.7% | 48.4% | 20.0% | 48.3% | 20.0% | 15.0% |
| Phi | 0.073 | 0.010 | 0.078 | 0.082 | 0.067 | 0.092 |
| **Visual Hallucinations** | | | | | | |
| Yes | 100.0% | 50.0% | 50.0% | 0.0% | 0.0% | 50.0% |
| No | 38.2% | 48.5% | 20.6% | 50.0% | 20.6% | 14.7% |
| Phi | **0.210\*** | 0.005 | 0.119 | 0.167 | 0.086 | 0.162 |
| **Disorganized** | | | | | | |
| Yes | 42.1% | 47.4% | 31.6% | 47.4% | 21.1% | 21.1% |
| No | 39.2% | 49.0% | 17.6% | 49.0% | 19.6% | 13.7% |
| Phi | 0.026 | 0.015 | 0.151 | 0.015 | 0.016 | 0.090 |
| **Bizarre Behavior** | | | | | | |
| Yes | 31.6% | 47.4% | 36.8% | 57.9% | 31.6% | 15.8% |
| No | 43.1% | 49.0% | 15.7% | 46.1% | 15.7% | 15.7% |
| Phi | 0.105 | 0.015 | **0.229\*** | 0.114 | 0.177 | 0.001 |
| **Thought Disorder** | | | | | | |
| Yes | 44.4% | 44.4% | 33.3% | 55.6% | 27.8% | 27.8% |
| No | 38.5% | 50.0% | 17.3% | 46.2% | 17.3% | 11.5% |
| Phi | 0.053 | 0.049 | 0.171 | 0.082 | 0.114 | 0.195 |
| **Suspiciousness** | | | | | | |
| Yes | 40.0% | 56.0% | 24.0% | 36.0% | 28.0% | 20.0% |
| No | 40.0% | 44.4% | 20.0% | 55.6% | 15.6% | 13.3% |
| Phi | 0.000 | 0.111 | 0.047 | 0.187 | 0.144 | 0.088 |
| **Belief that Others are Hostile** | | | | | | |
| Yes | 42.9% | 57.1% | 23.8% | 42.9% | 28.6% | 23.8% |
| No | 38.8% | 44.9% | 20.4% | 51.0% | 16.3% | 12.2% |
| Phi | 0.038 | 0.112 | 0.038 | 0.075 | 0.140 | 0.146 |
| **Belief that Others want to Deliberately Cause Harm** | | | | | | |
| Yes | 40.9% | 54.5% | 22.7% | 36.4% | 31.8% | 18.2% |
| No | 39.6% | 45.8% | 20.8% | 54.2% | 14.6% | 14.6% |
| Phi | 0.013 | 0.081 | 0.021 | 0.165 | **0.200\*** | 0.046 |

\* $p < 0.10$
\*\* $p < 0.05$
\*\*\* $p < 0.01$

**Table 10: The Average Number of Violent Offences for each Specific Psychotic Symptom**

| | Murder | Assaults | Use of Weapon | Armed Robbery | Armed Aggression | Sexual Offences |
|---|---|---|---|---|---|---|
| **Psychotic Symptoms** | | | | | | |
| **Auditory Hallucinations** | | | | | | |
| Yes | 0.81 | 2.86 | 0.69 | 6.50 | 0.50 | 0.50 |
| No | 0.94 | 1.06 | 0.70 | 7.17 | 0.37 | 1.07 |
| Eta | 0.046 | **0.246*** | 0.004 | 0.021 | 0.054 | 0.059 |
| **Command Hallucinations** | | | | | | |
| Yes | 1.10 | 2.30 | 0.90 | 4.20 | 0.30 | 0.30 |
| No | 0.88 | 1.33 | 0.67 | 7.48 | 0.42 | 1.05 |
| Eta | 0.064 | 0.109 | 0.046 | 0.087 | 0.041 | 0.064 |
| **Command Hallucinations Obeyed** | | | | | | |
| Yes | 1.38 | 2.75 | 0.25 | 1.38 | 0.13 | 0.38 |
| No | 0.85 | 1.31 | 0.76 | 7.74 | 0.44 | 1.02 |
| Eta | 0.139 | 0.148 | 0.090 | 0.153 | 0.098 | 0.050 |
| **Visual Hallucinations** | | | | | | |
| Yes | 2.50 | 8.00 | 1.00 | 0.00 | 0.00 | 0.50 |
| No | 0.87 | 1.28 | 0.69 | 7.22 | 0.41 | 0.96 |
| Eta | **0.228*** | **0.361**** | 0.029 | 0.091 | 0.068 | 0.019 |
| **Disorganized** | | | | | | |
| Yes | 1.00 | 1.84 | 0.95 | 3.74 | 0.32 | 0.63 |
| No | 0.88 | 1.33 | 0.61 | 8.24 | 0.43 | 1.06 |
| Eta | 0.044 | 0.073 | 0.084 | 0.151 | 0.051 | 0.046 |
| **Bizarre Behavior** | | | | | | |
| Yes | 0.74 | 1.79 | 1.47 | 5.74 | 0.84 | 1.43 |
| No | 0.98 | 1.35 | 0.41 | 7.49 | 0.24 | 1.10 |
| Eta | 0.091 | 0.063 | **0.264**** | 0.059 | **0.268**** | 0.062 |
| **Thought Disorder** | | | | | | |
| Yes | 0.85 | 1.78 | 1.00 | 3.17 | 0.83 | 1.44 |
| No | 1.11 | 1.37 | 0.60 | 8.35 | 0.25 | 0.77 |
| Eta | 0.097 | 0.058 | 0.099 | 0.171 | **0.254**** | 0.072 |
| **Suspiciousness** | | | | | | |
| Yes | 1.04 | 2.56 | 0.84 | 3.84 | 0.64 | 2.08 |
| No | 0.84 | 0.87 | 0.62 | 8.78 | 0.27 | 0.31 |
| Eta | 0.079 | **0.262**** | 0.058 | 0.178 | 0.178 | **0.207*** |
| **Belief that Others are Hostile** | | | | | | |
| Yes | 1.19 | 2.71 | 2.03 | 3.43 | 0.71 | 2.57 |
| No | 0.80 | 0.94 | 0.76 | 8.55 | 0.27 | 0.27 |
| Eta | 0.152 | **0.262**** | 0.047 | 0.177 | **0.205*** | **0.260**** |
| **Belief that Others want to Deliberately Cause Harm** | | | | | | |
| Yes | 1.09 | 2.68 | 0.77 | 3.23 | 0.72 | 2.27 |
| No | 0.83 | 0.92 | 0.67 | 8.75 | 0.25 | 0.33 |
| Eta | 0.100 | **0.264**** | 0.027 | 0.193 | **0.220*** | **0.219*** |

* p < 0.10
** p < 0.05
*** p < 0.01

According to the principle of rationality-within-irrationality, violence is more likely to be exhibited when the individual believes that his life is threatened by another or that someone else wants to deliberately cause him harm. Therefore, we expected these symptoms (the latte two symptoms) to be associated with a greater proportion of convictions for assault and armed

aggression but not with sexual offences. Typically, sexual aggressors do not perpetuate their offences because they believe that their victim (s) intended to cause them harm. Subsequent analysis is required to understand the true nature between these symptoms, assault, armed aggression and sexual aggression.

*Synthesis.* In brief, according to the results gathered from Table 9 and 10, psychotic symptoms better discriminate subjects when the frequencies for each violent act committed are measured (not their proportion rate). The principal findings are drawn from Table 10. Subjects who believed that others were hostile towards them and wanted to deliberately inflict harm upon them committed more assaults and armed aggressions than those without these beliefs. Further, persons who were suspicious committed higher rates of assaults than those who were not. Although these results are consistent with the principle of rationality-within-rationality (Link and Stueve, 1994) we also expected to find a statistical association between these symptoms and murder. As for the relation detected between sexual aggression, suspiciousness, belief that others were hostile towards them and belief that others wanted to deliberately inflict harm upon them, further analysis is required to better understand the nature of the relationship. The analysis based on the contextual variables surrounding the commission of crime would probably provide more information on the nature of this relationship.

The following series of analysis investigate the functional form of the relation between the psychotic symptoms scales and violence (Swanson et al., 1997). Table 11 indicates for each psychotic symptom scale, the average number of convictions for each violent offence type. Since, the distribution of the independent variables are highly skewed to the left, the Pearson correlation coefficient—the most common coefficient used to quantify the strength of the association between the variables—is inappropriate. A correlation matrix with a Spearman Rho coefficient—a nonparametric measure—is rather used since the assumption of bivariate normality is unreasonable. No significant relations are however extracted from this table. This is perhaps because the relationship between the psychotic symptom scales and violent offences are not linear. Note that the correlation coefficient could only be used to summarize the strength of a linear association (Swanson and al., 1997).

**Table 11: Correlation Matrix of the Psychotic Symptoms Scales and Violent Offences on their Continuous Form**

| | 1.General Psychotic Symptoms Scale | 2.Visual and Auditory Psychotic Symptoms Scale | 3. TCO Psychotic Symptoms Scale | 4.Murder | 5.Assault | 6.Use of Weapon | 7.Armed Robbery | 8.Armed Aggression | 9.Sexual Offence |
|---|---|---|---|---|---|---|---|---|---|
| 1. | --- | 0.59** | 0.92** | 0.02 | 0.14 | 0.08 | -0.07 | 0.19 | 0.12 |
| 2. | | --- | 0.68** | -0.34 | 0.07 | 0.05 | 0.08 | 0.11 | 0.05 |
| 3. | | | --- | 0.03 | 0.16 | 0.03 | -0.08 | 0.18 | 0.12 |
| 4. | | | | --- | -0.11 | -0.23* | -0.48** | -0.21 | -0.02 |
| 5. | | | | | --- | 0.04 | -0.02 | 0.19 | 0.23* |
| 6. | | | | | | --- | 0.46** | 0.03 | -0.10 |
| 7. | | | | | | | --- | 0.15 | -0.12 |
| 8. | | | | | | | | --- | -0.20 |
| 9. | | | | | | | | | --- |

\* $p < 0.10$
\*\* $p < 0.05$
\*\*\*$p < 0.01$

In an attempt to understand the functional form of the relationship between the psychotic symptoms scales and violent behavior, we ran a scatter plot graph. Once again however, no significant relations are generated. A possible explanation for the lack of significant relations could be the result of the small number of our sample (N=70).

A curve estimation analysis is thus performed to see if the relation between psychotic symptoms and violence is linear, quadratic or both and whether psychotic symptoms are efficient predictors of violence. The curve estimation analysis is only performed with the TCO psychotic symptom scale since all three scales are highly correlated with one another.

Table 12 presents the significant relations extracted from the curve estimation analysis. Overall, the relationship between TCO psychotic symptoms and certain types of violent offence vary in their functional form. The relation between murder and TCO psychotic symptoms, for instance, is U shaped, implying that until a certain threshold is met, the incidence rate of murder decreases as the subjects' TCO psychotic symptoms multiplies. Once this threshold is exceeded, the incidence rate of murder increases. The relation between assault and TCO psychotic symptoms on the other hand, is linear. Thus as the amount of TCO psychotic symptoms increases, so does the number of assaults committed. When we integrate the TCO psychotic symptoms scale in a quadratic form analysis, it weakened the predictive model. The relation between TCO psychotic symptoms and armed aggression is however, curvilinear with a bell shape. Thus, the higher the

score is on the TCO psychotic symptoms scale, the higher the convictions rate is for armed aggression (until a certain threshold). Once this threshold is exceeded, the conviction rate for armed aggression begins to decrease (Swanson et al., 1997).

**Table 12: Curve Estimation Analysis.**

|  | Murder | | Assault | | Armed Aggression | |
|---|---|---|---|---|---|---|
|  | B | Ratio | Beta | T-ratio | Beta | T-ratio |
| TCO Scale | -0.40* | -1.80* | 0.53*** | 2.67*** | 0.33* | 1.74* |
| TCO Scale2 | 0.11** | 2.27** | --- | --- | -0.06 | -1.41 |
| Intercept | 0.92*** | 4.96*** | 0.70 | 1.53 | 0.22 | 1.39 |
| R-square | 8.0% | | 9.5% | | 3.6% | |

* $p < 0.10$
** $p < 0.05$
*** $p < 0.01$

*Synthesis for Table 11 and 12.* As mentioned previously, no significant associations are drawn from table 11. Table 12, on the other hand, provides important insight regarding the relation between TCO psychotic symptoms and violent behavior. It, for instance, supports the assertion that TCO psychotic symptoms inform us about the level of frequency that a violent act will be perpetuated. As shown in the previous table, TCO psychotic symptoms are not linked to all forms of violent offence. Further, the functional form of the relationship varies according to the type of violent offence analyzed. According to earlier studiers, the TCO psychotic symptoms scale is a potential predictor of violence for only murder, assault and armed aggression (Swanson et al,. 1992; Link and Stueve, 1994). Criminological variables are then introduced in the regressive model as control variables to see if the relationship between these various forms of violent offence and the TCO psychotic symptoms continue to prevail. These criminological variables are the same variables identified in earlier research as important predictors of violent offences.

## 1.2. Relation between Drug and or Alcohol Abuse and Violent Offences

Drugs and or alcohol consumption contributes to offending in many different ways. Earlier research have indicated that drugs and or alcohol consumption are used by offenders to lower their inhibitions and thus execute a violent offence (psychopharmacological effect); to engage in economically oriented violent offences to support the cost of their drug use (economic

compulsive); and as auto-medication, in an attempt to cope with painful feelings (i.e. depression and anxiety) and, personality vulnerabilities

Table 13 examines the relationship between substance use and offending by accounting for these three plausible explanations. As Table 13 illustrates, offenders who consumed alcohol and or drugs to gain money and thus support the cost of their drug habits, were more frequently convicted for armed robbery than their counterpart group (13.59 versus 4.53 with an eta = 0.293; $p < 0.01$) and less likely to commit murder (0.18 versus 1.3 with an eta = 0.297; $p < 0.01$).

Subjects who consumed drugs and or alcohol as auto-medication, committed, on average, more sexual offences than those who did not (eta = 0.294; $p < 0.01$). However, the values for this variable are not evenly distributed for both groups. Consequently, the significant relation is probably attributed to the extreme values observed in the «yes» group. The offenders who consumed drugs and/or alcohol as a disinhibitor to help them perpetuate their offence, were convicted on average 1.08 time more for armed aggression than their counterpart group (0.25) (eta = 0.309; $p < 0.01$).

The lower part of Table 13 presents the prevalence rate of all violent convictions. The results indicate that: although, drug and alcohol consumers did not commit, on average more assault, they were convicted in greater proportion for assault than those who did not consume such substances (phi = 0.296; $p < 0.001$).

They were also convicted in greater proportion for armed robbery than their counterpart group (phi = 0.210; $p < 0.05$). Offenders who consumed substances for utilitarian reasons—to support their addiction, in contrast, were convicted in greater proportion for armed robbery (76.5% vs. 39.7%) and in lesser proportion for murder (11.8% vs. 45.6%) than those who did not consume drug and or alcohol to support their drug use. Further, offenders who reported consuming drugs and or alcohol to disinhibit their fears and thus commit the offence were convicted in greater proportion for assault (phi = 0.179; $p < 0.10$) and sexual aggression (phi = 0.203; $p < 0.10$) than their comparison group.

*Synthesis.* Table 13 shows the different ways in which drug and or alcohol use may contribute to each of the six violent offences. For instance, offenders who engaged in violent offences to

support their drug habits were more likely, in terms of proportion and frequency to be convicted for armed robbery. Whereas, the most common crime committed by those who consumed drugs and alcohol to disinhibit their fears, were armed aggression, assault, and sexual crimes. Finally, among the subjects who consumed drugs and alcohol to self-medicate, the most common form of crime was sexual.

**Table 13: The Association between Substances Abuse and Violence**

| | Murder | Assault | Use of Weapon | Armed Robbery | Armed Aggression | Sexual Offence |
|---|---|---|---|---|---|---|
| **Average Number of Convictions** | | | | | | |
| **Drug and/ or Alcohol Dependence or Abuse According to DSM-IV** | | | | | | |
| Yes | 0.80 | 1.48 | 0.67 | 5.98 | 0.42 | 1.03 |
| No | 1.05 | 1.05 | 1.00 | 7.43 | 0.19 | 0.24 |
| Eta | 0.094 | 0.064 | 0.079 | 0.050 | 0.106 | 0.091 |
| **Use of Drugs and or Alcohol in an Economic-Compulsive Manner** | | | | | | |
| Yes | 0.18 | 1.24 | 1.18 | 13.59 | 0.37 | 0.06 |
| No | 1.03 | 1.41 | 0.65 | 4.53 | 0.37 | 1.03 |
| Eta | 0.297*** | 0.024 | 0.118 | 0.293*** | 0.006 | 0.104 |
| **Use of Drugs and or Alcohol in an Psychopharmacological Manner** | | | | | | |
| Yes | 1.00 | 1.33 | 0.50 | 3.17 | 1.08 | 1.00 |
| No | 0.84 | 1.38 | 0.79 | 6.86 | 0.25 | 0.81 |
| Eta | 0.050 | 0.006 | 0.057 | 0.104 | 0.309*** | 0.018 |
| **Use of Drugs and or Alcohol as a Self-Medication** | | | | | | |
| Yes | 0.50 | 0.50 | 0.63 | 8.38 | 0.00 | 4.25 |
| No | 0.90 | 1.47 | 0.77 | 6.13 | 0.40 | 0.48 |
| Eta | 0.101 | 0.097 | 0.023 | 0.053 | 0.125 | 0.294*** |
| **Prevalence of Convictions** | | | | | | |
| **Drug and/or Alcohol Dependence or Abuse According to DSM-IV** | | | | | | |
| Yes | 37.5% | 53.1% | 21.9% | 53.1% | 20.3% | 15.6% |
| No | 42.9% | 19.0% | 28.6% | 28.6% | 14.3% | 14.3% |
| Phi | 0.047 | 0.296*** | 0.068 | 0.210** | 0.066 | 0.016 |
| **Use of Drugs and or Alcohol in an Economic-Compulsive Manner** | | | | | | |
| Yes | 11.8% | 47.1% | 29.4% | 76.5% | 17.6% | 5.9% |
| No | 45.6% | 44.1% | 22.1% | 39.7% | 19.1% | 17.6% |
| Phi | 0.278*** | 0.024 | 0.069 | 0.295*** | 0.015 | 0.131 |
| **Use of Drugs and or Alcohol in an Psychopharmacological Manner** | | | | | | |
| Yes | 50.0% | 66.7% | 8.3% | 58.3% | 25.0% | 33.3% |
| No | 37.0% | 41.1% | 26.0% | 45.2% | 17.8% | 12.3% |
| Phi | 0.093 | 0.179* | 0.145 | 0.092 | 0.064 | 0.203* |
| **Use of Drugs and or Alcohol as a Self-Medication** | | | | | | |
| Yes | 25.0% | 50.0% | 25.0% | 37.5% | 0.0% | 25.0% |
| No | 40.3% | 44.2% | 23.4% | 48.1% | 20.8% | 14.3% |
| Phi | 0.091 | 0.034 | 0.011 | 0.062 | 0.155 | 0.087 |

\* $p < 0.10$
\*\* $p < 0.05$
\*\*\* $p < 0.01$

## 2. Criminological Variables

Thus far, the focus of the analysis has been on the clinical variables advanced by clinicians as key risk factors for violence (Wessely and Taylor 1991). The emphasis will now be placed on the criminological variables previously considered in the criminological literature as important risk factors for violence. Those variables include: prior violence and criminality; psychiatric history, childhood experience, familial history (criminal, psychiatric and suicidal).

### 2.1. Relation between Risk Factors and Violence

Table 14 presents a set of risk factors and examines their association with violent behavior. Certain risk factors seem to be more associated with particular forms of crime in terms of proportion rate. Further, only one risk factor is found to be positively associated with violent behavior—one's marital status. Single persons were convicted in greater proportion for armed aggression (phi $= 0.223$; $p < 0.05$).

Table 15 presents for each risk factor, the average number of convictions committed for each specific form of violent behavior. Very few significant associations are generated. All the significant relations are linked to specific forms of violent crime. Offenders, for instance, who begun their criminal behavior during their childhood and teen-hood, incurred a higher average of convictions for armed aggression (mean $= 0.53$) than those who begun during their adulthood (0.19); subjects who were exposed to psychological and/or physical violence within their home had an average of 1.25 convictions for weapon use compared with an average of 0.31 for those who were not exposed to any violence (eta $= 0.261$; $p < 0.05$); parental abandonment (eta $= 0.216$; $p < 0.05$) and familial psychiatric history (eta $= 0.188$; $p\ 0.05$) were both positively associated with a greater commission of assaults; similarly, general stressors were positively related to a higher commission rate of armed aggression (eta $= 0.191$; $p < 0.10$).

**Table 14: The Risk Factors Associated with Specific Forms of Violent Offence**

| | Murder | Assault | Use of Weapon | Armed Robbery | Armed Aggression | Sexual Offence |
|---|---|---|---|---|---|---|
| **Risk Factors** | | | | | | |
| **Age at First Offence** | | | | | | |
| Adulthood | 38.1% | 42.9% | 19.0% | 40.5% | 14.3% | 19.0% |
| Adolescence/childhood | 39.5% | 46.5% | 27.9% | 53.5% | 23.3% | 11.6% |
| Phi | .015 | .037 | .104 | .130 | .115 | .103 |
| **Psychiatric History** | | | | | | |
| Yes | 37.3% | 50.7% | 22.4% | 47.8% | 20.9% | 14.9% |
| No | 44.4% | 22.2% | 27.0% | 44.4% | 11.1% | 16.7% |
| Phi | .060 | .234** | .052 | .027 | .102 | .020 |
| **Victim of Psychological and/or Physical Violence Intra-Familial** | | | | | | |
| Yes | 37.8% | 48.6% | 27.0% | 51.4% | 18.9% | 16.2% |
| No | 39.6% | 41.7% | 20.8% | 43.8% | 18.8% | 14.6% |
| Phi | .018 | .070 | .072 | .076 | .002 | .022 |
| **Exposure to Psychological and/or Physical Violence Intra-Familial** | | | | | | |
| Yes | 42.5% | 45.0% | 35.0% | 55.0% | 20.0% | 10.0% |
| No | 35.6% | 44.4% | 13.3% | 40.0% | 17.8% | 20.0% |
| Phi | .071 | .006 | .255** | .150 | .028 | .139 |
| **Victim of Psychological and/or Physical Violence Extra-Familial** | | | | | | |
| Yes | 45.0% | 50.0% | 35.0% | 50.0% | 20.0% | 20.0% |
| No | 36.9% | 43.1% | 20.0% | 46.2% | 18.5% | 13.8% |
| Phi | .070 | .059 | .150 | .033 | .017 | .073 |
| **Exposure to Psychological and/or Physical Violence Extra-Familial** | | | | | | |
| Yes | 46.2% | 42.3% | 30.8% | 53.8% | 19.2% | 11.5% |
| No | 35.6% | 45.8% | 20.3% | 44.1% | 18.6% | 16.9% |
| Phi | .100 | .032 | .113 | .090 | .007 | .069 |
| **Parental Abandonment** | | | | | | |
| Yes | 39.5% | 53.5% | 27.9% | 48.8% | 23.3% | 14.0% |
| No | 38.1% | 35.7% | 19.0% | 45.2% | 14.3% | 16.7% |
| Phi | .015 | .179* | .104 | .036 | .115 | .038 |
| **General Stressors** | | | | | | |
| Yes | 36.8% | 47.4% | 28.1% | 50.9% | 24.6% | 15.8% |
| No | 42.9% | 39.3% | 14.3% | 39.3% | 7.1% | 14.3% |
| Phi | .058 | .076 | .153 | .109 | .209* | .020 |
| **Familial Criminal History** | | | | | | |
| Yes | 30.8% | 61.5% | 38.5% | 76.9% | 38.5% | 23.1% |
| No | 40.3% | 41.7% | 20.8% | 41.7% | 15.3% | 13.9% |
| Phi | .070 | .144 | .150 | .254** | .213** | .092 |
| **Familial Psychiatric History** | | | | | | |
| Yes | 44.8% | 55.2% | 31.0% | 48.3% | 27.6% | 17.2% |
| No | 35.7% | 39.2% | 19.6% | 46.4% | 14.3% | 14.3% |
| Phi | .089 | .151 | .127 | .018 | .161 | .039 |
| **Familial Suicide or Attempted Suicide** | | | | | | |
| Yes | 42.9% | 28.6% | 28.6% | 57.1% | 14.3% | 14.3% |
| No | 38.5% | 46.2% | 23.1% | 46.2% | 19.2% | 15.4% |
| Phi | .025 | .097 | .036 | .061 | .035 | .008 |
| **Marital Status** | | | | | | |
| Couple | 42,9% | 42.9% | 28.5% | 50.0% | 0.02% | 21.4% |
| Single | 38.2% | 47.1% | 23.5% | 47.1% | 23.5% | 14.7% |
| Phi | .036 | .032 | .044 | .022 | .223** | .069 |

* p < 0.10
** p < 0.05
*** p < 0.01

## Table 15: Average Number of Violent Convictions and Risk Factors

| | Murder | Assault | Use of Weapon | Armed Robbery | Armed Aggression | Sexual Offence |
|---|---|---|---|---|---|---|
| **Risk Factors** | | | | | | |
| **Age at First Offence** | | | | | | |
| Adulthood | 0.83 | 1.40 | 0.62 | 5.83 | 0.19 | 1.36 |
| Adolescence/childhood | 0.88 | 1.35 | 0.88 | 6.84 | 0.53 | 0.33 |
| Eta | 0.022 | 0.010 | 0.074 | 0.041 | **0.182*** | 0.138 |
| **Psychiatric History** | | | | | | |
| Yes | 1.06 | 0.72 | 1.11 | 7.28 | 0.22 | 1.00 |
| No | 0.81 | 1.55 | 0.66 | 6.09 | 0.40 | 0.79 |
| Eta | 0.089 | 0.116 | 0.103 | 0.039 | 0.078 | 0.023 |
| **Victim of Psychological and/or Physical Violence Intra-Familial** | | | | | | |
| Yes | 0.84 | 1.72 | 0.78 | 7.95 | 0.19 | 0.41 |
| No | 0.86 | 1.19 | 0.73 | 5.10 | 0.5 | 1.17 |
| Eta | .016 | .074 | 0.15 | .114 | .163 | .101 |
| **Exposure to Psychological and/or Physical Violence Intra-Familial** | | | | | | |
| Yes | 0.93 | 1.50 | 1.25 | 7.43 | 0.23 | 0.28 |
| No | 0.80 | 1.27 | 0.31 | 5.34 | 0.49 | 1.33 |
| Eta | .054 | .040 | .261** | .083 | .140 | .141 |
| **Victim of Psychological and/or Physical Violence Extra-Familial** | | | | | | |
| Yes | 1.00 | 1.00 | 0.90 | 3.15 | 0.25 | 0.45 |
| No | 0.82 | 1.49 | 0.71 | 7.32 | 0.40 | 0.95 |
| Eta | 0.068 | 0.071 | 0.045 | 0.143 | 0.067 | 0.057 |
| **Exposure to Psychological and/or Physical Violence Extra-Familial** | | | | | | |
| Yes | 1.04 | 0.85 | 0.92 | 4.62 | 0.23 | 0.27 |
| No | 0.78 | 1.61 | 0.68 | 7.10 | 0.42 | 1.08 |
| Eta | 0.104 | 0.120 | 0.063 | 0.093 | 0.094 | 0.100 |
| **Parental Abandonment** | | | | | | |
| Yes | 0.91 | 2.00 | 0.84 | 6.58 | 0.49 | 0.35 |
| No | 0.81 | 0.74 | 0.67 | 6.10 | 0.24 | 1.33 |
| Eta | 0.042 | **0.216*** | 0.048 | 0.020 | 0.133 | 0.131 |
| **General Stressors** | | | | | | |
| Yes | 0.79 | 1.70 | 0.96 | 7.42 | 0.49 | 0.53 |
| No | 1.00 | 0.71 | 0.32 | 4.14 | 0.11 | 1.46 |
| Eta | 0.086 | 0.159 | 0.169 | 0.125 | **0.191*** | 0.118 |
| **Familial Criminal History** | | | | | | |
| Yes | 0.77 | 1.69 | 1.15 | 8.54 | 0.54 | 0.77 |
| No | 0.88 | 1.32 | 0.68 | 5.94 | 0.33 | 0.85 |
| Eta | 0.033 | 0.046 | 0.095 | 0.076 | 0.078 | 0.007 |
| **Familial Psychiatric History** | | | | | | |
| Yes | 0.97 | 2.14 | 0.76 | 5.69 | 0.38 | 0.48 |
| No | 0.80 | 0.98 | 0.75 | 6.68 | 0.36 | 1.02 |
| Eta | 0.067 | **0.188*** | 0.002 | 0.038 | 0.011 | 0.068 |
| **Familial Suicide or Attempted Suicide** | | | | | | |
| Yes | 1.00 | 0.43 | 0.57 | 11.71 | 0.37 | 0.57 |
| No | 0.85 | 1.46 | 0.77 | 5.86 | 0.29 | 0.86 |
| Eta | 0.037 | 0.097 | 0.030 | 0.130 | 0.025 | 0.025 |
| **Marital Status** | | | | | | |
| Couple | 0.93 | 1.86 | 0.57 | 9.71 | 0.00 | 036 |
| Single | 0.85 | 1.34 | 0.82 | 5.91 | 0.46 | 0.97 |
| Eta | 0.025 | 0.066 | 0.052 | 0.114 | 0.179 | 0.061 |

\* p < 0.10
\*\* p < 0.05
\*\*\* p < 0.01

*Synthesis.* According to existing literature, more significant relations between the various risk factors and violent offences should have been yielded. Perhaps, the risk factors are not generating the anticipated results, because their effects are not singular but rather additive. Also, the risk factors incorporated in our study were drawn from studies that used community samples Although, these risk factors were considered as efficient predictor of violence in community samples (Link & Stueve, 1994; Link et al., 1992; Swanson et al., 1996; Swanson et al., 1997), they were not found as important predictors of violence in a incarcerated sample. Each sample has its own particular characteristics.

To empirically test the additive effect of all of the risk factors on violence, the following three scales were produced: (1) the *developmental risk factors* scale; 2) the *victims of physical/psychological violence* scale; 3) the *general stressful situation* scale. Since the distribution of the scales are positively skewed, the calculation of the correlation coefficients between the total number of convictions for each type of violent act and the risk factor scales are done by the Spearman Rho coefficient. The results yielded from Table 16 show no significant association between the risk factors and the total number of violent crimes, thus suggesting that there is no additive effect. Further, we are not able to determine whether the direction of the association is positive or negative because the coefficients are sometimes positive and other times negative (there is no consistency).

Moreover, as shown in Table 16, the three scales are correlated to one another because the items included in the general scale are also included in the other two scales. For instance, the general stressful situation scale is positively correlated to the victim of physical/psychological violence scale ($r = 0.243$; $p < 0.05$). As the general stressful situation decreases, the victim of physical/psychological violence scale increases.

Also, the more frequently murder is committed, the less frequently other forms of violent offence are perpetuated, especially armed robbery ($r = -0.363$; $p < 0.01$) and weapon use ($r = -0.245$; $p < 0.05$). Thus far, murder conviction has been associated with specific mental disorders—psychotic form only. Overall, few significant relations are found between risk factors and violent crimes. In effect, no statistical significant relations are observed between the intensity of the scale and the frequency of violent offences.

**Table 16: Spearman Correlation Coefficients between the Risk Factors Scales and the Total Number of Violent Convictions**

| | 1.Victim of Physical Psychological Violence Scale | 2.Developmental Risk Factors Scale | 3. General Stressful Situation Scale | 4.Murder | 5.Assault | 6. Weapon use | 7.Armed Robbery | 8.Armed Aggression | 9.Sexual Offence |
|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | 0.810** | 0.243** | 0.063 | -.019 | 0.123 | -0.004 | -0.147 | -0.126 |
| 2 | | --- | 0.711** | 0.036 | 0.088 | 0.175 | 0.054 | 0.055 | -0.183 |
| 3 | | | --- | -0.020 | 0.167 | 0.125 | 0.127 | 0.172 | -0.125 |
| 4 | | | | ---- | -0.009 | -0.245* | -0.363** | -0.202 | -0.087 |
| 5 | | | | | --- | -0.018 | -0.118 | 0.078 | 0.007 |
| 6 | | | | | | --- | 0.449** | -0.009 | -0.083 |
| 7 | | | | | | | ---- | -0.066 | -0.100 |
| 8 | | | | | | | | --- | -0.086 |
| 9 | | | | | | | | | --- |

\* p < 0.05
\*\* p < 0.01

**Table 17: Average Score on the Risk Factors Scales for each Violent Conviction**

| Violent Offences | Victims of Physical/Psychological Violence Scale | Developmental Risk Factors Scale | General Stressful Situation Scale |
|---|---|---|---|
| **Murder** | | | |
| Yes | 1.58 | 3.85 | 1.36 |
| No | 1.37 | 3.69 | 1.44 |
| Eta | 0.068 | 0.034 | 0.037 |
| **Assault** | | | |
| Yes | 1.50 | 4.03 | 1.58 |
| No | 1.40 | 3.52 | 1.28 |
| Eta | 0.031 | 0.106 | 0.146 |
| **Weapon Use** | | | |
| Yes | 1.95 | 5.00 | 1.75 |
| No | 1.29 | 3.38 | 1.31 |
| Eta | 0.184* | 0.286** | 0.182* |
| **Armed Robbery** | | | |
| Yes | 1.63 | 4.26 | 1.60 |
| No | 1.29 | 3.31 | 1.24 |
| Eta | 0.111 | 0.199* | 0.172 |
| **Armed Aggression** | | | |
| Yes | 1.50 | 4.80 | 1.88 |
| No | 1.43 | 3.52 | 1.30 |
| Eta | 0.017 | 0.207* | 0.216** |
| **Sexual Offence** | | | |
| Yes | 1.31 | 3.54 | 1.46 |
| No | 1.47 | 3.79 | 1.40 |
| eta | 0.039 | 0.038 | 0.020 |

\* p < 0.10
\*\* p < 0.05
\*\*\* p < 0.01

However, when the average score of each scale is considered for each violent offence (Table 17), different results are yielded. Subjects convicted for weapon use (eta = 0.286; $p < 0.05$), armed robbery (eta = 0.199; $p < 0.10$) and armed aggression (eta = 0.207; $p < 0.10$) scored higher on the developmental risk factors scale than their comparison group. Also, weapon use (eta = 0.182; $p < 0.10$) and armed aggression convictions (eta = 0.216; $p < 0.05$) are positively associated with the general stressful situation scale. Finally, the only form of violence significantly associated with the victim of physical and or psychological violence scale, is convictions of weapon use (eta = 0.184; $p < 0.10$). Offenders convicted of this offence incurred an average of 1.95 more than those who did not use a weapon during the commission of their offence on this scale (1.29).

*Synthesis on the risk factors scales.* In general, the risk factors examined in this study are associated with violent offences. The significant relations observed are between the specific risk factors and the particular forms of violent crime. All of which are positively associated with the frequencies and the proportion rate of violent convictions. As mentioned earlier, the lack of significant relations between the risk factors and violent offences may be the result of our sample characteristics and not their additive effects.

## 3. Multivariate Analysis

Thus far, bivariate analysis is performed to yield the most relevant predictors of violence. Now that we have identified which variables are best associated with violence, we can proceed with our multivariate analysis. Recall that the numbers of independent variables that can be incorporated in our explicative model are limited to the size of our sample (data regarding the sample's psychotic symptoms were missing for 15 of the 85 subjects). Also, when determining which variables should be included in our explicative model we must account for the specific effects produced by each independent variable on the specific form of violent behavior. Certain psychotic symptoms for instance, are associated with only one form of violent offence. The same relation is observed between general mental disorder, personality disorders, risk factors, drug/alcohol abuse and specific forms of violent behavior. As a result, our variable selections are not solely based on their level of significance since too many variables would then be included but rather according to the main theoretical model applied in our research project—the rationality-within-irrationality principle. To reiterate, this principle posits that "once one

suspends concern about the irrationality of psychotic symptoms and accepts that they are experienced as real; violence unfolds in a rational fashion" (Link & Stueve, p. 143 1994). Also, when "an individual suspects personal harm or feels endangered by others, interpersonal violence becomes a rational response" (Link & Stueve, p.144, 1994). The studies conducted by Taylor (1999) and D'Obran and colleagues (1989), for instance indicated that persons with persecutory delusions were more prone to violent actions specifically homicide, to "protect" themselves when compared with those without such delusions. The same rational could be extended to the following two forms of crime: armed aggression and assault. For this reason, we incorporate the variables that have shown statistical relations with these three forms of crime: murder, assault and armed aggression. Note however, that most of the emphasis is placed on the significant relations yielded between the independent variables and murder since it has been the main focus of the literature. Table 18 presents the variables we included in our predictive model.

The multiple regression analysis begins with the variables associated with the general mental disorder diagnoses, the specific psychotic symptoms and the frequency of each specific violent offence. This allows us to quantify the significance of the relationship between mental disorders, psychotic symptoms and violence. The criminological variables (risk factors) are then introduced in the regressed equation as control variables to see whether the relationship between mental disorder, psychotic symptoms and violence persists with the control variables.

### 3.1. Multiple Regression Analysis

As mentioned previously, Table 18 presents the results generated from the first multiple regression model. As is illustrated in Table 18, very few significant relations are yielded from the clinical variables. Our findings indicate that schizophrenia diagnosis is an important predictor of a high incidence of murder (beta = 0.25; $p < 0.05$); a medium—high level of TCO psychotic symptoms is a strong predictor of a high incidence of assault (beta = 0.24; $p < 0.10$) and sexual offence (beta = 0.23; $p < 0.10$); alcohol and or drugs consumed as a disinhibitor is an important predictor of frequent convictions for armed aggression (beta = 0.35; $p < 0.01$).

The coefficient of determination, ($R^2$) which indicates the explanatory power of the multiple regression model is low. There are few plausible explanations for the rather small $R^2$ coefficient: 1) a very low proportion of variance is explained or accounted for by the independent variables included in our model to predict the specific form of violence (dependent variables); 2) the

relationship between the independent and the dependent variables are non-linear; 3) the independent variables included in the model contribute a rather small amount to the explanation of violence. Thus, further analysis is necessary to determine the exact reason (s) for the low $R^2$ in our explicative model.

**Table 18: Multiple Regression Model of Predictions of Violent Behavior since Age 18, Including Clinical Variables.**

| | Murder Beta | Assault Beta | Use of Weapon Beta | Armed Robbery Beta | Armed Aggression Beta | Sexual Offence Beta |
|---|---|---|---|---|---|---|
| **Model 1** | | | | | | |
| **Criminological Factors** | | | | | | |
| Early Starter | --- | --- | --- | --- | --- | --- |
| Psychiatric History | --- | --- | --- | --- | --- | --- |
| In couple | --- | --- | --- | --- | --- | --- |
| General Stressors | --- | --- | --- | --- | --- | --- |
| **Clinical Factors** | | | | | | |
| **Mental Disorder Diagnosis & Psychotic Symptoms** | | | | | | |
| Schizophrenia | 0.25** | -0.02 | 0.14 | 0.03 | 0.12 | -0.12 |
| TCO Symptoms Dummy Variables | | | | | | |
| ▪ Low-Medium level (1-2) | 0.00 | 0.03 | 0.04 | -0.05 | 0.08 | 0.06 |
| ▪ Medium-High level (3-6) | -0.03 | 0.24* | -0.05 | -0.17 | 0.13 | 0.23* |
| **Drug and or Alcohol Use** | | | | | | |
| Use of Drug or Alcohol in a Psychopharmacological Manner | 0.03 | -0.01 | -0.16 | -0.15 | 0.35*** | 0.00 |
| Intercept | 0.78 | 0.92 | 0.73 | 9.52 | 0.07 | 0.39 |
| R-square | 6.2% | 5.2% | 5.1% | 5.3% | 17.4% | 5.2% |

* p < 0.10
** p < 0.05
*** p < 0.01

In the second multiple regression model (Table 19), the criminological variables (risk factors) are introduced in the regressed equation as control variables to see whether the relationship between mental disorder, psychotic symptoms and violence persist. As is illustrated, all of the significant relations previously observed remained significant except for one. The medium—high level of TCO psychotic symptoms is not longer a strong predictor for a high occurrence rate of sexual offence. Also, the predictive power of each significant predictor (beta) increased when the criminological variables are added to the clinical variables in the second model.

**Table 19: Multiple Regression Model of Predictions of Violent Behavior Frequency since Age 18, Including Clinical and Criminological Variables**

| | Murder Beta | Assault Beta | Use of Weapon Beta | Armed Robbery Beta | Armed Aggression Beta | Sexual Offence Beta |
|---|---|---|---|---|---|---|
| **Model 2** | | | | | | |
| | | | | | | |
| **Criminological Factors** | | | | | | |
| Early Starter | -0.11 | 0.09 | 0.03 | 0.04 | **-0.21*** | 0.17 |
| Psychiatric History | -0.09 | 0.10 | -0.12 | 0.01 | 0.02 | -0.01 |
| In couple | 0.05 | 0.20 | -0.12 | 0.15 | -0.14 | -0.01 |
| Presence of General Stressors | 0.21 | 0.21 | **0.24*** | 0.13 | **0.27**** | -0.09 |
| | | | | | | |
| **Clinical Factors** | | | | | | |
| **Mental Disorder Diagnosis & Psychotic Symptoms** | | | | | | |
| Schizophrenia | **0.30**** | -0.08 | 0.10 | 0.01 | 0.06 | -0.09 |
| TCO Symptoms Dummy Variables | | | | | | |
| ▪ Low-Medium level (1-2) | -0.03 | 0.08 | 0.09 | 0.01 | 0.02 | 0.10 |
| ▪ Medium-High level (3-6) | 0.01 | **0.28**** | -0.02 | -0.13 | 0.14 | 0.21 |
| **Drug and or Alcohol Use** | | | | | | |
| Use of Drugs and or Alcohol in a Psychopharmacological Manner | 0.01 | 0.02 | -0.13 | -0.13 | **0.39***** | -0.02 |
| | | | | | | |
| Intercept | 1.45 | -1.29 | 0.53 | 5.10 | -0.08 | 0.32 |
| R-square | 11.8% | 13.5% | 12.7% | 8.9% | 31.2% | 8.9% |

* $p < 0.10$
** $p < 0.05$
*** $p < 0.01$

The introduction of criminological variables further, increased the overall variance explained by the regression model. They are thus, important predictors when estimating the frequency of violence. Additional statistical associations are revealed with the inclusion of the criminological variables: general stressor is a strong predictor of a high frequency of weapon use (beta = 0.24; p < 0.10) and armed aggression (beta = 0.27; p < 0.05); beginning criminal activity at an early age, on the other hand, is a weak predictor of the frequency rate of armed aggression convictions (beta = -0.21; p < 0.10). Moreover, the results generated from this table suggest that none of our independent variables are important predictors for two specific forms of violent offence: sexual aggression and armed robbery.

*Synthesis on the Multiple Linear Regressions.* To reiterate, the only mental disorder diagnosis related to violence (murder), is schizophrenia. The medium-high level of TCO psychotic symptoms is only related to one form of violent offence: assault. Unfortunately, we are not able

to compare our results with earlier research findings, since very few of them accounted for the specific forms of violent offence and their level of frequency (only the proportion rate of violent offences). We did however find that TCO psychotic symptoms are strong predictors of high level of assault just as Nestor, Haycock, Doiron, Kelly and Kelly's found in their study (1995). These researchers suggest a significant relationship between persons who commit extremely violent forms of crime (murder or aggravated assaults) and delusional beliefs (disorganized and paranoid thoughts; belief that hey are the target of victimization). Further, similar to Cirincione, Steadman, Robbins and Monahan (1992) who found a positive relation between schizophrenia and violence when controlling for substance use, race, age and marital status, we observed a strong relationship between schizophrenia and murder, even when controlling for similar criminological variables. Finally, perhaps the reason why we found certain clinical variables to be strong predictors of murder and assault is because these subjects suspected personal harm or felt endangered by others, and as a result committed either an assault or murder to end this "perceived" threat (Link and colleagues, 1994).

## 3.2. Logistic Regression

The results yielded from the logistic regression model are presented in table 20. Some of the findings generated from previous tables (18, 19) remain significant in Table 20. The clinical variables are, once again, the best predictors of murder, assault and armed aggression. However, the variables most significantly associated with a high rate of conviction rate are not the same as those associated with a high proportion rate of violent conviction.

Table 20 portrays the odds ratios from the logistic regression analysis. The pseudo $R^2$ and the percentage level of improvement are also calculated for each predictor. However, the most important estimate to assess the efficiency of our model is the percentage of improvement. The estimate indicates, for each variable, the percentage of prediction improvement to predict violence. An initial good classification of 50.7% is observed when predicting assault. However, when we added an explicative variable in the logistic regression model, the percentage of prediction improved by 43% (from a classification rate of 50.7% to 72.5%). In table 20, the odds ratio of general stressor is excluded in the predictive model. This variable was omitted voluntary from the model because it was yielding an invalid coefficient (10 000).

**Table 20: Logistic Regression Model of Predictions of Violent Convictions since Age 18, Including Clinical and Criminological Variables**

| | Murder Odds ratio | Assault Odds ratio | Use of Weapon Odds ratio | Armed Robbery Odds ratio | Armed Aggression Odds ratio | Sexual Offence Odds ratio |
|---|---|---|---|---|---|---|
| **Criminological Factors** | | | | | | |
| Early Starter | 0.62 | 1.25 | 1.17 | 0.82 | 0.36 | 6.11** |
| Psychiatric History | 0.57 | 7.31** | 0.45 | 1.39 | 6.89 | 0.15 |
| In couple | 1.02 | 1.82 | 0.31 | 0.50 | 0.00 | 3.78 |
| General Stressors | 0.46 | 3.86* | N/A | 4.17** | 28.09*** | 1.48 |
| **Clinical Factors** | | | | | | |
| **Mental Disorder Diagnosis & Psychotic Symptoms** | | | | | | |
| Schizophrenia | 5.73** | 0.09*** | 1.14 | 0.51 | 0.10 | 0.91 |
| TCO Symptoms Dummy Variables | | | | | | |
| • Low-Medium level (1,2) | 0.49 | 4.23 | 4.03 | 1.35 | 3.94 | 5.29 |
| • Medium-High level (3-6) | 0.49 | 3.08** | 0.94 | 1.07 | 5.99** | 1.72 |
| **Drug and or Alcohol Use** | | | | | | |
| Use of Drugs and or Alcohol in a Psycho-Pharmacological Manner | 1.68 | 10.42*** | 0.00 | 1.48 | 2.18 | 4.41** |
| Intercept | 1.91 | 0.04 | 0.00 | 0.32 | 0.00 | 0.01 |
| Nagelkerde pseudo R-square | 15.8% | 26.3% | 39.5% | 14.8% | 41.2% | 22.5% |
| % of improvement | 4.8% | 43.0% | 3.7% | 24.9% | 1.9% | 1.6% |

* $p < 0.10$
** $p < 0.05$
*** $p < 0.01$

The diagnosis of schizophrenia produces nearly a six fold increase in the odds of murder convictions. The medium-high level of TCO psychotic symptoms and the schizophrenia diagnosis increases the likelihood of being convicted for assault by an odds ratio of 3.08 and 0.09 respectively. There is also, an increased risk for assault convictions among subjects with previous psychiatric history and general stressful stressors. Substance abuse is however, by far the strongest—producing nearly a tenfold increase in the odds of assault convictions. Thus, although, clinical and criminological factors are important predictors for assault convictions, the best predictor is substance abuse.

The medium-high level of TCO psychotic symptoms produces nearly a six fold increase in the odds of armed aggression convictions. The general stressor variable is however, by far the best

predictor of armed aggression conviction with the highest increase of odds ratio (28.09) (the increased high odds ratio may be caused by the low number of cases included in the analysis).

*Synthesis on the logistic regression analysis.* On the whole, the results yielded from the logistic regression analysis are consistent with earlier research findings. Psychotic disorders are associated with specific forms of violent behavior. For instance, schizophrenia diagnosis is an important predictor of murder and assault convictions; the medium-high level of the TCO psychotic symptoms is strong predictors of assault and armed aggression convictions. This is perhaps because persons exhibiting such symptoms are less rational. Thus when they feel threatened by others they respond violently to remove that perceived threat. Also, the lack of significant relations between the TCO psychotic symptoms and the other forms of violent offence (sexual aggression, weapon use and armed robbery) further supports the principal of rationality-within-irrationality. Recall also, that the criminological variables are useful only when predicting the prevalence of violent behavior and not their level of occurrence rate.

### 3.2.1. The Influence of Mental Disorders and Psychotic Symptoms on Other Forms of Crime

Up to know the focus of our analysis has been on mental disorders, specific psychotic symptoms and violent offences. We now shift our focus to non-violent forms of crime. To attain our second objective (assessing whether persons afflicted with mental disorders only engage in violent offences, or also in non-violent offences) we regress the same set of independent variables used in the previous analysis for the following three forms of crime: arson, drunk driving, and theft.

On the whole, the results from this analysis yielded inconclusive results. More specifically, only two significant relations are generated between mental disorders, psychotic symptoms and non-violent offences: 1) persons who began their criminal activity during their childhood and or teen-hood increased the likelihood of being convicted for drunk driving by an odds ratio of 3.47 ($p < 0.10$); 2) persons diagnosed with a schizophrenia disorder increased the risk of being convicted for theft by an odds ratio of 0.15 ($p < 0.05$). Further, the lack of significant relations between TCO psychotic symptoms and non-violent offences implies that the most common form of crime committed by persons who exhibit TCO symptoms are violent and not non-violent (this fulfills our third objective) perhaps because these "symptoms either cause a person to perceive

others as out to harm them or intrude in such ways as to override proscriptions against violence" (Link et al. p. 56, 1998). This rational does not apply to lesser severe forms of crime.

### 3.2.2. The Context in which the Violent Act are Committed

To reiterate, thus far, the results generated from the previous analysis found a significant relation between TCO psychotic symptoms and violence, specifically armed aggression and assault. Thus, accounting for the specific forms of psychotic symptom, violent offence and their frequency rate has allowed us to draw specific results (Swanson et al., 1997). Since persons who exhibit TCO psychotic symptoms show a higher occurrence rate of violent behavior, we wanted to compare those who exhibited these symptoms with those who did not by examining the contextual variables surrounding the most recent crime. The contextual variables are available for 70 of the 85 subjects of our sample. Thirty two subjects exhibited TCO psychotic symptoms (45.7%) versus 38 (54.3%) who did not. As is illustrated bellow in Table 21, no significant differences are yielded between the two groups.

**Table 21: Contextual Variables, Violence and TCO Psychotic Symptoms**

|  | Subjects with TCO Psychotic Symptoms | Subjects without TCO Psychotic Symptoms | phi value (sig.) |
|---|---|---|---|
| **Variables Associated with the Context of the Crime** | | | |
| **Premeditation** | 53.1% | 52.6% | 0.005 |
| **Victim Known** | 50.0% | 36.8% | 0.132 |
| **Alcohol Use Prior or During Most Recent Offence** | 50.0% | 55.3% | 0.053 |
| **Drug Use Prior or During the Most Recent Offence** | 40.6% | 23.7% | 0.182 |
| **Medication Use Prior or During the Most Recent Offence** | 21.9% | 21.1% | 0.010 |
| **Substance Co-morbidity** | 37.5% | 34.2% | 0.034 |
| **Victim Selection** | 59.4% | 42.1% | 0.172 |
| **Coercive Approach** | 18.8% | 13.2% | 0.077 |
| **Weapon Use** | 84.4% | 71.1% | 0.158 |
| **Use of Contention** | 9.4% | 10.5% | 0.019 |
| **Acknowledgment of Offence Severity** | 40.6% | 50.0% | 0.094 |

\* $p < 0.10$
\*\* $p < 0.05$
\*\*\* $p < 0.01$

Further research analysis is required to see whether the lack of significant relations is due to the small sample (70 subjects) or because there is no contextual difference (s) between subjects who exhibit TCO psychotic symptoms and subjects who do not experience such symptoms.

Chapter 4 reiterates the principal findings described in the preceding section and interprets them according to the main theoretical frameworks invoked in our thesis. The results generated from previous studies are also compared with our own research findings to assess whether they are consistent or conflicting.

This chapter is divided into three main components. In the first section, the principal results regarding mental disorders, psychotic symptoms, violence and the rationality within irrationality theory are discussed. In the second part of this chapter, the principal findings according to the other two alternative theoretical frameworks are described. In the final section, the limitations of this research are described and future research avenues are proposed.

## 1. Rationality-within-irrationality Theory

### 1.1 Results: Mental Disorder and Violence

According to earlier research findings (Link and Stueve, 1992; Link et al., 1994; Swanson et al., 1996; Swanson et al., 1997), persons with mental disorder (s) commit more violent offences thus suggesting that there is a link between mental disorder (s) and violent behavior. However, the majority of these studies focused primarily on violent offences. Link and colleagues (1992) for instance, only gathered information on six measurements of violence; no data was collected to measure non-violent offences.

Further, the way in which violence was measured, in earlier studies, was vague. Previous studies did not differentiate between the various forms of violent behavior. For instance, in Link and colleagues (1996) study, all six measurements of violence were regrouped under one variable (violent behavior). Thus, it is not possible to determine which violent behavior are directly associated with which type of mental illnesses or psychotic symptoms.

In consequence, our first objective was to determine whether persons afflicted with mental disorder (s) engaged in only violence offences, as is suggested by earlier research or also in non-violent offences. To overcome the limitations of previous studies, we examined each specific form of violent behavior independently (murder, assault, weapon use, armed robbery, armed aggression and sexual offences).

According to our findings, mentally disordered persons do not only engage in violent offences, but in also other forms of non-violent behavior. Criminal activity, for instance that began during the offender's childhood or teen-hood increased the likelihood of drunk driving convictions by an odds ratio of 3.47 ($p < 0.10$). Schizophrenia diagnosis is significantly associated with an elevated occurrence rate of theft. Perhaps schizophrenic offenders committed theft in greater proportion because they needed to support their drug and or alcohol addiction (Swanson, 1997).

Although our study suggests that mentally ill persons engage in all forms of violent behavior (violent/non-violent), future research replication of our findings is necessary to further understand the relationship between mentally ill persons, violent and non-violent offences.

## 1.2. Results: Psychotic Symptoms, Violence and the Principle of Rationality-within-irrationality

With the exception of Swanson and colleagues (1997) study, the nature (functional form) of the relationship between psychotic symptoms and violent acts is not investigated in earlier studies. According to their results, the association between psychotic symptoms and violent behavior is curvilinear in nature (as oppose to linear relation); insinuating that the relationship between psychotic symptoms and violence becomes negative once a certain threshold is exceeded. However, in Swanson and colleagues study, the specificity as well as the frequency of violent offences was not considered.

As a result, in this research project, the nature (functional form) of the relationship between psychotic symptoms and violent acts is investigated by accounting for: the specificity as well as the frequency of the violent acts committed by offenders who experience psychotic symptoms, (specifically the threat-control/override psychotic symptoms). Our objective is to assess the nature of this relationship by determining whether it is linear or curvilinear with a bell shape.

The results of this study indicate that the nature of the relationship between TCO psychotic symptoms and violent offences vary in its functional form. The relation between murder and TCO psychotic symptoms, for instance, is U shaped, implying that until a certain threshold is met, the incidence rate of murder decreases as the subjects' TCO psychotic symptoms multiplies. Once this threshold is exceeded, the incidence rate of murder increases. The relation between assault and TCO psychotic symptoms on the other hand, is linear. Thus as the amount

of TCO psychotic symptoms increases, so does the number of assaults committed. The relation between TCO psychotic symptoms and armed aggression is however, curvilinear with a bell shape, thus consistent with earlier research findings (Swanson et al., 1997).

Our results suggests that since TCO psychotic symptoms vary in their functional form and are not related to all forms of violent behavior, the TCO psychotic symptoms scale should only be considered as a relevant measure when examining three forms of violent offence: murder, assault and armed aggression. Our findings further suggest that TCO psychotic symptoms are good indicators only when predicting the level of frequency that a violent act will to be perpetuated (not the proportion rate).

Dissimilar to Swanson and colleagues findings, our study did not find a curvilinear relation between all forms of violent behavior and TCO psychotic symptoms. The difference in the results yielded is probably attributable to the way in which the TCO psychotic symptoms scales are operationalized and measured. For instance, in Swanson and colleague's study, a psychotism/agitation scale was operationalized to analyse the nature of the association between psychotic symptoms and violence while, in our study, the agitation symptoms are excluded. Perhaps, when the TCO psychotic symptoms intensify and the agitation symptoms are excluded, the risk of violent behavior increases.

Nevertheless, the curvilinear relation observed in our study, between the TCO psychotic symptoms scale and armed aggression suggests that when a person exhibits too many psychotic symptoms they become too disorganized to commit a crime. But not any form of violent crime—armed aggression.

Moreover, the statistical association yielded between assault, armed aggression and TCO psychotic symptoms illustrates that most crimes committed by persons who exhibit TCO psychotic symptoms are crimes committed against the person (third objective). Recall, that according to the principle of rationality-within-irrationality, "once one suspends concern about the irrationality of psychotic symptoms and accepts that they are experienced as real, violence unfolds in a *rational* fashion" (Link and Stueve, p. 143, 1994). When an individual "suspects personal harm or feels endangered by others, their internal controls—that usually inhibit the expression of violence—weakens" (Link and Stueve, p.143, 1994). As a result, interpersonal violence becomes more probable. For instance, when a psychotic experience involves a loss of

self-control through, thought insertion or mind domination by external forces, violence becomes probable. Similarly, violence is more likely to be exhibited when the individual is convinced that his life is threatened by another or that someone deliberately wants to cause him harm.

Therefore, the lack of statistical associations observed between the TCO psychotic symptoms, armed robbery and sexual offences validates the theory of rationality-within-irrationality. Since, according to this principle, persons do not engage in violent behavior to profit economically, nor do they commit violent offences that are sexual in nature but rather are violent only when they feel that their lives are being threatened by another or when they feel that someone wants to deliberately inflict harm upon them. Further, the lack of significant relations between the TCO psychotic symptoms and non-violent forms of illegal activity supports this theory. The most common crime committed by persons who exhibit TCO symptoms are violent because these "symptoms either cause a person to perceive others as out to harm them or intrude in such ways as to override proscriptions against violence" (Link et al. 1998, p. 56). This rational does not apply to non-violent forms of crime because the "perceived threat" is not severe enough to require violence in order to "remove" it.

In relation to our first multiple regression model, the clinical variables are important predictors for some forms of violent behavior. Schizophrenia diagnosis is an important predictor of a high incidence of murder (beta = 0.25; $p < 0.05$); the medium—high level of TCO psychotic symptoms are strong predictors of a high incidence of assault (beta = 0.24; $p < 0.10$) and sexual offence (beta = 0.23; $p < 0.10$); alcohol and or drugs consumed as a disinhibitor are important when predicting the frequency of armed aggression conviction (s) (beta = 0.35; $p < 0.01$).

In model 2 (Table 19), the criminological variables (risk factors) are introduced in the regressed equation as control variables to see whether the relationship between mental disorder, psychotic symptoms and violence persist with the control variables. As is illustrated, all of the significant relations previously observed remained except for one. The medium—high level of TCO psychotic symptoms was not longer a strong predictor for high occurrence of sexual offences. Also, the predictive power of each significant predictor (beta) increased when the criminological variables were added to the clinical variables in the second model. The introduction of the criminological variables further increased the overall variance explained by the regression model. They are thus, important predictors when estimating the frequency of violence. Additional statistical associations are revealed with the inclusion of the criminological factors:

general stressor is a strong predictor of a high frequency of weapon use (beta = 0.24; p < 0.10) and armed aggressions (beta = 0.27; p < 0.05); beginning criminal activity at an early age is a weak predictor of frequent armed aggressions convictions (beta = -0.21; p < 0.10). Moreover, the results generated from this table (model 2) suggest that none of our independent variables are important predictors for two specific forms of violent offence: sexual aggression and armed robbery.

On the whole, our results are consistent with earlier research findings. Similar to Cirincione, Steadman, Robbins and Monahan's study (1992), for instance, who found schizophrenia diagnosis to be an important predictor of violence even when controlling for substance use, race, age and marital status, we observed a parallel relationship between schizophrenia and murder even when we controlled for similar criminological variables.

Likewise, the medium-high level of TCO psychotic symptoms remained a strong predictor of a high incidence of assault conviction even when we controlled for the criminological variables. Unfortunately, we are not able to compare our results with earlier research findings, since very few of them accounted for the specific forms of violent offence and their level of frequency. Nestor, Haycock, Doiron, Kelly and Kelly's did however find a similar relation in their study (1995). According to their findings, persons who committed extremely violent forms of crime (murder or aggravated assaults) exhibited delusional beliefs (believing that they are the target for victimization or trickery, individual are disorganized and have paranoid delusions). This finding is also consistent with the results yielded from Link and colleagues' study (1992). They also found that patients who experienced psychotic symptoms were more likely to engage in deviant /illegal behaviors when compared with those who did not, even when additional factors, such as alcohol and or drug use were taken into account.

According to the results yielded from the logistic regression model, the clinical variables are the best predictors for murder, assault and armed aggression convictions. Many of the significant relations observed in the multiple regression analysis remained significant in the logistic regression analysis. However, the variables most significantly associated with a high rate of conviction rate are not the same as the ones associated with a high proportion rate of violent conviction. The criminological variables are useful only when predicting the level of occurrence rate that a violent act will be perpetuated (except for armed aggression and sexual offences).

The diagnosis of schizophrenia produces nearly a six fold increase in the odds of murder convictions. The medium-high level of TCO psychotic symptoms and the schizophrenia diagnosis increases the likelihood of being convicted for assault by an odds ratio of 3.08 and 0.09 respectively. There is also, an increased risk for assault convictions among subjects with previous psychiatric history and general stressful stressors. Substance abuse is however by far the strongest factor—producing nearly a tenfold increase in the odds of assault convictions. Thus, although, clinical and criminological factors are important predictors for assault conviction (s), the best predictor is substance abuse.

The medium-high level of TCO psychotic produces nearly a six fold increase in the odds of armed aggression convictions. The general stressor variable is however, by far the best predictor for armed aggression conviction with the highest increase of odds ratio (28.09).

On the whole the results yielded from the logistic regression analysis are consistent with earlier research findings. Psychotic disorders are indeed more associated with specific forms of violent behavior. For instance, schizophrenia diagnosis is an important predictor of murder and assault convictions; medium to high level of the TCO psychotic symptoms are strong predictors of assault and armed aggression convictions. This is perhaps because persons exhibiting such symptoms are less rational and thus when they feel threatened by others they respond violently to remove that "perceived" threat. Also, the lack of significant relations between the TCO psychotic symptoms and the other forms of violence offence (sexual aggression, weapon use and armed robbery) further supports the principal of rationality-within-irrationality.

In brief, according to our results, persons afflicted with a mental disorder do not only engage in violence offences, but in also other forms of non-violent behavior; the relationship between psychotic symptoms and violence, armed aggression in particular, is curvilinear with a bell shape; and the most common forms of crime perpetuated by persons who exhibit TCO psychotic symptoms are crimes committed against the persons; while the least forms of crime committed by these persons are crimes against property (i.e. armed robbery). Future research is however, required to assess the true nature of the relationship between TCO psychotic symptoms and violent behavior since some relations were linear (i.e. assault), while others were U shaped (i.e. murder).

With regards to our multiple regression analysis, the clinical variables are better predictors of violence (armed aggression, assault, murder) when the criminological variables are taken into account. The results generated from our multiple regression models further suggests, that none of our independent variables are important predictors for two specific forms of violent offence: sexual aggression and armed robbery. Many of the significant relations observed in the multiple regression analysis remained significant in the logistic regression analysis. However, the variables most significantly associated with a high frequency of conviction (s) rate (s) are not the same as those associated with a high proportion rate of violent conviction (s).

## 2. Alternative Theoretical Frameworks

### 2.1. Result Interpretation: Personality Disorders According to the DSM III-R

According to the American Psychiatric Association's (APA) of the Diagnostic and Statistical Manual of Mental Disorders (DSM III-R), violent behavior is a central feature for two personality disorders: borderline and antisocial (Reid and Balis, 1987). Further, antagonistic and hostile traits are most common among paranoid, antisocial, borderline, histrionic, narcissistic, passive-aggressive, Schizotypal, and obsessive-compulsive personality disorders. Thus persons suffering from any of the above personality disorders, specifically antisocial and borderline are more likely to engage in violent (hostile/antagonistic) behavior.

The results extracted from our study, on the contrary, did not always find violence as a central feature for the borderline personality disorder. In effect a negative relationship is observed between the borderline personality disorder and armed aggression (a lower proportion rate). Similarly, a negative association is yielded between the antisocial personality disorder and murder (a lower proportion rate). A positive association is however, observed between the latter personality disorder and assault.

As for the other personality disorders, specifically the narcissistic and avoidance personality disorders, a negative association with violent behavior are also yielded. Therefore, in spite the common trait of antagonism and hostility generally found among narcissistic, borderline and antisocial personality disorders, subjects with these disorders are less likely to exhibit violent behavior, in our study. However, we did not record the specific traits associated with each personality disorder (i.e. trait of antagonism) when we gathered our data collection. Perhaps if

we had accounted for the specific traits associated with each personality disorder, we would have found more positive relations between personality disorders and violence (Millon, 1996).

In brief, the simple diagnosis of personality disorder (s) is not sufficient when predicting violent offence (s) in a highly psychiatric sample. Also, when the analysis is performed, the co-occurrence rate between Axis I disorders and Axis II disorders are not accounted for. Thus, when the subjects suffered from co-morbid mental disorders (on Axis I and Axis II), it was not possible to determine which disorders are truly related to violent offences. Thus, in order to better understand the exact nature of the relationship between personality disorder (s) and violent offences and in order to assess whether they are important when predicting violent offences, more specific information regarding each personality disorder (s) (traits) should have been gathered while controlling for the co-morbid effects.

## 2.2. Result interpretation: Drug-Crime Relationship According to Goldstein

As illustrated, substance use can contribute to offending in various forms. They are consumed by some of the offenders to lower their inhibitions and thus execute their violent offence (psychopharmacological); to support the cost of their drug use (economic compulsive); and/or as auto-medication in an attempt to cope with painful feelings (i.e. depression and anxiety) and personality vulnerabilities.

In our sample drugs are consumed by our subjects in a psychopharmacological functional manner. Certain substances were used to induce aggression and control nervousness, and thus execute the violent offence (Bean 2000). In effect, those who consumed drugs and/or alcohol as a disinhibitor to help them execute their crime, were convicted in greater proportion for armed aggression (eta = 0.309; $p < 0.01$), assault (phi = 0.179; $p < 0.10$) and sexual aggression (phi = 0.203; $p < 0.10$) when compared to their counterpart groups.

Similar to Bennett (1998), who found that for at least some of their subjects, the use of illicit drugs (i.e. crack and heroin) were economically related with their offending (Brochu, 2000; Chaiken & Chaiken, 19; Kinlock and colleagues, 2003; Menard & Mihalic, 2001), we found some of our hard drug consumers to engage in economically oriented offences to support the cost of their drug use. Recall that according to the economic-compulsive model, individuals are not driven to violence through impulse but rather through the lack of money. The central motive

is to obtain money to purchase drugs in order to satisfy their addiction. According to our findings, offenders who engaged in violent offences to support their drug consumption are more likely in terms of proportion (76.5% vs. 39.7%) and frequency rate to be convicted for armed robbery (13.59 versus 4.53 with an eta = 0.293; $p < 0.01$) and less likely in terms of proportion (11.8% vs. 45.6%) and frequency rate to be convicted for murder (0.18 versus 1.3 with an eta = 0.297; $p < 0.01$) when compared with their counterpart groups.

With regards to the third proposed explanation for the increased rate of substance abuse/dependence among mentally disordered offenders (Klantizian, 1997; Swanson, 1990; Swanson and colleagues, 1994) which suggested that the use of alcohol and drug among psychiatric offenders is to self-medicate for difficult feeling state (i.e. depression and anxiety), we found subjects who consumed substances as auto-medication, to commit on average, more sexual offences compared with those who did not (eta = 0.294; $p < 0.01$). However, further analysis is necessary since the values for this variable are unevenly distributed in both groups; the significant relation is probably attributed to the extreme values observed in the «yes» group and not because there is a relationship between sexual offences and the use of drugs and or alcohol to self-medicate.

## 3. Study Limitations, Contribution and Conclusion

This study is limited in several ways that should be considered when interpreting the results. First of all, although we recorded the time at which the psychotic episode occurred in relation to the time the violent offence was perpetuated, we do not know for certain whether such symptoms were indeed exhibited during the commission of the offence. It is based on self-reports, psychologists and psychiatrists observations. As Taylor and Hodgins (1994) have noted, "the timing of illness events relative to violent events is important for interpreting the relationship between psychosis and violence, and for applying such information usefully to clinical practice" (Swanson et al. 1996).

Also, the results yielded from our research should be interpreted cautiously because of the small study sample. Although, the findings indicate a significant association between two variables, visual hallucinations and murder, for instance, it is not representative since only two subjects out of 85, experienced these symptoms. In addition, in consequence of the small number of subjects, certain relations are probably not found as significant when they should have been.

Perhaps when comparing the circumstances surrounding the most recent offence for persons with and without TCO psychotic symptoms with a variety of contextual variable, no significant relations are generated because only 70 subjects are included in the study with more then 10 contextual variables.

Further, it is important to bear in mind, when considering these current findings, that the data collection is gathered from one institution (RMHC); the extent to which these findings can be generalized to other clinical samples is thus unknown. All offenders are considered to be mentally ill (Axis I & Axis II) at the time of their most recent offence on the basis of clinical evaluations.

Despite these limitations, in contrast to earlier studies, our research project provides more insight regarding: 1) the relationship between mental disorders, violent and non-violent offences; 2) the functional form of the relationship between TCO psychotic symptoms and violence; 3) the relation between specific psychotic symptoms and violent offences; 4) the rationality-within irrationality theory; 5) the relative predictive power of the TCO psychotic symptoms while controlling the clinical and criminological variables; 6) the way in which drug and or alcohol use contribute to criminality among psychiatric offenders.

Furthermore, our results have some important clinical and policy implications. The data, for instance, suggests that the assessment of risk of violence among mentally disordered persons should include measures of current substance abuse, and inquire about feelings of perceived threats and domination. The data were drawn from an incarcerated sample, and thus should be of some assistance to clinicians in their efforts to reduce the risk of violence—assault and armed aggression—among those in their care, especially when predicting recidivism in a psychiatric population (according to the significant results generated from the relationship between psychotic symptoms and violence frequency rate). The reasons for which drugs and or alcohol are consumed and the content of the TCO psychotic symptoms should be a part of the risk management strategy adopted by mental health clinicians.

Clearly, however, much more research is needed to understand how psychotic symptoms lead to criminality. The more that is known about the connection between psychosis and violence; the better equipped the mental health clinicians will be to provide accurate treatment interventions that benefit mentally ill persons as well as their families and their communities. Therefore,

future research would do well to expand and elaborate on our major findings. Also, it would be interesting to take into account the effect (s) co-morbid disorders (Axis I and Axis II) have on violent offences to determine which of the co-existent disorders are responsible for the violent behavior. For instance, when an offender is suffering from a dual disorder, schizophrenia and antisocial personality disorder, which of the two disorders was the primary motor for the perpetuated violence?

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**Annexe I**

**Questionnaires des intervenants**          **# d'identification :**

| SYMPTÔMES POSITIFS | PÉRIODE ENTOURANT LE DÉLIT | SYMPTÔMES CONTRIBUTIFS AUX DÉLITS | PÉRIODE ACTUELLE (ÉTAT MENTAL ACTUEL) |
|---|---|---|---|
| **Présence d'hallucinations auditives;**<br><br>- *Contenu des hallucinations;*<br>- *Réactions du patient face à ces hallucinations;*<br>- *Est-ce que les voix sont directives?*<br>- *Est-ce que le sujet obéit au directives?* | Oui ☐ Non ☐ NSP ☐<br><br><br>Oui ☐ Non ☐ NSP ☐<br>Oui ☐ Non ☐ NSP ☐ | Oui ☐ Non ☐ NSP ☐ | Oui ☐ Non ☐ NSP ☐<br><br><br>Oui ☐ Non ☐ NSP ☐<br>Oui ☐ Non ☐ NSP ☐ |
| **Présence d'hallucinations visuelles;** | Oui ☐ Non ☐ NSP ☐ | Oui ☐ Non ☐ NSP ☐ | Oui ☐ Non ☐ NSP ☐ |
| **Présence de désorganisation;**<br><br>- *Comportements bizarres;*<br>- *Erreurs grossières de pensées;* | Oui ☐ Non ☐ NSP ☐<br><br>Oui ☐ Non ☐ NSP ☐<br>Oui ☐ Non ☐ NSP ☐ | Oui ☐ Non ☐ NSP ☐ | Oui ☐ Non ☐ NSP ☐<br><br>Oui ☐ Non ☐ NSP ☐<br>Oui ☐ Non ☐ NSP ☐ |
| **Présence de méfiance;**<br><br>- *Croit que des gens sont hostiles à son endroit;*<br>- *Croit que des gens veulent concrètement lui causer des problèmes;* | Oui ☐ Non ☐ NSP ☐<br><br>Oui ☐ Non ☐ NSP ☐<br>Oui ☐ Non ☐ NSP ☐ | Oui ☐ Non ☐ NSP ☐ | Oui ☐ Non ☐ NSP ☐<br><br>Oui ☐ Non ☐ NSP ☐<br>Oui ☐ Non ☐ NSP ☐ |