Mental Illness, Personality Disorder and Violence: A Scoping Review

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1 Aim and Method

The aim of this report is to:

- conduct a scoping review of empirical studies surrounding mental illness, personality disorder (excluding psychopathy) and violence; and
- explore whether there is an inter-relationship between these.

The scoping review was conducted using electronic databases relevant to the area, citing key words and combinations of key words in order to identify the main empirical studies exploring mental illness, personality disorder and violence. The following databases were searched:

- CINHAL;
- PsychINFO;
- PUBMED;
- MEDLINE;
- EMBASE;
- OVID;
- DARE;
- COCHRANE;
- ASSIA;
- CSA ILLUMINA; and
- WEB OF SCIENCE.

Relevant articles were also obtained from reference lists cited in other articles, with some being searched by hand. Book chapters relevant to the research areas were included where salient. This review is a scoping, rather than a systematic literature review and therefore represents studies deemed by the authors as relevant to the research question.

2 Background

'The twentieth century will be remembered as a century marked by violence'

Nelson Mandela

Violence is a major social problem; in the UK there were an estimated 2,087,000 violent incidents against adults in 2009/10 (Home Office, 2010) and the World Health Organisation (WHO, 2002) has stated that violence is a significant public health issue. The WHO defines violence as: *The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation*. There is no single factor that explains why some people behave violently toward others or why violence is more prevalent in some communities than in others. Violence is the result of the complex interaction of individual, relationship, social, cultural and environmental factors.

Within academia, clinical practice and the media there has been considerable focus on two specific risk factors for violence; mental illness and personality disorders. Questions have been raised; are people with mental illness or personality disorder more likely to be violent? Is there a causal link between mental illness, personality disorder and violence? And are these people a risk to public safety?

Assessing and managing violence risk is a key component of the role of professionals working within the field of mental illness and personality disorder. Within the last 30 years there has been a dramatic shift in how violence is conceptualised and how violence risk assessments are conducted. Today risk assessments are a composite of empirical knowledge and clinical/professional expertise. The systematic risk assessment is made by referring to a checklist of factors that have been demonstrated to have a relationship to violence based on empirical research. They emphasise prevention rather than prediction and are designed to guide clinicians in determining what level of risk management is needed, in which contexts, and at what points in time (Vincent, 2006).

The HCR-20 (Webster et al, 1997) is a structured professional guideline to violence risk. The conceptual scheme of the HCR-20 aligns risk factors into past, present,

and future. The HCR-20 was developed from a thorough consideration of the empirical literature concerning risk factors that relate to violence. Of importance to this scoping review is the fact that four of the 20 risk items of the HCR-20 are directly related to mental illness and/or personality disorder. A person's risk rating is increased if they have a diagnosis of a major mental illness; a diagnosis of personality disorder; if they lack insight into their mental illness; and, if they have active symptoms of major mental illness. But what is the empirical evidence? The following sections will review studies that focus on the relationship between mental illness, personality disorder and violence. However before that this report will briefly discuss the difficulty of establishing causality.

3 Establishing Causality

Causality is the relationship between an event (the cause) and a second event (the effect), where the second event is understood as a consequence of the first. The philosophical treatment of causality extends over thousands of years. In the Western philosophical tradition, discussion stretches back at least to Aristotle, and the topic remains a staple in contemporary philosophy. Aristotle held that there were four kinds of causes:

- A thing's material cause is the material of which it consists.

- A thing's formal cause is its form, i.e. the arrangement of that matter.

- A thing's efficient or moving cause is the primary source of the change or rest.

- A thing's final cause is its aim or purpose.

The nature of causality and the philosophical issues surrounding causal determinations have occupied philosophers for centuries. There is however a consistent theme; that certain conditions have to be met to establish causality.

Hume (1938) concluded that cause cannot be directly demonstrated, but can be invoked when high correlations are involved, and inferred if three conditions are present: contiguity between the presumed cause and effect; temporal precedence; and constant conjunction, meaning that the cause is always present whenever the effect is obtained.

More recently Haynes (1992) stated that there were four conditions required to establish causality. These are:

- covariation between the variables – a lack of correlation between variables negates the possibility of a causal relationship because any form of relationship is precluded;

- temporal precedence of the casual variable – evidence that the cause happened before the effect;

- exclusion of an alternative explanation for the relationship and;

- establishing a logical connection between the variables – how does X cause Y.

The issue is whether, in light of these criteria, a case can be made for a casual functional relationship between mental illness, personality disorder and violence.

4 Mental Illness

Definitions of mental illness can be broad, sometimes serving as an umbrella-term for a number of different disorders (Prins, 2005). According to the Diagnostic and Statistical Manual of Mental Disorder (DSM-IV; American Psychiatric Association, 2000) mental disorder is conceptualised as a clinically significant behavioural or psychological syndrome or pattern that occurs in an individual and that is associated with present distress (e.g. a painful symptom) or disability (i.e. impairment in one or more important areas of functioning) or with a significantly increased risk of suffering death, pain, disability, or an important loss of freedom.

A high proportion of people in contact with the Criminal Justice System (CJS) have mental health problems. It is well documented that the prevalence of psychiatric morbidity is higher among prisoners than the general population (Fazel & Danesh, 2002); indeed, an increasing prison population means there are more people in prison with mental illness than ever before (Bradley, 2009). A large scale point prevalence survey conducted by the Office for National Statistics (ONS) reported rates of 'probable psychosis' amongst men were between 4% in the sentenced and 10% in the remand population; for female prisoners the rate was 14%, whereas within the general population, the rate of probable psychosis was 0.4% (*ibid*). Amongst women prisoners, rates of psychosis varied between 10% in the sentenced and 21% in the remand population. More than half (59%) of male remand and 40% of male sentenced prisoners had a neurotic disorder, with the corresponding figures for women being 76% and 63% respectively. Within the general population, women were also more likely to suffer from a neurotic disorder; rates were 18% for women and 12% for men. Higher rates of mental illness in comparison with the general population are not confined to the prison population. At all stages of the CJS (police custody, courts, probation) research has indicated higher rates of mental illness among those who have contact (Gudjonsson et al, 1993; Shaw et al, 1999; Mair & May, 1997).

Gudjonsson et al. (1993) administered a range of psychological assessments and questionnaires to 163 detainees at two London police stations. The assessments covered current mental state; intellectual functioning; reading ability; interrogative suggestibility; anxiety proneness; and understanding of legal rights. The sample comprised those due to be interviewed by the police i.e. they had been arrested for

an offence, therefore may not necessarily be representative of detainees generally. The study excluded cases in which there was insufficient time between the detainee's initial detention and police interview to complete the tests (which took approximately an hour). The study also excluded anyone under the age of 18. Assessments were conducted by psychiatrists and, on the basis of the researchers' clinical judgements they identified 7% as having a serious mental illness, which included diagnoses such as schizophrenia and depression. Details of the prevalence of schizophrenia alone is not available, also it is arguable whether, due to the localised nature of the sample, involving only two London police stations, the study findings are generaliseable, either to London more widely or to the country as a whole. Additionally, the study did not look at differences in prevalence rates with regards to gender, age or ethnicity. However, the study did use mental health professionals, specifically trained to diagnose mental illness, therefore the identification of mental health problems is likely to have been more accurate than studies using police officers or non-clinically trained researchers.

Shaw et al (1999) undertook a study in Manchester Magistrates' Court to examine the prevalence of serious psychiatric disorder, the proportion of defendants requiring diversion and whether defendants with serious mental illness were reliably detected by court personnel and referred to psychiatric staff operating the onsite court diversion scheme. The sample was taken from Manchester Magistrates' Court which has six daily criminal courts, serving a total population of 500,000. The study included defendants appearing in court for the first time in relation to their index offence. Some attended from the community and others had been remanded in police custody overnight. The study's definition of serious psychiatric disorder included schizophrenia, mania, other psychoses and depressive or other severe disorders (e.g. including suicidal ideas). They found that the frequency of serious psychiatric disorder was 1.31% among defendants appearing in court direct from the community and 6.57% among those held in custody overnight. Of the 99 individuals with serious psychiatric disorder, 34 (34%) had schizophrenia and other psychoses and 55 (55%) had depressive disorders. Forty-two (76%) of the 55 individuals with depressive disorders had suicidal ideas, which were recorded on the first-phase screening procedure in many cases. Only 14 of 96 (14.5%) defendants from overnight custody with serious psychiatric disorder were routinely detected by court staff and subsequently referred to the court diversion programme. They concluded that there was a substantial rate of psychiatric disorder in the court population, which was not satisfactorily detected within the

current system. Brief screening questionnaires and training of court staff in mental health issues were recommended.

Longstanding national health and criminal justice policy dictates that when a prisoner is suffering from a serious mental illness, they should be transferred to a more appropriate hospital environment, under mental health legislation. Recently Lord Bradley's *Review of People with Mental Health Problems or Learning Disabilities in the Criminal Justice System* has placed the issue of mental illness and offending to the forefront of the current political agenda (Bradley, 2009). Subsequently, the Department of Health has published a cross-departmental offender health strategy, setting up programme boards to move forward with service development, not just in prison, but throughout the whole CJS.

There are barriers to the notion of improving health and welfare opportunities for offenders. Public perceptions of mental illness may be one such obstacle. A comparative study of society's views of mental illness in both 1950 and 1996 (Phelan et al, 2000) found that, the proportion of people who considered mentally ill individuals to be either frightening, or violent, had increased. The reasons behind fear of mental illness have not been comprehensively identified. Fear could be a by-product of the media; specifically, the attention given to offences committed by those believed to be suffering from a mental illness such as Peter Sutcliffe. Prins (2005) explained the uneasiness generally felt by society towards those with mental illness, rooted within three popular misconceptions, or myths. Firstly, people are scared because they often lack the knowledge necessary to understand the causes of such conditions. Secondly, people are inherently fearful of what they perceive to be madness. The final myth is that mental illness is something to be feared because it is difficult to treat.

4.1 Schizophrenia

Schizophrenia is described in the two major diagnostic classification systems: the DSM-IV (APA, 2000) and the International Classification of Disorders 10 (ICD-10; WHO, 1992). DSM-IV defines schizophrenia as 'a mixture of characteristic signs and symptoms (both positive and negative) that have been present for a significant proportion of time during a one-month period, with some signs of the disorder

persisting for at least six months. These signs and symptoms are associated with marked social or occupational dysfunction.

ICD-10 includes schizophrenia, schizotypal disorder, persistent delusional disorder, transient psychotic disorder and schizoaffective disorders. ICD-10 describes these schizophrenic disorders as characterised by "fundamental and characteristic distortions of thinking and perception, and affects that are inappropriate or blunted". The most significant symptoms in those with these disorders include "thought echo, thought insertion or withdrawal, thought broadcasting, delusional perception and delusions of control, influence or passivity, hallucinatory voices commenting or discussing the patient in the third person, and thought disorders and negative symptoms" (WHO, 2007).

It is widely reported that the prevalence rate of schizophrenia among adults is around 1%, with a slightly higher incidence in men than women (DSM-IV, 2000). However, Saha et al (2005) conducted a systematic review of prevalence rates of schizophrenia reported in 188 studies drawn from 46 countries. They reported that the median prevalence rates per 1,000 individuals were 4.6% for point prevalence, 3.3% for period prevalence, 4% for lifetime prevalence and 7.2% for lifetime morbid risk.[1] There were no significant differences between male and females, or urban, rural and mixed areas. However, they reported that homeless individuals and migrants had higher rates of schizophrenia, and that developing countries had lower prevalence rates. This study has clear implications for developing services since it means that more services may need to be established and they need to be both culturally appropriate and gender sensitive.

Despite this difference in general population figures, there is evidence that shows that the prevalence of mental illness and schizophrenia is higher in people in contact with all stages of the CJS (Fazel & Danesh, 2002; Singleton et al, 1998; Bradley, 2009; Gudjonsson et al, 1993; Shaw et al, 1999; Mair & May, 1997).

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[1] Point prevalence is the proportion of individuals in a population who have a disorder at a particular time. Period prevalence is the proportion of individuals in a population who have a disorder over a specific period of time. Lifetime prevalence is the proportion of individuals in a population who have ever had a disorder at some point in their life. Lifetime morbid risk is the probability of an individual developing a disorder up to a specified age or period of their life.

4.1.1 Schizophrenia and Violence

Violence is the most commonly examined offence category in relation to schizophrenia. However clinical opinion on a causal link between schizophrenia and violence has fluctuated. Two decades ago it was suggested there was no increased risk for violence in individuals with schizophrenia and other psychoses (Monahan & Steadman, 1983). Since then there have been numerous large population-based studies which have shown a modest association between violence and schizophrenia. Although most studies report a greater risk of violence, what is still debated is whether this relationship is due to the effects of active schizophrenia; as a result of, or response to, its particular symptoms; or as a result of neural deterioration or deterioration of social or environmental factors that may occur as a result of suffering from schizophrenia. The review will discuss each study in turn (see Table 1 for a summary of the studies).

Lindqvist & Allebeck (1990) conducted a longitudinal follow up study comparing crime rates of those with schizophrenia and those without. Participants were identified from the Stockholm County In-Patient Register, which includes information on all psychiatric clinics and psychiatric hospitals in Stockholm. Participants were selected if they were born between 1920 and 1959, had a diagnosis of schizophrenia and were discharged during 1971. Crime data were gathered from the Central Swedish Police Register and analysed for the period 1972-1986. The sample comprised 644 participants, of which 32 (5%) had committed violent offences. Of these, 28 (87%) were men and four (13%) women. Assault was the most common offence and constituted 20 (47%) out of 43 offences. Those with schizophrenia committed nearly four times (Confidence Interval [CI] 3.0-5.1) as many violent offences in comparison to the general population. However, certain limitations of the study must be considered. Firstly, the study was based on an in-patient sample, there may well be many people with schizophrenia who live independently in the community and not in-patient clinics therefore this may not completely represent people with schizophrenia as a whole. Secondly, the study was conducted in one Northern European city and therefore may not be generalisable to other countries and thirdly, due to the study time limits, some offences that had severe penalties (more than ten years) would not have been included.

Modestin & Ammann (1996) conducted a case control study which explored lifetime prevalence of criminality in relation to three sub-groups of schizophrenia (schizophreniform disorder, acute schizophrenia and chronic schizophrenia). Participants comprised 282 males diagnosed with schizophrenia, who had been hospitalised at least once at the Psychiatric Hospital of Berne between 1985 and 1987, and were aged between 18 and 78 years old. Control participants were drawn from the general population, matched in terms of age, gender, marital status, occupational level and community size. Hospital clinical records were analysed as well as conviction records from the Swiss Central Criminal Record Department. They reported that 97 (34%) of cases and 102 (36%) controls had criminal records, but found significant differences between the two groups in relation to violence. They found that 15 (5%) participants had convictions for violent offences compared with three (1%) controls. Those with schizophrenia were five times (Odds Ratio [OR] 5.2; CI 1.5-18.25] more likely than the general population to have been convicted of a violent crime. Despite cases and controls being matched, there were significant differences between the two groups, with the patients being significantly younger, of lower social class and more frequently living in urban areas. There may have also been a selection bias when comparing cases to controls as all participants with schizophrenia had been hospitalised and the authors argued that hospitalisation may indicate a higher risk of violence, compared to those with schizophrenia who had never been hospitalised. The study was also reliant on official conviction data which is an underestimate of the true rate of violence. Interestingly, they also compared patients with and without criminal records. Patients who had committed crimes were found to be significantly younger; had shorter illnesses; spent less time in psychiatric hospitals; and were more likely to have a history of substance misuse. They suggested that active symptoms and co-morbidity may be a contributing factor to criminal behaviour.

Tiihonen et al (1997) conducted a 26 year prospective study of an unselected birth cohort of 12,058 participants in Finland. Data were collected from the Finnish Hospital Discharge Register and Ministry of Justice Data. In the study group a total of 6,007 boys and 5,757 girls were alive at the age of 15 years, and 5,636 boys and 5,217 girls were living in Finland. Five hundred and three of the male participants and 53 females had committed at least one crime resulting in a criminal record by the end of 1992. Of the 503 male offenders, 116 (23%) had a psychiatric diagnosis (27 had a major mental disorder), and 62% (n = 72 of 116) of these participants had committed their first crime before being diagnosed as

having a psychiatric illness. Of the 5,636 male participants, 351 had a psychiatric diagnosis, and 86 had a major mental disorder. Of the 165 violent offenders, 11 (7%) were diagnosed as psychotic. Ten (20%) out of 51 participants with schizophrenia had committed an offence. Of these, seven (70%) had committed a violent crime. They concluded that those with schizophrenia were seven times (CI 3.1-16.6) more likely to commit a violent offence, than the general population. Although an unselected birth cohort, this study only includes data on hospitalised people. The authors acknowledge that even 20 additional people with untreated schizophrenia without a history of violent crime would have decreased the odds ratio for a violent offense from 7.0 to 4.8. Also because the cohort was followed up to only 26 years of age, anybody who developed schizophrenia later in life would not have been included, therefore this sample may not be representative of all people with schizophrenia.

Wessely (1998) conducted a population based longitudinal study between 1964 and 1984, of 538 participants diagnosed with schizophrenia, identified through the London Borough of Camberwell Psychiatric Case Register. The same number of controls were identified through the case register and matched by gender, age and year of joining the register. Clinical records were analysed as well as conviction data from the Central Criminal Register, held by the Home Office. Overall conviction rates did not differ between the male cases and controls. However, there was a significant increase in male violent offending in those with schizophrenia, with this group being twice (CI 1.5-2.9) as likely to commit a violent offence, than those without. In contrast, rates of female offending in those with schizophrenia were increased across all offence categories (odds ratio for offending 3.3 (CI 2.3-4.7), odds ratio for violent offending 3.1 (CI 1.3-7.4). Adjustment for important confounders was made, in women the rate ratio for the effect of schizophrenia on the rate of convictions was 2.1 adjusted for social class and ethnicity. However, a more complex picture was found in the men, where an interaction between gender, ethnicity and schizophrenia was found. Having schizophrenia increased the rate of offending in black men, but not in white men. The authors state that this may be the result of a small number of participants from the ethnic minorities who accumulated very long lists of both hospital admission and criminal convictions after the onset of illness. They state that social deprivation, differing responses of the mental health and criminal justice systems, and age at onset may all play a part. The main limitation of this study is the reliance on official conviction data as this can underestimate the rate of offending. This study did however compare cases with a control group that had other mental

disorders, excluding psychosis, therefore some effort was made to control for the non-specific effects of mental illness. Also the sample was not based on hospital admissions/discharges alone, but was a true population-based study of an incident cohort, in which the only assumption made is that someone with schizophrenia will, at some stage in their life, make some form of contact with some form of mental health service. In this study they found that although nearly all of those with schizophrenia are admitted to hospital, a small proportion are not, and that the decision to admit may be associated with the presence of violent behaviour and/or police involvement.

Brennan et al (2000) conducted a birth cohort study of 335,990 participants in Denmark born between January 1, 1944, and December 31, 1947. Records of psychiatric hospitalizations and official arrest and conviction data through 1991 were obtained. There were a total of 1,143 males with schizophrenia, 129 (11%) had been arrested for a violent offence and they were nearly five times (95% CI 3.8-5.6) more likely to be arrested for such an offence, than those without schizophrenia. Of 680 women with schizophrenia, 19 (3%) had been arrested for a violent offence and they were 23 times (95% CI 14.4-37.4) more likely to be arrested for a violent offence than those without schizophrenia. Findings indicate, when controlling for socio-economic status, marital status and concurrent disorders, schizophrenia was associated with an increased risk of violent offending in males and females. However, there are a number of limitations. Firstly, the study was based on those who had been hospitalised in the past, therefore they may not be representative of all people with schizophrenia, as it is possible that the most violent psychotic individuals would be more likely to be identified and hospitalized than those who are less severely ill. Secondly, the control group was the general population; therefore there was no effort to control for the non-specific effects of mental illness. Thirdly, the study was conducted in Denmark, a country with relatively low rates of criminal violence. Denmark does not have the poverty, gang, and substance abuse problems that exist in some other countries.

Increased risk for violent offending in those with schizophrenia was also reported by Mullen et al (2000). The authors compared patients admitted in 1975 and 1985 with a first admission for schizophrenia who had received the same diagnosis on at least two out of three subsequent service contacts. Participants were identified through the Psychiatric Case Register in the state of Victoria, Australia, and controls drawn from a random community sample were matched by age, gender and place of residence. Criminal records were analysed from the police database,

with convictions calculated over participants' lifetime and ten years after their first admission. The sample comprised 3,719 participants admitted in 1975 with schizophrenia. Of these, 2,030 (55%) were male and 1,689 (45%) female. In 1985, 2,411 participants were admitted with schizophrenia. Of these, 1,366 (57%) were male and 1,045 (43%) were female. For violent offences over the lifetime of the 1975 group, the authors reported 34 (11%) cases with at least one violent offence conviction compared to four (1%) controls (OR 8; 95% CI 2.8-21.9). In the 1985 group, there were 36 (11%) cases with at least one violent offence conviction compared to four (2%) controls (OR 6; 95% CI 2.2-16.6). Analysis of violent offences in the 10 years after 1975 and 1985 showed, in the 1975 group there were 16 (5%) cases with at least one violent offence conviction compared to two (1%) controls, with an OR of seven (95% CI 1.7-32.0). In the 1985 group, there were 16 (5%) cases with at least one violent offence conviction compared to two (1%) controls, with an OR of five (95% CI 1.2-22.9). For men with schizophrenia in the 1985 group, a coexisting diagnosis of substance abuse was significantly associated with a tenfold increase of acquiring at least one violent conviction over a lifetime. However, as with previous studies the control group was drawn from the general population and also did not exclude people who might by chance have received treatment for schizophrenia, or the people who could have overlapped with the group of patients, which introduced a small bias against identification of differences between patients and controls. Also the study relied on official conviction data which can underestimate offending behaviour. It is important to note that most of those with schizophrenia had no convictions in the decade after first admission, and overall only 37 (3.4%) had convictions for violence. Male patients who offended had usually begun their criminal careers and acquired most of their criminal convictions before their first psychiatric admission. The pattern of offending over time did not differ significantly between patients and controls. This finding conflicts with studies that not only reported a later onset of criminal careers in those with schizophrenia, but also used this difference to argue for a causal link between schizophrenia and criminality.

These studies all have flaws in their methodology which limit the generalisability of the results; however, they do all suggest that there is some relationship between schizophrenia and increased risk of violence. However, the causal nature of this relationship remains unclear. Some studies have attempted to examine this relationship in more detail by looking at the impact of the psychotic symptoms associated with schizophrenia, to discover whether those with active psychotic symptoms are more likely to be violent and whether they are violent in reaction to,

or as a product of, these symptoms. Link & Steuve (1994) identified a set of psychotic symptoms referred to as "threat/control-override" (TCO) symptoms, defined as symptoms that "either cause a person to perceive others as out to harm them or intrude in such a way as to override proscriptions against violence". They argued that it was TCO symptoms that were likely to lead to violence.

Swanson et al (1996) analysed data from three cities in the USA (Baltimore, Durham and Los Angeles). Their sample comprised 10,066 participants assessed for psychiatric illness. Information on violence was gathered as part of the interview schedule, with participants being asked about hitting or injuring a spouse/partner/child, getting into physical fights with others, using weapons in fights, and getting into physical fights whilst drinking. They found that the proportion of participants with schizophrenia, who were also violent, was significantly higher in those who experienced delusional symptoms than in those who experienced only hallucinations or no psychotic symptoms. They concluded that having a diagnosis of schizophrenia or the presence of hallucinations without delusions was not significantly related to an increase in violence in the previous year. However, they reported that those with delusions showed an OR of 2.6 (95% CI not reported) and those with a combination of delusions and hallucinations an OR of 4.1 (95% CI not reported) and were therefore more likely to be violent, than those without psychotic symptoms. When specifically analysing for TCO symptoms, the authors reported that participants with one or more such symptoms were more than twice as likely to be violent as those who had other psychotic symptoms (16% vs. 6%). Of those with TCO symptoms, 56% had a history of violence before the age of 18, contrasting with 29% of participants who had non-TCO delusions/hallucinations. However, there are methodological limitations to this study. Firstly, the study measured violence through self-report, while this can overcome the limitations of official data which is likely to underestimate the true incidence of violence, self-report only can also be biased. There are two perspectives on the source of validity problems associated with self-report data. These are the Cognitive Perspective, which includes mental process issues such as comprehension and recall and the Situational Perspective, based on the influence of environmental conditions and social desirability (Brener et al, 2003). Self-report measures can also have limited use in populations who can be expected to employ high levels of impression management, e.g. prisoners (Helfritz et al, 2006). A second methodological issue with the above research is the use of lay interviewers not trained to recognise and evaluate psychotic symptoms, which may have led to an inaccurate estimation of symptoms. Thirdly, data collected did not allow for

analysis of whether psychotic symptoms were present at the time of the violent act, making it difficult to make any conclusions about an causal relationship between active symptoms and violence.

Link et al (1998) conducted a study of 2,741 Israeli born Jews, aged between 24 and 33 years of age who had screened positive for a mental disorder. Participants were administered the Schedule for Affective Disorders and Schizophrenia (SADS) Violent behaviour was self-reported and included fighting and weapon use in the 5 year period preceding interview. They reported that five TCO measures (delusions of control, persecutory delusions, mind dominated by external forces, thoughts put into individuals head that are not their own and belief that people wish the individual harm) were significantly associated with fighting and weapon use. They observed that TCO independently predicted both fighting and weapon use in the sample. However, the sample population was very narrow, Israeli-born Jews aged 24-33 years, therefore may not be representative of other populations. Also violent behaviour was assessed using self-report measures, and only for a five-year period preceding the interview. In comparison to other studies violent behaviour was very broad defined, e.g. been in a physical fight in the past five years.

Taylor et al (1998) conducted a case note survey of all high secure hospital patients in England, resident between 1st January and 30th June 1993. The sample comprised 1,463 participants, convicted of an index offence relevant to their hospital admission, and whose symptoms had been recorded at the time of their offence. Of these, 818 (47%) had schizophrenia. They found that, of the 309 participants who had psychosis and had been admitted following homicide, 231 (75%) had delusions and 139 (45%) hallucinations. The authors observed that, of those who had been admitted for other violent offences, 304 (63%) had delusions and 194 (40%) hallucinations. When examining the relationship between symptoms present at the time of the offence, the authors found that the presence of hallucinations or hallucinatory drive (being driven to offend by hallucinations) alone did not play a significant role in the offence. They concluded that it was only when combined with delusional drive that hallucinatory drive became significant to the commission of an offence. They also found the combination of delusional and hallucinatory drives was more likely to occur than other psychotic symptoms, for those with violent offences. However, this study was record dependent and therefore subject to other people's clinical bias in mental state description and diagnostic judgement. Also the sample was of high secure hospital patients with

major mental illness and a history of serious violence and therefore is not representative of all people with schizophrenia.

Appelbaum et al (2000) argued that the presence of delusions did not predict higher rates of violent crime. Study data from the MacArthur Violence Risk Assessment Study investigated violence in the community by following 1,136 psychiatric patients for a year after discharge. Participants were interviewed at the point of discharge and thereafter at 10 week intervals over a year. The sample size decreased over the study period to 670 participants at the final follow-up. The interviews collected clinical and violence-related information, corroborated by collateral information from participant-nominated individuals. Hospitalisation and arrest records were also analysed. For this study, violence was defined as battery that resulted in physical injury or involved use of a weapon, sexual assaults, or threats made with a weapon in hand. When comparing violent acts at each follow-up, the authors reported no significant differences in rates of violence for those who were assessed as being delusional and those not delusional. At the first follow-up (week 10) of participants that had committed acts of violence, 29 (12%) were assessed as delusional at the prior evaluation. At final follow up (week 50), 11 (9%) were assessed as delusional at the prior evaluation. When the authors analysed specifically for TCO symptoms they found a significant difference was only apparent at the first follow-up evaluation where, in contrast to previous studies, those without TCO symptoms had a significantly higher rate of violence than those with the symptoms. At the first follow-up, 101 (15%) participants who were violent were assessed as having no TCO symptoms at prior evaluation in comparison to 14 (8%) participants who were violent and had TCO symptoms. The authors argued that TCO symptoms were not a significant risk factor for violence. They concluded that violence caused by symptoms was rare and may be due to the consequent social withdrawal, leading to fewer opportunities and less desire to commit violence, in comparison to less seriously ill individuals. There are a number of methodological differences between this study and others which may account for the difference in results. This was a prospective study, whereas previous studies all asked about TCO symptoms and violence during some previous period. This analysis focused on the prospective predictive effect of the presence of TCO delusions. As with all retrospective methods, the other studies may have introduced biases into the data. This study also used slightly different definitions of TCO symptoms and violence.

More recently, studies have explored the wider social-environmental context of individuals with schizophrenia. Wallace et al (2004) conducted a study using cohorts drawn from the state of Victoria's Psychiatric Case Register in Australia. Participants comprised individuals who had received a schizophrenia diagnosis at first contact with mental health services in 1975, 1980, 1985, 1990 or 1995, with confirmation of this diagnosis on at least two-thirds of all subsequent contacts. The cohort comprised 2,861 participants, of whom 1,689 (59%) were male and 1,172 (41%) female. Participants were matched with community controls by age, gender and place of residence. Conviction records were analysed, with violent offences defined as those involving interpersonal violence such as assault, causing serious injury and homicide. The total number of convictions among cases was higher than those of the comparison group (8,791 vs. 1,119). Of these, 235 (8%) of cases had convictions for violent offences in comparison to 52 (2%) participants in the comparison group. Those with schizophrenia were nearly five times (95% CI 3.6-6.2) more likely to be convicted of a violent offence over their lifetime. Participants had 855 separate convictions for violent offences (mean of 3.6 offences per offender), compared to 76 convictions for the comparison group (mean of 1.5 offences per offender). They concluded that male cohort participants, in contrast to males in the community, had significantly more lifetime-to-date convictions (13% vs. 3%), and significantly more convictions in the five-year period after their first admission (5% vs. 1%). The authors suggested that having schizophrenia was a risk factor for offending, in particular violent offending. However, they argued that offending in those with schizophrenia was not likely to be influenced solely by the presence of the active symptoms of schizophrenia itself and was more likely to "reflect a complex interaction between the deficits in social, psychological, and brain function that precede, accompany, and follow the overt disturbances of mental state". However, the study had a number of limitations. Firstly, it used conviction data which may underestimate the levels of violence. Secondly, the comparison group may have included up to 0.7% of those with schizophrenia in the community. In addition, the study was conducted in Australia so may not be generalisable to other countries.

Walsh et al (2004) aimed to establish the prevalence of violence in a sample of patients with schizophrenia living in the community, and to identify socio-demographic and clinical risk factors for violent behaviour. A total of 271 patients with schizophrenia were recruited as part of the UK700 Case Management Study (UK 700 Group, 1999). Participants were interviewed by psychiatrists and research psychologists at baseline and 2-year follow-up. The main outcome variable was

assault, defined as actual physical contact with another person regardless of severity or resulting injury. Three data sources were combined to produce a binary outcome measure for each patient; self-report; case manager report; and case records. Scoring positive on any of these indicated a positive score for assault. Of the 271 subjects with schizophrenia, 176 (65%) were male. The mean age at baseline interview was 38 years (SD = 12 years), with the average length of illness being 11 years (SD = 9 years). Over the 2 years follow-up, 69 (25%) participants physically assaulted another person. Those who assaulted others were significantly more likely to be under 40 years of age (OR 2.05; 95% CI 1.12–3.77), to have a younger age at onset of illness (OR 0.96), to have taken one or more illegal drugs over the previous year (OR 2.06; 95% CI 1.02–4.15), to abuse alcohol (OR 3.12; 95% CI 1.18–8.23), to have received special education (OR 2.74; 95% CI 1.27–5.91), to have committed assault in the last 2 years (OR 2.53; 95% CI 1.34–4.78) and to have previous violent (OR 2.11; 95% CI 0.98–4.51) and nonviolent (OR 1.99; 95% CI 1.14–3.50) convictions. No significant difference was found in gender, ethnicity, marital status, social class, homelessness, employment, degree of social isolation, severity or length of illness, IQ, negative symptoms, threat control override symptoms or the presence of a co-morbid personality disorder.

Swanson et al (2006) supported the findings of Wallace et al (2004), in their study of patients with schizophrenia living in the community, from 57 clinical sites across the United States. Participants were enrolled in the study if they were aged between 18 and 65 years of age, met the diagnostic criteria for schizophrenia and had a condition deemed appropriate to be treated with oral medication. Symptoms were measured by the Positive and Negative Syndrome Scale (PANSS) and violence committed in the last six months was measured by the MacArthur Community Violence Interview with violence being classified as minor violence (simple assault without injury or weapon use) or serious violence (assault using a lethal weapon or resulting in injury, any threat with a lethal weapon in hand, or any sexual assault). Collateral information on violence was also gathered from family members. The sample comprised 1,410 participants, of which 1,048 (74%) were male and 362 (26%) female. The authors found that, of 1,410 participants, 1,140 (81%) reported no violence, 219 (15%) reported only minor violence and 51 (4%) reported serious violence. Those committing minor violence were more likely to be younger in age, female, residing in restrictive housing, residing with family/relatives, had limited/no vocational activity, had a history of police contact and did not feel 'listened to' by family members. Minor violence was more likely to be associated with positive symptoms including delusions, conceptual

disorganisation, hallucinations, excitement, grandiosity, suspiciousness/persecution and hostility, than negative symptoms such as blunted affect, social withdrawal and poor rapport. Those committing serious violence were more likely to be younger in age and have a history of childhood conduct problems and arrest. They noted that five specific symptoms were associated with an increased risk of serious violence, namely hostility (OR 1.65; 95% CI not reported), suspiciousness/persecution (OR 1.46; 95% CI not reported), hallucinatory behaviour (OR 1.43; 95% CI not reported), grandiosity (OR 1.31; 95% CI not reported) and excitement (OR 1.30; 95% CI not reported). They also found that participants with a combination of delusional thinking and suspiciousness/persecution were three times more likely to engage in serious violence. However, they also reported that five specific negative symptoms were significantly associated with a decrease in the risk of serious violence; lack of spontaneity and flow of conversation (OR 0.66; 95% CI not reported), passive/apathetic social withdrawal (OR 0.67; 95% CI not reported), blunted affect (OR 0.75; 95% CI not reported), poor rapport (OR 0.79; 95% CI not reported) and difficulty in abstract thinking (OR 0.84; 95% CI not reported). The authors suggested that risk of violence increased with high positive symptoms, provided negative symptoms were low. They observed that high negative symptoms moderated the effect of positive symptoms and therefore reduced the risk of serious violence. The authors argued that violence in schizophrenia was associated with several factors which included psychotic symptoms, pre-morbid developmental events and the social situation of the individual, for example, whether family circumstances provide "a protective matrix or an opportunity for aggressive interactions". However, this study has a number of limitations, firstly, the study is cross-sectional, therefore it cannot demonstrate causal connections between variables. Secondly, the study relied on self-report data for violence, which may have underestimated the true incidence of socially undesirable behaviours. Thirdly, participants in the study may not be representative of all persons with schizophrenia. The sample was a diverse group of treated schizophrenia patients who were willing to enrol in a medication trial and excluded first episode patients, who might have been less violent.

Coid et al (2006) measured the prevalence of self-reported violent behaviour over a five-year period and its association with individual categories of mental disorder and co-morbidity in a representative sample of adults (aged 16–74 years) in households in Britain. Participants screened positive for psychosis if any two of four criteria were currently present from the Psychosis Screening Questionnaire.

Participants were asked about violent behaviour, these included; whether they had been in fights and had threatened or hurt anyone with a weapon. A total of 8,397 respondents (4,179 men, 4,278 women) were included, of whom 982 (12%) reported violent behaviour in the last five years. Of the 982 respondents reporting violent behaviour in the preceding five years, 644 (66%) met survey criteria for any psychiatric disorder, compared with 2,767 (37%) non-violent respondents, therefore the OR was 3.2 (95% CI 0.35-29.6). For participants with psychosis only they were twice (95% CI 0.10-42.7) as likely to have been violent in the last five years. There are several methodological problems with this study that limit the generalisability of the findings. Violent behaviour was assessed for the last five years via self-report, therefore, it was restricted, and did not include objective information such as arrests or convictions. Self-report may have underestimated true prevalence, as socially undesirable behaviours tend to be less frequently reported. Mental disorders were also derived from self-report questionnaires and therefore subject to the same bias. Nearly a third of participants did not complete the whole study; the non-responders were less likely to be White and more likely to be from lower social class and lower educational level. This could introduce bias through underestimating the true prevalence. Finally, the dating of episodes of mental disorder proved difficult, and therefore it was not identified whether violent incidents related to time periods when symptoms were present.

Soyka et al. (2007) aimed to determine the prevalence of criminal acts post discharge among former inpatients with schizophrenia. All patients were included who met the criteria for a diagnosis of schizophrenia and were treated in the Department of Psychiatry at the Ludwig- Maximilians-University, Munich, between 1990 and 1995 (n = 1662). The psychopathology and clinical history of the patients with schizophrenia had been assessed by an experienced psychiatrist at admission and discharge. One hundred and sixty nine patients (10.17%) committed criminal acts during the follow-up period. Significant predictors of future violence were gender and a lack of insight at discharge. The study does have a number of limitations. Firstly, the sample consisted only of former inpatients, all of whom were treated in a university hospital, so that a selection bias must be considered. The authors state that patients with schizophrenia and offending behaviour are more likely to be admitted to a state mental hospital rather than a university hospital. Secondly, the analysis was based upon a retrospective record search in the national crime register, therefore has the potential to be biased.

Elbogen & Johnson (2009) used data from the National Epidemiological Survey on Alcohol and Related Conditions to prospectively identify risk factors for violent behaviour. A total of 34, 653 participants were included. A structured diagnostic interview designed for use by lay interviewers, was administered to determine historical and recent mental illness. Self-report data was collected on violent behaviour. A total of 294 (0.86%) had a diagnosis of schizophrenia. They found that having a diagnosis of schizophrenia was not associated with violent behaviour. Violent behaviour was associated instead with historical (past violence, juvenile detention, physical abuse, parental arrest record), clinical (substance abuse, perceived threats), dispositional (age, sex, income), and contextual (recent divorce, unemployment, victimization) factors. However, this study does have a number of limitations. As with other studies self-reported violence likely underestimates actual violence and the time lapse between interviews may have affected recall of violent behaviour. Furthermore, although the study examined severe/serious violence, they were not aware if these acts included murder or attempted murder; thus, generalisations as to whether severe mental illness is associated with homicide cannot be made. Also, as in other epidemiological studies, information about schizophrenia was based on self-report; thus, it seems likely that a proportion of subjects with schizophrenia did not report their diagnosis.

Fazel et al (2009) aimed to determine the risk of violent crime among patients diagnosed as having schizophrenia and the role of substance abuse in mediating this risk. They linked data from the Swedish registers of hospital admissions with criminal conviction data from 1973 to 2006. A total of 8,003 patients with schizophrenia were compared with 80,025 general population controls. In patients with schizophrenia, 1,054 (13.2%) has at least one violent offence compared with 4,276 (5.3%) of the general population controls, this gave an OR of 2 (95% CI 1.8-2.2). Patients with co-morbid substance abuse had an increased OR of 4.4 (95% CI 3.9-5.0). However, the study had a number of weaknesses; including reliance on hospital data for diagnosis. As with previous studies not all people with schizophrenia will have been admitted to hospital, therefore, some individuals with schizophrenia would not have been included. Another weakness is that information on co-morbidity was also based on hospital diagnoses, and it is likely that the effects of substance abuse have been underestimated. Also the study relied on official conviction data; other work has shown that this can represent an underestimation of violence. A further limitation is that the study did not have

data on whether treatment was received and the nature of such treatment. It is possible that treatment effects mediated some of the differences.

Most recently Fazel et al (2010a) conducted a systematic review of studies examining the risk of schizophrenia and other psychoses for violent outcomes including homicide. Computerised searches were performed from January 1970 to February 2009, references were hand searched for other references, including grey literature, and non-English language publications were translated. The inclusion criteria covered case-control studies (including cross-sectional surveys) and cohort studies, which allowed an estimation of the risk of violence in patients with schizophrenia and/or other psychoses compared with a general population comparison group. Reports were excluded if: data were presented solely on all convictions not broken down for violence; there was no general population comparison data; studies that used other psychiatric diagnoses as the comparator group; data were superseded by subsequent work and inclusion would involve duplication of data; the cases included diagnoses of non-psychotic illnesses such as personality disorder, and major depression. Twenty studies were identified, the total number of schizophrenia and other psychoses cases in the reviewed studies was 18,423. Of these cases, 1,832 (9.9%) were violent. These cases were compared with 1,714,904 individuals in the general population, of whom 27,185 (1.6%) were violent. The systematic review found that risk of violent outcomes was increased in individuals with schizophrenia. The odds ratios were all above one indicating an increased risk of violence in those with schizophrenia and other psychoses compared with the general population controls. Risk ratios varied between one and seven in men, and between four and 29 in women. The review also found that co-morbidity with substance use disorders substantially increased this risk, with increased odds ratios of between three and 25. They found no significant differences in risk for; those diagnosed with schizophrenia versus other psychoses; if the outcome measure was based on official records versus self-report; and if the study location was the US or Nordic countries compared with other countries. Finally, they reported that increased risk of violence in schizophrenia and the psychoses co-morbid with substance abuse was not different than the risk of violence in individuals with diagnoses of substance use disorders. Therefore schizophrenia and other psychoses did not appear to add any additional risk to that conferred by the substance abuse alone.

4.1.2 Schizophrenia and Homicide

There have been a number of very high profile cases of people with schizophrenia committing homicide.

'On Thursday, 17 December 1992, Jonathan Zito was travelling home by London Underground with his brother Christopher.The brothers stood waiting for a change of train on the Piccadilly Line at Finsbury Park Station, chatting to each other in a crowd of waiting passengers. On the platform was a large, shabbily dressed, black man acting in a bizarre manner. The waiting passengers ignored Christopher Clunis until he came very close behind the Zito brothers on the edge of the platform. Without any warning, Clunis suddenly stabbed Jonathan Zito three times in the face, one of the wounds penetrating upwards over his eye and into his brain. Clunis was a paranoid schizophrenic'.

Coid (1994)

The subsequent inquiry (Richie et al. 1994) concluded that Jonathan Zito died because the care and treatment Christopher Clunis received was 'a catalogue of failure and missed opportunity'. Despite the failings in this case being those of health care professionals, the public perceive people with schizophrenia as extremely dangerous. But what does the research evidence suggest?

Eronen et al (1996) conducted a 12-year study of schizophrenia and homicide risk. In Finland there were 1,423 homicide offenders (1302 male; 121 female) between January 1, 1980 and December 31, 1991. In Finland, almost all homicide offenders are examined by at least one psychiatrist. Of the 1,423 offenders, 86 men and 7 women were diagnosed with schizophrenia. Schizophrenia increased the OR of committing homicide by ten times (8.1-12.5) in men and an OR of 8.7 (95% CI 4.1-18.7) in women. Schizophrenia with alcoholism increased the risk by over 17 times (95% CI 12.4-23.7) in men and over 80 times in women (95% CI 25.7-255). The study may not have included all cases as offenders who committed homicide while in hospital or who committed suicide immediately after the act were not included. Also the OR were calculated using estimates based on US figures, therefore the actual point-prevalence in Finland may be different.

Wallace et al (1998) conducted a case linkage study, whereby they linked data from court records of convictions between 1993 and 1995, with a state-wide

psychiatric case register in the state of Victoria, Australia. Of the 4156 individuals (3838 men, 315 women) found guilty in the higher courts, 1,044 (25.1%) were on the psychiatric case register. There were 168 charges of homicide (152 men, 16 women), of these 62 (36.9%; 55 men, 7 women) were on the Victoria Psychiatric Case Register. A homicide conviction was received in the three-year period by 0.09% of men and 0.01% of women on the register. Men with schizophrenia were 10 times (95% CI 5.45-18.61) more likely to have been convicted of homicide, for women homicide risk was not reported. Men with schizophrenia were significantly more likely to have been convicted of offences if they had also received a diagnosis of substance misuse. During the three-year study, 0.28% of those with schizophrenia with no recorded co-morbid substance misuse were convicted of violent offences compared with 2.2% of those with substance misuse problems. For men with schizophrenia and a history of substance misuse the OR for homicide increased to 28.8 (95% CI 10.67-77.92), therefore men with schizophrenia who also had a record of substance misuse were four times more likely to be convicted of homicide, than those without co-morbid substance misuse. In this study 7.2% of men convicted of homicide had been treated for schizophrenia. The data does indicate that men with schizophrenia have a risk five to 18 times higher than that of the general population of committing a homicide. However, 99.97% of those with schizophrenia, irrespective of coexisting substance misuse, will not commit a homicide in any given year. The authors state that the probability that any given patient with schizophrenia will commit homicide is small (approximate annual risk 1:3000 for men and 1:33,000 for women). Even this level of association may well be accounted for as much by coexisting substance misuse as by schizophrenia itself. However there are a number of limitations. Firstly, the authors state that the case linkage methodology could have lead to an underestimation of the true level of association between being convicted of an offence and having a history of psychiatric contact. Secondly, the study used conviction data which may underestimate the levels of violence. Thirdly, the study was conducted in Australia so may not be generalisable to other countries.

Schanda et al (2004) aimed to investigate the likelihood of participants with major mental disorders committing a homicidal act associated with their illness during a 25-year period. In Austria all defendants must be seen by a psychiatrist. During 1 January 1975 and 31 December 1999 there were a total of 1,087 offenders (961 men, 88.4%; 126 women, 11.6%) with a conviction for murder or manslaughter. Similar to Eronen et al (1996) OR were calculated using estimates based on US figures. Of the 1,087 offenders, 77.4% of male and 70.8% of female offenders

received a diagnosis of schizophrenia. Schizophrenia was associated with an increased risk of homicide for both men (OR 6.53; 95% CI 4.7-9.0) and women (OR 25.86; 95% CI 14.97-44.09). Co-morbid substance abuse/dependence was diagnosed in 46.3% of the male (39% alcohol, 24.4% non-alcohol) and 11.8% of the female participants with schizophrenia (5.9% alcohol, 11.8% non-alcohol). For people with schizophrenia and alcohol abuse/dependence there was a large increase in risk with an OR of 20.70 (95% CI 12.40-34.08). However, there are a number of limitations which need to be highlighted. As already mentioned the OR were calculated using US data, therefore limits the accuracy of the data. The US data was also 1-month prevalence rates rather than lifetime rates, therefore this may have inflated the ORs. Also as with other studies homicide-suicide cases were excluded, therefore the sample would not be representative of all homicides.

Fazel et al (2010b) aimed to investigate the factors associated with homicide after discharge from hospital in patients with schizophrenia. Information on diagnosis was obtained from the Hospital Discharge Register and conviction data from the National Crime Register in Sweden. A case-control design was used, 47 cases who committed a homicide within 6 months of discharge, and 105 controls who did not commit any violent offence after discharge. They found that there were a number of factors associated with homicide post-discharge, these included; being unemployed prior to admission (OR 3.3; 95% CI 1.3-8.6); violence or self harm as main reason for admission (OR 2.0; 95% CI 0.9-4.1); evidence of poor self-care (OR 5.0; 95% CI 1.5-16.7); previously hospitalised for a violent episode (OR 5.7, 95% CI 1.7-18.7); lack of compliance post discharge (OR 3.8; 95% CI 1.5-9.8); and alcohol or drug misuse post discharge (OR 3.2; 95% CI 1.3-7.8). However, this study focused on a small number of cases, and the study lacked statistical power to test the importance of some risk factor. Furthermore, the study was based on medical records, which limited the depth and breadth of the factors investigated.

Most recently Fazel et al (2010a) conducted a systematic review of schizophrenia and violent and including homicide as an outcome (details of the study in section 3.1.1). They identified five studies that reported on the risk of homicide in individuals with psychosis compared with the general population (Modestin & Ammann, 2006; Wallace et al 1998; Fazel & Grann, 2006; Haller et al 2001). There were 261 homicides committed by individuals with schizophrenia and other psychoses compared with 2,999 in the comparison group. The risk of homicide in individuals with schizophrenia was 0.3% compared with 0.02% in the general

population. The odds ratio was 19.5. Within these studies, they compared these estimates with studies that reported on risk of homicide in persons diagnosed with substance abuse problems. The odds ratio for homicide in individuals with substance abuse issues was 10.9. Although the heterogeneity was large, the odds ratios were considerably higher than those for all violent outcomes. They conclude that although the risk of any individual with schizophrenia committing homicide was very small at 0.3%, it does indicate a particularly strong association between psychosis and homicide.

4.1.3 Conclusion

Two decades ago it was suggested there was no increased risk for violence in individuals with schizophrenia and other psychoses (Monahan & Steadman, 1983). Since then numerous large population-based studies have shown a modest association between violence and schizophrenia. Studies suggest there is an increased risk of violence in those with schizophrenia with males suffering from schizophrenia being found to be between four and eight times more likely to be violent and females between three and 23 times more likely to be violent than those without. In examining these figures, however, there is one important caveat; the overwhelming majority of persons with mental illness are not dangerous and not violent. The presence of delusions has been thought to increase the risk of violence, however this connection, is not universally accepted nor supported conclusively by research. Research that has reported increased risk of violence in people with schizophrenia does not prove a main causal link between violence and schizophrenia. Any link is likely to be mediated partially or fully by other variables such as substance misuse, co-morbidity, family circumstances, and deprivation. More research is needed to take into account the wider social context surrounding individuals with schizophrenia in order to understand more fully the association between schizophrenia and violent offending and also to aid future risk assessment.

Table 1: Summary of Schizophrenia and violence studies

Authors	Country	Participants	Methodology/Assessments	Findings
Violence				
Lindgvist & Allebeck (1990)	Sweden	644 participants; 330 (51%) were male and 314 (49%) were female	Stockholm County In-Patient Register; Crime data from the Police Register accessed	Those with schizophrenia committed four times as many violent offences as the general population
Modestin & Ammann (1996)	Switzerland	564 males, aged 18-78 years , 282 with schizophrenia and 282 controls	Clinical records and conviction data accessed	Those with schizophrenia were five times as likely to have been convicted of a violent offence
Swanson et al (1996)	USA	10,066 participants	National Institute of Mental Health Diagnostic Interview Schedule and self-reports of violence	Those with delusions were nearly three times as likely to be violent than those with no psychotic symptoms. Those with a combination of hallucinations and delusions were four times as likely to be violent
Tihonen et al (1997)	Finland	Cohort of 12,058	Medical records from the Finnish Hospital Discharge Register and conviction data from the Ministry of Justice	Those with schizophrenia were seven times more likely to commit a violent offence than the general population
Link et al (1998)	Israel	2741 participants aged between 24-33, positive for	Psychiatric Epidemiology Research Interview, SADS and	The presence of threat/control override symptoms independently predicted fighting and weapon use

		mental disorder	self-reports of violence	in the sample
Taylor et al (1998)	England	1463 participants resident in high secure hospitals, 818 (47%)with schizophrenia	High secure case files	Hallucinations alone were not significant in offending behaviour, but a combination of hallucinations and delusions were significant in the commission of violent offences

Table 1: continued

Authors	Country	Participants	Methodology/Assessments	Findings
Wessely (1998)	UK	538 participants	London Borough of Camberwell Psychiatric Case Register and the Central Criminal Register, held by the Home Office were accessed	Males with schizophrenia were twice as likely to commit violence as those without and for females three times as likely
Applebaum et al (2000)	USA	1136 psychiatric patients, down to 670 at final follow-up	MacArthur Violence Risk Assessment study data; clinical and conviction data	No significant differences in rates of violence for those who were assessed as being delusional and those not delusional
Brennen, et al (2000)	Denmark	Birth cohort of 173,688 men and 162,322 women	Danish Psychiatric Register and the official arrest and conviction data were obtained from the Danish National Police Register	The odds ratio of males with schizophrenia committing a violent offence was 4.6, for women this was 23.2

Mullen et al (2000)	Australia	12,260 (including cases and controls). 3719 diagnosed with schizophrenia in 1975 and 2411 diagnosed in 1985.	Victorian Psychiatric Case Register and conviction data were obtained	Those with schizophrenia were between six and eight times more likely to offend violently than those without
Wallace et al (2004)	Australia	2861 participants, 1689 males and 1172 females (including controls)	Victorian Psychiatric Case Register and conviction data were obtained	Those with schizophrenia were five times more likely to be convicted of a violent offence than those without
Walsh et al (2004)	UK	271 patients recruited from the UK700 Case Management Study	Interviewed by psychiatrists and research psychologists	Violence was associated with being under 40 years of age, younger age at onset of illness, taken one or more illegal drugs, abuse alcohol, received special education. Committed assault in the last two years and previous convictions

Table 1: continued

Authors	Country	Participants	Methodology/Assessments	Findings
Swanson et al (2006)	USA	1140 participants with a schizophrenia diagnosis and living in the community, aged between 18 and 65 years	PANSS; Calgary Depression Scale for Schizophrenia, MacArthur Community Violence Interview	Five symptoms were associated with an increased risk of violence: hostility; suspiciousness; hallucinations; grandiosity; and excitement. Negative symptoms such as lack of spontaneity, social withdrawal, blunted affect, poor rapport and difficulties with abstract thinking decreased violence risk

Coid et al (2006)	UK	8,397 adults aged 16–74 years	Psychosis was identified using the Psychosis Screening Questionnaire and self-reports of violence	Those with psychosis were twice as likely to be violent within the last five years
Soyka et al (2007)	Germany	1662 patients diagnosed with schizophrenia	The psychopathology and clinical history of the patients with schizophrenia had been assessed by an experienced and psychiatrist at admission and discharge	Future violence was associated with gender and a lack of insight at discharge
Elbogen & Johnson (2009)	USA	34,653 adults with a median age of 43 years	The National Institute on Alcohol Abuse and Alcoholism Alcohol Use Disorder and Associated Disabilities Interview Schedule–*DSM-IV* Version was used to assess mental illness and self-reports of violence	Schizophrenia was not associated with violent behaviour
Fazel et al 2009	Sweden	8,003 patients with schizophrenia	Swedish registers of hospital admissions and official criminal conviction data	Patients with schizophrenia were twice as likely to have at least one violent offence. Risk increased to four times for co-morbid substance abuse.

Table 1: continued

Authors	Country	Participants	Methodology/Assessments	Findings
Homicide				
Eronen et al (1996)	Finland	1,423 homicide offenders (1302 male; 121 female)	Psychiatrist diagnosis of all homicide offenders	Those with schizophrenia were 10 times more likely to have committed homicide. Schizophrenia with alcoholism increased to 17 times.
Wallace et al (1998)	Australia	168 adults charged with homicide	Victoria Psychiatric Case Register	Men with schizophrenia were 10 times more likely to have been convicted of homicide. For men with schizophrenia and a history of substance misuse the risk of homicide increased to nearly 30 times
Schanda et al (2004)	Austria`	1,087 homicide offenders	All defendants are seen by a psychiatrist	Schizophrenia was associated with an increased risk of committing homicide, nearly seven times in men and 26 times in women.
Fazel et al (2010b)	Sweden	47 homicide cases	Hospital Discharge Register and National Crime Register	Factors associated with homicide post-discharge, included; being unemployed prior to admission; violence or self harm as main reason for admission; evidence of poor self-care; previously hospitalised for a violent episode; lack of compliance post discharge and alcohol or drug misuse post discharge

4.2 Schizophrenia and Sexual Violence

Sexual violence is reported in almost all countries, in all socioeconomic classes, and in all age groups (WHO, 2002). The WHO also stated that the prevention of sexual violence was a significant public health challenge and called for more research on risk factors for victims and perpetrators of sexual violence (ibid). Although there is evidence demonstrating that schizophrenia increases the risk of violent crime (see Table 1), some authors suggest that severe mental illness has very little to do with sexual offending (Gordon & Grubin, 2004; Hanson & Bussière, 1998). Despite this, links between schizophrenia and sexual offending have been explored in a smaller number of studies. These studies do tend to have small and highly selective samples. This review will discuss each study in turn (see Table 2 for a summary of the studies).

Packard & Rosner (1985) reported that those with schizophrenia accounted for 2 – 5% of individuals with mental illness in the sex offender population. In a more recent study, Raymond et al (1999) found schizophrenia in 2% of male sexual offenders recruited from sex offender treatment programmes. Several studies of mental illness in sexual offenders have shown they are more likely to suffer from other forms of mental illness, such as personality disorder, anxiety disorder, depression and alcohol and drug misuse, rather than schizophrenia (e.g. Raymond et al 1999, Kafka & Hennen, 2002), however both these studies focused on small samples of paraphilic and paedophilic offenders, therefore the results must be interpreted with caution. This apparent low prevalence of schizophrenia in sexual offenders and the limited number of studies has led to this group being described as "poorly studied" as it remains unclear whether sexual offending behaviour is associated with symptoms of schizophrenia (Alish et al 2007).

Craissati & Hodes (1992) conducted a descriptive study of psychotic patients resident at a regional secure unit in the UK, who had been convicted of serious sexual assaults on adult women between 1986 and 1990. Participants were identified through the clinic case register and hospital notes, with court depositions used to compile demographic, family, personal, psychiatric and offending histories. Semi-structured interviews were used to gather missing data and assessments conducted of how participants currently understood their offences. The sample comprised 11 participants; 10 (91%) had a diagnosis of schizophrenia. Only nine

participants were interviewed as two were transferred before interviews could take place. The authors reported that, when the participants were asked to think back to the time of their offence, three (27%) participants stated they believed they committed their offence due to their illness, two (18%) reported feelings of confusion and six (55%) described experiencing feelings of sexual arousal and impulsivity. They also found evidence that the mental state of six (55%) participants had been deteriorating in the weeks prior to their offence due to discontinued medication. Of these, two (33%) reported having hallucinations at the time of their offence. They reported that, of the four (36%) participants with no previous psychiatric history, one (25%) became acutely psychotic one week before committing the offence, one (25%) became acutely psychotic after four months in custody and two (50%) displayed evidence of withdrawn and irrational behaviour before the offence, developing into an acute psychotic state six months later. The authors suggested that the relationship between mental illness and sexual offending was complex. In describing a relationship between schizophrenia and sexual offending they suggested that criminal sexual behaviour post-dated schizophrenia and that sexual offences were committed in the context of psychotic symptoms but during the early phase of illness when inhibitory controls were breaking down but florid symptoms remained concealed. They concluded that it was a result of these inhibitory controls breaking down during psychosis that those affected gave in to their sexual impulses. Findings must be interpreted with caution as the study has several methodological limitations. Firstly, the sample size was very small, with no control group. Secondly, the sample was highly selective as it was drawn from sexual offenders in one secure unit. It must be also acknowledged that sexual crimes often go unreported and conviction rates are lower than for other types of crime. It may also be that offenders with psychotic illness may be more likely to be apprehended than other sexual offenders. Finally, the study used self-report methods which may have underestimated the impact schizophrenia had on sexual offending.

Sahota & Chesterman (1998a, 1998b) conducted a study of 20 male mentally ill sexual offenders from a regional secure unit in the UK. Of the 20 participants, 12 (60%) suffered from schizophrenia at the time of the offence. Of these, seven (58%) reported positive psychotic symptoms such as delusions and hallucinations at the time of their offence, however, they considered that these symptoms were not directly related to their sexual offence. Instead, they reported factors such as sexual frustration, anger, arousal and revenge as being causal to their offending. The authors reported that, participants had low scores for self-esteem and sexual

knowledge, and high scores for sexual fantasy, a finding similar to non-mentally ill sex offenders. As a result of these similarities they suggested, consistent with Craissati & Hodes (1992), that the presence of schizophrenia may only provide a partial explanation of sexual offending and that sexual parahilias may play a role in offending within this group. However, the generalisability of findings are limited due to the small and highly selective sample used.

The view that schizophrenia may only partially explain sexual offending behaviour is supported by Smith & Taylor (1999). They identified all in-patients resident in hospital across England and Wales during May 1997, following a conviction for an index sexual offence (rape, attempted rape or indecent assault of a female aged 16 years or above). Participants were identified from the case files of the Mental Health Unit of the Home Office and information from these files was analysed by the researchers. The sample comprised 80 male sexual offenders with schizophrenia. They reported that, of these 80 participants, the majority committed their first sexual offence after the onset of schizophrenia. They found that nine participants (11%) acquired convictions for sexual offences prior to the onset of schizophrenia and a further 14 (18%) self-disclosed an offence, with third party corroborative information indicating veracity, but had not received a formal conviction prior to the onset of schizophrenia. The remaining participants (57; 71%) had behaved in a way described as "a sexually offensive manner" after the onset of schizophrenia. The authors argued, like Sahota & Chesterman (1998a, 1998b), that sexual parahilias may be relevant and that elements of pre-morbid sexual deviancy may become incorporated into the offender's psychotic symptoms of their subsequent developing schizophrenia. When exploring the presence of delusions and hallucinations at the time of the sexual offence, the authors reported that 75 (94%) participants experienced delusions. Sub-categories included 14 (19%) participants with delusions directly related to the offence, 20 (27%) participants with indirectly related delusions and 41 (54%) participants with coincidental delusions. The authors observed that 62 (78%) participants experienced hallucinations at the time of their sexual offence. Again, sub-categories included 12 (19%) with directly related hallucinations, 14 (23%) with indirectly related hallucinations and 36 (58%) with coincidental hallucinations. However, when analysing for specific delusional and/or hallucinatory drive present at the time of the sexual offence, this was present in only 18 (22%) participants. When it was present both delusions and hallucinations occurred simultaneously.

It was argued that, even though nearly all participants had either delusions or hallucinations at the time of the sexual offence, it did not necessarily follow that their behaviour was driven or influenced by them. The authors suggested that, even in instances where hallucinations involved explicit instructions to carry out the sexual offence, other elements were involved, such as situational factors and an individual's resistance to follow hallucinatory commands. They argued that schizophrenia and its resulting symptoms were relevant to sexual offending; however, psychosis and sexual offending do not occur in isolation and other factors were often salient and a direct symptom relationship was relatively unusual. Although this study had a larger sample size and identified cases nationally, it focused on people detained under the Mental Health Act and therefore excluded either those convicted of less serious offences or those who were not sufficiently ill to be hospitalised at the time of their conviction for the sexual offence. In addition, sex offenders experiencing psychotic symptoms resident in prison rather than hospital, were also excluded. Data were collected from hospital records and as a result may be dependent on the clinical judgement of others.

Smith (2000) also challenged Craissati & Hodes' 1992 findings. Smith studied the motivation of sexual offending in schizophrenic men using the same sample of 80 participants studied in Smith & Taylor (1999). It was reported that the primary motivations for sexual offending were sexual (43 participants, 54%); opportunistic (23 participants, 29%); vindictive (9 participants, 11%); and pervasively angry (5 participants, 6%). Smith (2000) argued that subdividing sexual offenders with schizophrenia into these classifications was effective for understanding offending behaviour and that attributing sexual offending to the effects of psychotic symptoms alone may lead to neglect of other psychosocial factors as potential areas of treatment, such as "social skills deficits, poor anger control, limited empathy, cognitive distortions and deviant sexual fantasy".

More recently there have been larger case control studies investigating sexual offending in those with schizophrenia. Fazel et al (2007) conducted a case control study using data from the Swedish Hospital Discharge Register and Swedish Crime Register. They identified 8,495 male cases with one or more clinical diagnoses on discharge, who had been convicted of a sexual offence (defined as rape, sexual coercion, indecent exposure, sexual harassment or child molestation) between 1988 and 2000. Of these, 130 (2%) had a diagnosis of schizophrenia. Controls were drawn from a random sample of males in the general population, excluding those under 15 years of age, and those convicted of a sexual offence. The number

of controls constituted 19,935 males. Of these, 51 (0.3%) had a diagnosis of schizophrenia. Sexual offenders were six times (OR 6.3; 95% CI 5.7 – 6.9) more likely to have a history of psychiatric hospitalisation compared to the general population. They observed that sexual offenders were five times (OR 4.8; 95% 3.4 -6.7) more likely to have schizophrenia than the general population. In describing their results, Fazel et al (2007) argued that, although the link between schizophrenia and sexual offending is uncertain, psychotic symptoms may trigger sexual offending. They also argued that schizophrenia may act as a non-specific disinhibiting factor that interacts with other risk factors present at the time of the offence, such as being intoxicated with alcohol or drugs.

This study had several strengths compared to those preceding it. Firstly, it used the Swedish Crime Register which included data on sexual offenders who are cautioned or fined and also those who, following a diagnosis of a severe mental illness, are transferred to a secure hospital. Secondly, its use of official conviction data avoided the reporting bias that can be associated with the self-report of sexual offending. Thirdly, it had a larger sample size than other studies. However, there were some limitations affecting its generalisability. The study only used in-patient data and therefore excluded sexual offenders with schizophrenia in the general population. Secondly, reliance on conviction data can underestimate sexual offending and therefore prevent generalisation to non-convicted sexual offenders, for example, those who commit offences for which they have not been apprehended. Thirdly, those with severe mental illness may be disproportionately caught and convicted compared to those without such illnesses. This may lead to an overestimate of the contribution of mental illness to sexual offending.

In contrast to Fazel et al (2007) who used a control group drawn from the general population, Alish et al (2007) retrospectively compared two separate control groups to their cases. The overall sample comprised of 173 participants; of these, 36 (21%) participants were selected from the in-patient population of a forensic psychiatric unit in Israel, convicted of a sexual offence between 2000 and 2004, and diagnosed with schizophrenia (scz-sex). The two control groups were also drawn from the same in-patient population detained between 2000 and 2004. The first control group comprised of 80 (46%) participants diagnosed with schizophrenia, but had been convicted of any criminal offence other than sexual offences (scz-no sex). The second control group comprised of 57 (33%) participants who had been convicted of a sexual offence but did not have a diagnosis of schizophrenia (no scz-sex). The three groups were compared on

demographic and clinical variables, which included the Positive and Negative Symptom Scale (Kay et al., 1987) and the Clinical Global Impression Scale (Guy, 1976). When analysing for each sexual offence in the scz-sex group, only one (3%) participant's sexual offending was found to be directly related to psychotic behaviour. They found that for all other sexual offences committed by this group, no direct association could be made with any psychotic experiences. The authors also found both differences and similarities between the scz-sex group and the two control groups. The scz-sex group were similar to the no scz-sex group as regards context and nature of their crimes (rates of recidivism, sexual crime type, paraphilia diagnosis, age of victim and incest levels). However, the scz-sex group were also similar to the scz-no sex group as regards clinical symptomology (psychiatric hospitalisation, Attention Deficit Hyperactivity Disorder, previous criminal record). The authors suggested that sexual offending in those with schizophrenia results from a co-morbidity of two clinical phenomena (the schizophrenia and the sexually deviant behaviour) rather than being mutually exclusive.

The authors described significant differences between the scz-sex group and the scz-no sex group in relation to anti-social personality disorder with the scz-sex group having a 36% prevalence rate in comparison to the scz-no sex group prevalence rate of 65%. The authors suggested that sexual offenders with schizophrenia were more similar in personality to the general sexual offender population than to the general schizophrenia population and that sexual offending in this group may not arise from schizophrenia itself, but may be a result of sexual deviancy unrelated to schizophrenia and/or the characteristics of personality disorder. Although this study explored sexual offenders and schizophrenia over a five-year period and compared three different groups its generalisability is limited for several reasons. It had a small sample size and was conducted in Israel. Unlike Fazel et al (2007), the study did not have a non-criminal control group to draw comparisons with. The study had a relatively high average sample population age (35.3 years), with those under 18 years of age excluded from the study; therefore results may not be generalisable to younger males.

4.2.1 Conclusion

In conclusion, the relationship between schizophrenia and sexual violence is unclear. Most studies tend to focus on adult males who have sexually offended against adult females. There is a paucity of research on the mentally ill who engage in other deviant sexual practices, particularly child abuse and non-contact paraphilias such as exhibitionism. Understanding of sexual offending in those with schizophrenia is also limited by the fact that it is a relatively rare behaviour. Currently there are no well designed prevalence studies and there are issues surrounding the under-reporting of sexual offences. Although some studies have argued that schizophrenia is associated with sexual offending, the exact role it plays is unclear, as are the potential impacts of other psychosocial factors and sexual parahilias. More research is needed to clarify whether sexual offending is related to schizophrenia and its symptoms, sexual parahilias, concomitant factors or a combination of these. Future research needs to involve larger samples with both criminal and non-criminal control groups and to include women and young offenders. However, it must be acknowledged that robust future research involving all these factors may be difficult to conduct due to the small numbers of convicted sexual offenders with schizophrenia.

Table 2: Summary of Schizophrenia and sexual violence

Authors	Country	Participants	Methodology/Assessments	Findings
Craissati & Hodes (1992)	UK	Nine sex offenders with schizophrenia resident at a secure psychiatric unit	Clinical records and conviction data accessed	Thirty-three percent suffered hallucinations at the time of their offence. Twenty-seven percent believed that they had offended because of their illness.
Sahota & Chesterman (1998a & b)	UK	20 male sex offenders with MI, 12 with schizophrenia	Multiphase Sex Inventory; Culture Free Self-Esteem Inventory; Rathus Assertiveness Schedule	58% were positive for psychotic symptoms at the time of their offence. They concluded that offending was related to a combination of MI and sexual parahilias.
Smith & Taylor (1999)	UK	80 male sex offender with schizophrenia in psychiatric in patient facility	Mental Health Unit files and Home Office information accessed	At the time of their offence, 94% were delusional and 78% were hallucinating. These symptoms co-occurred with but did not necessarily influence offending.
Smith (2000)	UK	80 male sex offender with schizophrenia in psychiatric in patient facility	MTC: R3	The main motives for offending were: 54% sexual; 29% opportunistic; 11% vindictive; and 6% passively angry. Offending can't be attributed just too psychotic symptoms as other psycho-social factors must be taken into account.
Alish et al (2007)	Israel	173 participants. 36 schizophrenic sex offenders, 80 schizophrenic general offenders and 57 sex offenders without schizophrenia	PANSS; Clinical Global Impression Scale	Both the schizophrenia groups had similar clinical symptoms. The context and the nature of the crimes were similar for both sex offender groups.
Fazel et al (2007)	Sweden	Cases were 8495 sex offenders with a clinical diagnosis; controls were 19,935 males with a clinical		2% of cases and 0.3% of controls had schizophrenia. Sex offenders were 6 times more likely to have a psychiatric hospitalisation than the general population. Sex offenders were 5 times more likely to have

| diagnosis but no offending history | schizophrenia than the general population. Schizophrenia was a disinhibiting factor interacting with other risk factors such as substance abuse. |

PANSS = Positive and Negative Symptoms Scale

SADS = Schedule for Affective Disorders and Schizophrenia

MTC: R3 = Massachusetts Treatment Centre Rapist Typology Version 3

5 Mood/Affective Disorders

Mood/affective disorders are described in the two major diagnostic classification systems: the DSM-IV (APA, 2000) ICD-10 (WHO, 1992). Within the DSM-IV and the ICD-10 there are two main groups of mood disorder, depressive disorders and bipolar disorders, which are classified according to experiences of either manic or hypomanic episodes. Depressive disorders include dysthymia and major depression, often termed unipolar depression, where a person experiences low mood, reduced energy and decrease in activity; and includes several sub-groups such as atypical depression, melancholic depression, psychotic depression, catatonic depression, postpartum depression and seasonal affective disorder. Bipolar disorder (formerly termed manic depression) involves a person experiencing alternating periods of manic and depressive episodes. In manic phases an individual may be hyperactive, easily distracted, grandiose and experience flight of ideas, pressured and/or diminished need for speech (Eaves, Tien & Wilson, 2000).

Taylor & Gunn (1984) conducted a study of psychiatric morbidity in the male remand population and categorised mental illness as psychosis or neurosis. They found that 1.2% of the men had affective psychosis and all of these were convicted of violent offences. Many other studies have also used this classification, based primarily on the presence of psychosis, however diagnostic classifications such as the DSM-IV and ICD-10 have moved away from this dichotomy. This makes it difficult to assess the relationship between mood disorders and violence, as some patients with a primary mood disorder will be included under the umbrella term of 'psychosis' and therefore do not differentiated from those with schizophrenia. The ONS survey of prisoners in England and Wales (Singleton, 1998) also considered diagnoses under the broad categories of psychosis and neurosis and found affective psychosis in 2% of prisoners. Evidence of a depressive episode was found in 17% of remand and 8% of sentenced males and 21% of remand and 15% of sentenced females. The study, however, did not look at severity of depression i.e. diagnosis of major depression. Birmingham (1996) also investigated psychiatric morbidity in remand prisoners in England and distinguished between mood disorders with and without psychosis and found that 0.7% of the prisoners had affective psychosis and 2.3% had a major mood disorder.

5.1 Mood/Affective Disorders and Violence

There are a number of large scale studies that have attempted to establish a link between schizophrenia and violence but any association between mood disorders and violence has been comparatively overlooked. This section will discuss each study in turn (see Table 3 for a summary of the studies).

Collins & Bailey (1990) investigated various affective disorders, in particular dysthymia, chronic depressed mood lasting at least two years (DSM-III) and recurrent depression, two or more major depressive episodes (DSM-III) and their relationship to violence. Their sample consisted of 1,140 adult males admitted to prisons in North Carolina, USA, after being convicted of a serious offence during 1983. Participants were interviewed using the Diagnostic Interview Schedule DSM-III criteria, with the relationship between affective disorders and violence being analysed using six violence indicators. Indicators included incidents of fighting in adulthood, recent arrests for violent offences (homicide, rape, assault, robbery), current incarceration for expressive violence (homicide, rape, assault) or instrumental violence (robbery) and lifetime arrests for expressive violence or instrumental violence. They reported that 34 (3%) had a dysthymia diagnosis and 34 (3%) a diagnosis of recurrent depression. With regards to symptoms, 194 (17%) participants had one manic symptom and 137 (12%) two or more manic symptoms. Two hundred and seventeen (19%) had one symptom of depression, 251 (22%) two or three symptoms of depression and 171 (15%) four or more symptoms of depression. Logistic regression analysis was carried out to examine relationships between mood disorder and violence. There were significant relationships between dysthymic and recurrent depression and violence, the relationship between manic symptoms and violence was weak. This study is limited as it does not consider the temporal relationship between the onset of the disorder and the violent act; it is not known whether the affective disorder was present at the time of the violent act or developed subsequently, making it difficult to establish a causal relationship between the two. In addition, the study drew its participants from an incarcerated population and therefore its generalisability is limited.

In a study comparing a sample of participants with affective disorders to a control group, Modestin et al. (1997) investigated criminal behaviour in male patients who had been hospitalised at least once at the Psychiatric University of Berne between 1985 and 1987, were aged between 18 and 78 years, and met the research diagnostic criteria for either minor, intermittent or major depressive disorder, or bipolar affective disorder. Their sample comprised of 261 participants, with a comparison group from the general population matched for age (plus or minus two years), sex, marital status and occupational level. Hospital records were analysed, as were conviction records from the Swiss Central Criminal Record Department. The authors found that, of the affective disorder group, 110 (42%) had a criminal record in contrast to 80 (31%) of the control group. For violent offences (defined as murder, manslaughter, assault with injury, robbery, threatening acts, rape and child abuse) they reported that 12 (5%) participants with affective disorders had a violent offence conviction in comparison to three (1%) of the control group. Those with affective disorders were four times (OR 4.14; 95% CI 1.16-14.86) more likely to be convicted of a violent offence. The authors also reported that a higher proportion (30%) of the affective disorder group had spent time in prison, in comparison to the control group (15%), stating that those with affective disorders were twice (OR 2.4; 95% CI 1.56-3.70) as likely to have been to prison. When investigating the sub-groups of affective disorders, the authors found no significant difference between the groups for violence. Interestingly, this study also looks at demographic differences between patients with and without a criminal record. Patients with a criminal record were significantly younger, more likely to be single, from a low social class, have a personality disorder, and a history of substance misuse. Although this study suggests an increased risk of violence in those with affective disorders in general, it is limited as it used conviction records as the measure of offending, thus underestimating the true extent of offending. Selection bias was introduced by including only participants who had been hospitalised at least once which may have excluded those with less severe disorders.

Tiihonen et al (1997) conducted a prospective unselected 1966 birth cohort study of 12,058 participants from Northern Finland. They reported that, of 503 male offenders, six had affective disorders with psychotic features. Of these, two (33%) had at least one registered offence, with one (17%) having at least one violent registered offence. Those suffering from affective disorder with psychotic features were six times (OR 6; 95% CI 1.1-34.7) more likely to have a registered crime and six times (OR 6; 95% CI 1-76.2) more likely to have a registered violent crime. Although this study was an unselected birth cohort, it only included data on

hospitalised people. Therefore additional people with untreated affective disorder would alter the ORs reported. The study does not differentiate between types of affective disorders and also due to the very small numbers with affective disorders the confidence intervals reported are very wide, suggesting uncertainty in the accuracy of the OR.

Brennan et al (2000) conducted a birth cohort study of 335,990 participants in Denmark born between January 1, 1944, and December 31, 1947. Records of psychiatric hospitalizations and official arrest and conviction data throughout 1991 were obtained. They reported that, of the 729 men with affective psychoses, 5% had been arrested for a violent offence and, of the 1,234 women with affective psychoses, 0.5% had been arrested for a violent offence. Men with affective psychoses were twice (OR 2; 95% CI 1.4-2.8) as likely and women four times (OR 3.9; 95% CI 1.7-8.9) more likely to be arrested for a violent offence, than men or women without the disorder. This study however has a number of limitations. Firstly, the study was based on those who had been hospitalised in the past, therefore they may not be representative of all people with affective psychosis, as it is possible that the most violent psychotic individuals would be more likely to be identified and hospitalised than those who are less severely ill. Secondly, the control group was the general population; therefore there was no effort to control for the non-specific effects of mental illness. Thirdly, the study was conducted in Denmark, a country with relatively low rates of criminal violence. Denmark does not have the poverty, gang, and substance abuse problems that exist in some other countries. Fourthly, the study does not differentiate between different types of affective disorders.

Hodgins et al. (1999) conducted a two year follow-up study of 30 participants with affective disorder (18 with bipolar disorder and 12 with major depression) and 74 participants with schizophrenia after discharge from one of three hospitals in Canada, of which one was secure and two were general psychiatric units. On discharge participants were interviewed using the SADS. Information was also gathered from hospital files and criminal records analysed. In the two year follow-up period the authors reported that twice as many participants with affective disorders (33%) were convicted of a criminal offence than those with schizophrenia (15%). They also reported an equal proportion of those with major depression and with bipolar disorder were convicted of a criminal offence. In relation to violent crime (defined as homicide, attempted homicide, hostage taking, assault, possession of firearms, use of firearms, armed robbery and sexual aggression),

nine participants with affective disorders (30%) had been convicted of a violent crime, in comparison to seven (10%) of those with schizophrenia. Although this study supports previous findings of increased risk of offending for those with affective disorders, it is limited due to its small sample size and data attrition as the follow-up period progressed. Also there were significant differences between the two groups at baseline, for example the participants with mood disorder were significantly more likely to have a lifetime diagnosis of alcohol abuse.

Corrigan & Watson (2005) investigated various affective disorders and their relationship to violent behaviour by analysing data from the National Co-morbidity Study, University of Michigan, which was a multi-stage area probability sample of community participants from 48 American states, aged between 15 and 54 years of age. The study was conducted between 14th September 1990 and 6th February 1997 and included 8,098 respondents of which a subset of 5,865 completed additional questionnaire items, which included indices of violence, psychiatric diagnoses based on the DSM-III and self-reported violent behaviour. The self-reported violent behaviour involved participants disclosing whether they had been in serious trouble with the police over the last 12 months and how many times in that period they had been involved in a physical fight in which they, or someone else, had sustained an injury requiring treatment by a doctor or nurse. When analysing for mental illness and violence over lifetime, the authors reported that, of the 382 participants with dysthymia, 18 (5%) reported violence. They observed that, of 992 participants with major depression, 46 (5%) reported violence and, of 93 participants with bipolar disorder, 11 (12%) reported violence. Analysis of mental illness and violence over the preceding 12 months found that of 148 participants with dysthymia, 13 (9%) reported violence; 42 (7%) of 586 participants with major depression reported violence and 11 (12%) of 71 participants with bipolar disorder reported violence. The authors suggested those with dysthymia were five times as likely to report violent behaviour, those with major depression four times and, most significantly, those with bipolar disorder 10 times as likely to report violent behaviour than those without mental illness. They also reported that those with bipolar and drug or alcohol abuse problems were eight times as likely to report violent behaviour. Although this study suggested an increased risk of violence for those with affective disorders, in particular bipolar disorder, it must be acknowledged that it is limited by its reliance on self-report measures of violent conduct and more importantly the authors do not report odds ratio data or confidence intervals .

Corrigan & Watson (2005) suggested the greatest risk of violence was for those with bipolar disorder. Quanbeck et al (2004) retrospectively identified prisoners at a Los Angeles county jail and evaluated them between July 1999 and January 2000. Participants were included if they had a DSM-IV diagnosis of bipolar disorder and a previous record of community treatment in the Los Angeles mental health system. The sample comprised of 66 participants, of which 37 (56%) were men and 29 (44%) women, with an age range of 22 – 60 (mean age 36). They were compared to a group of patients with bipolar disorder who had not been arrested during the course of their psychiatric treatment. The comparison group comprised 54 participants of which 17 (31%) were male and 37 (69%) female with an age range of 21 – 24 years of age (mean age 41). They found that, at the time of arrest, 49 (74%) prisoners with bipolar disorder were in a manic or mixed phase of their illness, with 17 (26%) showing symptoms of depression. Violent crimes were the most common in this group constituting 35 (41%) of 85 charges overall. The most common violent charge was for terrorist threats (29%), followed by assault (14%). The authors reported that 53 (80%) had a pre-existing criminal record at the time of arrest. When investigating substance abuse, those with bipolar disorder had significantly higher rates of co-morbid substance abuse than the comparison group; 50 (76%) of bipolar participants had co-morbid substance abuse compared to 10 (19%) of the control group.

More recently, Graz et al (2009) studied criminal behaviour and violent crime in former in-patients with affective disorder. The authors reviewed the national crime register for offences committed by 1,561 patients with affective disorder who had been treated between 1990 and 1995 in the Psychiatric Hospital of the University of Munich. Their sample comprised of 512 (33%) men and 1,049 (67%) women, of which 756 (49%) participants had bipolar disorder, 89 (6%) manic disorder and 702 (45%) major depression. They found a moderate association between affective disorders and criminality with 65 (4%) participants being convicted in the seven to 12 years following their discharge from hospital. Of these, 21 (32%) participants had committed a violent crime. They reported that men were six times more likely to commit a violent crime after discharge than women, with the greatest difference being between those men with manic disorder and major depression who were 10 times more likely to commit violent crimes than women. This study has a number of limitations. Firstly, the authors do not report odds ratios or confidence intervals for their data. Therefore this makes comparison with previous studies difficult. Although findings suggest an association between violence and affective disorders,

its generalisability is limited due to selection bias, as the study only included former in-patients who are likely to suffer from severe affective disorders.

Fazel et al (2010) conducted a longitudinal investigation using general population and unaffected sibling controls. Data were collected from hospital registers on discharge and diagnoses. Violent crime data were collected from official conviction data in Sweden. Participants were individuals with 2 or more discharge diagnoses of bipolar disorder (n=3743), general population controls (n=37,429), and unaffected full siblings of individuals with bipolar disorder (n=4059). During follow-up, 314 individuals with bipolar disorder (8.4%) committed violent crime compared with 1,312 general population controls (3.5%) (OR 2.3; 95% CI 2.0-2.6). The risk was mostly confined to patients with substance abuse comorbidity (OR 6.4; 95% CI 5.1-8.1). The risk increase was minimal in patients without substance abuse comorbidity (OR 1.3; 95% CI 1.0-1.5), which was further attenuated when unaffected full siblings of individuals with bipolar disorder were used as controls (OR 1.1; 95% CI 0.7-1.6). They found no difference in rates of violent crime by clinical subgroups (manic vs. depressive or psychotic vs. nonpsychotic). However this study did rely on hospital data, therefore it only included people who had been hospitalised. Also the reliance on official conviction data means this may be an underestimation of the true violence rates. However this study does suggest that there is a clear association between bipolar disorder and violence in individuals with substance abuse comorbidity. The risk associated with a bipolar diagnosis per se appears low.

5.1.1 Conclusion

There is some evidence to suggest an increased risk of violence for those with affective disorder, in particular those with bipolar disorder. However, there has been relatively little research focusing specifically on affective disorders, with many patients suffering from affective psychosis being grouped with schizophrenia patients in studies, or alternatively, studies do not differentiate between types of affective disorders. Therefore it makes it very difficult to disentangle links between different affective disorders and violence. Better designed studies are needed, based on larger and more wide-ranging samples, which compare different affective disorders, symptoms and symptom severity, types of violence and the temporal relationship between affective disorders and violence. More research is also needed to control for the effect of substance abuse, as this makes it difficult to

clearly establish the precise nature of the relationship between affective disorder and violence.

5.2 Mood/Affective Disorders and Sexual Violence

Most studies have not specifically investigated the relationship between affective disorders and sexual violence; a possible association has been highlighted through broader investigation of mental illness and sexual violence as a whole. Studies looking at a relationship invariably have small sample sizes, making it difficult to define the exact nature of the relationship.

Modestin et al (1997) investigated criminal behaviour in male patients who had been hospitalised at least once. Their sample comprised of 261 participants, with a comparison group from the general population matched for age (plus or minus two years), sex, marital status and occupational level. Hospital records were analysed, as were conviction records from the Swiss Central Criminal Record Department. The authors found that, of the affective disorder group, 110 (42%) had a criminal record in contrast to 80 (31%) of the control group. They found that there were no significant differences in rates of sexual offences between the two groups.

McElroy et al (1999) studied 36 convicted male sexual offenders admitted to a residential treatment facility in the USA, from prison, jail or probation. Participants received the Structured Clinical Interview for DSM-IV Axis I and II disorders (SCID I & II) and histories of criminal justice contact, sexual and physical abuse, family relationships and mental illness were evaluated. The mean age of participants was 33 years, with a range of 18 – 47 years of age. They found a high lifetime prevalence of DSM-IV Axis I disorders, with 22 (61%) having affective disorder. Of these, 13 (59%) had bipolar disorder and 8 (eight36%) had major depression. The authors reported that, when the 22 participants with affective disorders were divided into those with (16 participants, 73%) or without paraphilias (6 participants, 27%), those with had significantly higher rates of affective disorders. This study, however, has a number of limitations. These include a very small sample size, psychiatric diagnosis made by unblinded researchers, and lack of any control group for comparison. Also the study relied on self-reporting of sexual fantasies, deviant behaviours and sexual offences. Therefore this may have lead to an underestimation of offences.

In a similar, but larger study, Raymond et al (1999) interviewed 45 male paedophiles taking part in either a residential or outpatient sexual offender treatment programme in the USA. Participants were interviewed using the SCID I & II. They reported that affective disorders were the most common disorders in their sample, with 30 (67%) participants having a lifetime prevalence of affective disorder. Of these, 25 (83%) had major depression. The authors observed that 14 (31%) had a current affective disorder and, of these, 9 (64%) had major depression.

Dunsieth et al (2004) conducted a study of 113 consecutive male sexual offenders referred from prison, jail or probation to a residential treatment facility in the USA. Participants were interviewed using the SCID I & II, and their legal, sexual and physical abuse and family psychiatric histories were also assessed. They reported that 66 (58%) had a lifetime diagnosis of affective disorders. Of these, 40 (61%) had bipolar disorder and 27 (41%) major depression. In addition, of these 66, the 61 (92%) with paraphilias had significantly higher rates of affective disorders than the five (8%) without. This is consistent with the findings in McElroy et al (1999). The study also suffers from the same limitations as McElroy et al (1999), but additionally as the participants were referred from prison or probation to enter a voluntary treatment programme, the study was unable to assess how representative the cohort was in comparison to sex offenders in the general population or other forensic populations.

Leue et al (2004) interviewed 55 male sexual offenders in State Forensic Hospitals in Germany, using SCID I & II, and mini-DIPS, a short version of the Diagnostic Interview for Psychiatric Disorders. They reported lifetime prevalence rates of 31 (56%) for affective disorders, 29 (53%) for major depression and 3 (6%) for dysthymia. In contrast to McElroy et al (1999), major depression was the most prevalent disorder and, importantly, there was no significant difference between participants with paraphilias and those without regarding lifetime prevalence rates of affective disorders. The authors acknowledged their study may not be generalisable to all sexual offender groups as their sample comprised of those in State Forensic Hospitals.

Fazel et al (2007) conducted a case control study using data from the Swedish Hospital Discharge Register and Swedish Crime Register. They identified 8,495 male cases with one or more clinical diagnoses on discharge, who had been

convicted of a sexual offence (defined as rape, sexual coercion, indecent exposure, sexual harassment or child molestation) between 1988 and 2000. Of these, 130 (1.5%) had a diagnosis of nonpsychotic affective disorder. Controls were drawn from a random sample of males in the general population, excluding those under 15 years of age, and those convicted of a sexual offence. The number of controls constituted 19,935 males. Of these, 108 (0.5%) had a diagnosis of non-psychotic affective disorder. Sexual offenders were six times (OR 6.3; 95% CI 5.7 – 6.9) more likely to have a history of psychiatric hospitalisation compared to the general population. However this study has a number of limitations. Firstly, the study included only those who were inpatients. Sexual offenders in the general population were not included and therefore the study may have underestimated prevalence rates. Secondly, sexual crimes were recorded using official conviction data, which is known to underestimate violent offending. Thirdly, those people with severe mental illness may be disproportionally caught and convicted compared to those without mental illness.

5.2.1 Conclusion

It is very difficult to establish an association between affective disorders and sexual offending due to the very small sample sizes of the studies and also the sampling of discrete populations. Some research does suggest an association, particularly with regards to sexual offenders with paraphilias. However, much more research is needed. Research also needs to focus solely on affective disorders, rather than including psychotic affective disorders with schizophrenia samples and also needs to differentiate between types of affective disorders. More emphasis could be placed on exploring illness onset and conditions co-morbid with affective disorder.

Table 3: Summary of Affective Disorder Studies

Authors	Country	Participants	Methodology/Assessments	Findings
Collins & Bailey (1990)	USA	1140 adult male prisoners who had committed a serious offence	DSM- III	Found an association between mood disorders and violence, but the relationship between manic symptoms and violence was weak.
Modestin et al (1997)	Switzerland	261 hospitalised individuals suffering from depressive/bipolar affective disorders and a comparison group from the community	Clinical and criminal records accessed	Those with affective disorder were four times as likely to have been convicted of a violent crime than the control.
Tihonen et al (1997)	Finland	Cohort of 12,058	Medical records from the Finnish Hospital Discharge Register and conviction data from the Ministry of Justice	Those with affective disorder were six times more likely to commit an offence and six times more likely to commit a violent offence, than those without the disorder.
Hodgins et al (1999)	Canada	30 patients with affective disorder and 74 with schizophrenia, who had been discharged from hospital	SADS, Research Diagnostic Criteria, clinical and criminal records accessed	Thirty-three percent of the affective disorder group and 15% of the schizophrenia group had committed an offence during the two year follow-up period, with 30% of the affective disorder and 10% of the schizophrenia group having been convicted of a violent crime.
McElroy et al (1999)	USA	36 male sex offenders, aged between 18 and 47	SCID I & II	Lifetime prevalence of affective disorder was 61%, of these 59% had bipolar disorder and 36% major depression. Seventy-three percent had a

				paraphillia.
Raymond et al (1999)	USA	45 males paedophiles	SCID I & II	Affective disorder was the most common disorder in the sample with a lifetime prevalence of 67%.

Table 3: Continued

Authors	Country	Participants	Methodology/Assessments	Findings
Brennen et al (2000)	Denmark	Cohort of 173,688 men and 162,322 women	Danish Psychiatric Register and the official arrest and conviction data were obtained from the Danish National Police Register	Men with affective psychoses were twice as likely and women were four times as likely, to be arrested for a violent crime than those without the disorder.
Dunsieth et al (2004)	USA	113 male sex offenders	SCID I & II and family psychiatric histories taken	Fifty-eight percent of the sample had a lifetime affective disorder diagnosis; 61% of these were bipolar and 41% major depression diagnoses. Of these, 92% had paraphillias.
Leue et al (2004)	Germany	55 male sex offenders resident in forensic hospitals	SCID I & II and family psychiatric histories taken. Mini-DIPS and Diagnostic Interview for Psychiatric Disorders	There was no difference between those with paraphillias and those without.
Quanbeck et al (2004)	USA	37 male and 29 female prisoners with bipolar disorder, aged 22 to 60 were	DSM IV diagnosis	At time of arrest, 74% of the prisoner group were in the manic phase of the illness. Violent crimes accounted for 41% of the charges brought and

				compared with 17 men and 37 women aged between 21 and 24, with bipolar disorder but no criminal record		80% of the prisoner group had an existing criminal record. Seventy-six percent of the prisoner group and 19% of controls had a substance abuse problem.
Corrigan & Watson (2005)	USA	5865 participants aged between 15 and 54 years of age		DSM III criteria and self-reports of violent behaviour		Those with dysthymia were five times, those with major depression four times and those with bipolar disorder were 10 times more likely to report violent behaviour than those without.

Table 3: Continued

Authors	Country	Participants	Methodology/Assessments	Findings
Graz et al. (2009)	Germany	1561 offenders with affective disorder, 512 men and 1049 women.	National Crime Register and Psychiatric Hospital Register	Men with manic and major depression were 10 times more likely to be violent than women.
Fazel et al (2010)	Sweden	3743 people with bipolar; 37,429 general population controls, and 4059 unaffected full siblings of individuals with bipolar disorder	Hospital and conviction registers	Participants with bipolar were twice as likely to have committed a violent offence at follow-up. This increased to over six times for those with comorbid substance abuse.

6 Personality Disorder

6.1 Personality Disorder

Personality disorders have been defined by the American Psychiatric Association (2000) as "an enduring pattern of inner experience and behaviour that deviates markedly from the expectations of the individual's culture" and that this pattern has to be manifested in two or more areas of cognition, affect, interpersonal functioning and impulse control. The pattern must be inflexible and pervasive across a broad range of personal and social situations; lead to clinically significant distress or impairment in social, occupational, or other important areas of functioning; be stable; of long duration; and its onset traced back to adolescence or early adulthood. The pattern must not be better accounted for as a manifestation or consequence of another mental disorder, or due to physiological effects of substance abuse or a general medical condition.

The DSM-IV lists criteria for 10 personality disorders, grouped into three clusters, according to their similar symptoms.[2] Cluster A comprises odd or eccentric disorders, which includes paranoid, schizoid and schizotypal personality disorders. Cluster B comprises dramatic, emotional or erratic disorders, which includes anti-social, borderline, histrionic and narcissistic personality disorders. Cluster C comprises anxious or fearful disorders, which include avoidant, dependent and obsessive-compulsive personality disorders.

In a representative sample of the UK general population, using a structured clinical interview, Coid et al (2006a) identified the prevalence of personality disorder as 4.4%, with men more likely to have a personality disorder (5.4%) than women (3.4%). Most of these are unlikely to be violent, even those people diagnosed with Antisocial Personality Disorder (ASPD), about half had not been violent in the previous five years (Coid et al, 2006b). However they did find that people with Cluster B disorders, compared to those without, were 10 times more likely to have

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[2] (1994), 4th edition, American Psychiatric Association.

a criminal conviction and eight times more likely to have spent time in prison. Elevation of criminal risk was not seen in those with Cluster A and C disorders.

A high proportion of people in contact with the CJS have a personality disorder, in prison, Gunn et al (1991) conducted a population based survey of a 5% sample of men serving prison sentences in England and Wales. Participants were selected from 16 adult male prisons and nine young offender institutions, representative of prison type, security levels and sentence length nationally. All participants completed semi-structured interviews to assess their present mental state. Prison files were examined to obtain demographic, clinical and behavioural information. The sample comprised 1,769 participants, of which 1,365 (77%) were adult men and 404 (23%) young adult men (17-21 years). They reported that 652 (37%) had a psychiatric diagnosis, with a high prevalence of personality disorder. A total of 177 (10%) participants were diagnosed with a personality disorder, contrasted to 21 (1%) diagnosed with schizophrenia and 15 (1%) with organic disorders. The only disorder more prevalent than personality disorder was substance misuse (407; 23%).

From a sample of 3,563 prisoners in England and Wales, Singleton et al (1998) conducted follow-up interviews with 505 individuals, finding high prevalence rates of personality disorder. They reported that 78% of male remand, 64% of male sentenced and 50% of all female prisoners had a personality disorder. ASPD was the most prevalent disorder, with rates of 63% in male remand, 49% in male sentenced and 31% in female prisoners.

More recently, Fazel & Danesh (2002) conducted a systematic review of 62 studies from 12 countries published between January 1996 and January 2001, investigating the prevalence of personality disorders in prison populations. The total number of participants across the sixty-two studies comprised 22,790. Of these, 18,530 (81%) were men and 4,260 (19%) women. They reported that ASPD was most prevalent. Of the studies specifically reporting it, 5,113 (47%) of 10,797 men and 631 (21%) of 3,047 women had ASPD. Approximately one in two male and one in five female prisoners had ASPD.

Compared with mentally ill offenders, personality disordered offenders are more likely to reoffend after discharge from hospital. Jamieson & Taylor (2004) conducted a 12 year follow-up of a cohort of 204 patients discharged from UK high security hospitals in 1984. They found that 38% were reconvicted, 26% for

serious offences. Discharged patients with a personality disorder were seven times more likely to commit a serious offence than mentally ill offenders. Although personality disordered patients were more likely to be reconvicted of a serious offence, 75% of them were not reconvicted of a serious offence and 62% were not reconvicted at all.

6.2 Personality Disorders and Violence

Coid et al (1999) investigated patients admitted to secure forensic psychiatry services in England and Wales. Data were collected from 18 sites, including three high secure hospitals, 11 medium secure units and four private hospitals, on all patients admitted between 1st January 1988 and 31st December 1994. Participants' case files were analysed and diagnoses made according to ICD-10 criteria. The sample comprised 511 (16%) participants with personality disorder and 2,575 (84%) participants with mental illness. If more than one disorder was present, the researchers made a decision regarding the primary diagnosis based on the initial assessment undertaken at admission and the clinical team's management of the patient. They found that, of those diagnosed with personality disorder, most suffered from Cluster B personality disorders, with 224 (44%) diagnoses of ASPD and 177 (35%) diagnoses of borderline personality disorder. They observed that those with borderline personality disorder were 24 times (OR 24.41; 95% CI 15-39.71) more likely to be female than male and were significantly younger than other participants. In relation to criminal charges or convictions leading to admission, 115 (23%) of the 504 participants with personality disorder were admitted for attempted murder/wounding, 94 (18%) for actual bodily harm/weapons/threats, and 68 (14%) for homicide. Of the 233 participants with ASPD, 50 (22%) had previous convictions for major violence, 117 (52%) for minor violence and 131 (59%) for any violence. The authors noted that those with ASPD were three times more likely than those without the diagnosis to have previous convictions for both major (OR 2.57; 95% CI 1.57-4.22) and minor violence (OR 2.91; 95% CI 2.01-4.20). However, it must be noted that the study focused on samples drawn from secure forensic psychiatry settings, thus likely representing those most severely ill and violent. This study was also dependent on examining participants' records and therefore may be subject to clinical bias and inconsistencies in recording key data.

Other studies examining personality disorder and violence have drawn participants from prison populations. Warren et al (2002) conducted a study on female prisoners at a maximum security prison in the USA. They identified 200 participants who met the criteria for one of the Cluster B personality disorders and 50 participants who did not. Interviews were conducted using the SCID II (First et al, 1997). Prison files and self-reports were used to analyse offence information and behaviour in prison. The authors reported that, of all participants with personality disorder, ASPD was most prevalent (75 participants, 43%), followed by 47 (27%) with paranoid personality disorder and 42 (24%) with borderline personality disorder. They reported that co-morbidity was common, with ASPD most commonly co-morbid with paranoid personality disorder (120 participants, 69%) and borderline personality disorder most commonly co-morbid with schizotypal personality disorder (116 participants, 67%). The authors investigated specific personality disorder clusters and individual personality disorders in relation to reported violence, concluding "a powerful relationship" between narcissistic personality disorder and violent behaviour; those with narcissistic personality disorder were reported as being eight times (OR 7.57; 95% CI not reported) more likely to have a current conviction for a violent offence (including homicide) and five times (OR 4.92) more likely to have a current conviction for a violent offence (excluding homicide). Those with Cluster A personality disorders were two and a half times (OR 2.5) more likely to have current convictions for violent offences. The authors observed that those with ASPD and borderline personality disorder were three times (OR 2.88) more likely to self-report institutional violence. The findings from this study may not be generalisable to males, as the study sample included only female participants. Also as the study only included a prison sample the results may not be generalisable to a community or other forensic setting. In addition, the study used self-report methods and participants may have denied or exaggerated violent behaviour, introducing inaccuracy to the findings.

Coid (2002) studied the behaviour of prisoners diagnosed with personality disorder. Interviews were conducted with 81 male prisoners transferred to specialist personality disorder units in HMPs Hull, Lincoln and Parkhurst. Measures used included the Schizophrenia and Affective Disorders – Lifetime Version Schedule, the Structured Clinical Interview for DSM-IV Axis II Personality Disorders, an item sheet developed by the author to measure disruptive behaviours and motivations, and a demographics proforma gathering information on family history, personal history, index offence and criminal history. Information was also gathered from prison files and discussions with staff. Sixty-eight (84%) had ASPD, 54 (67%) had

paranoid personality disorder, 51 (63%) narcissistic personality disorder, 45 (56%) borderline personality disorder, 35 (43%) histrionic personality disorder, 22 (27%) schizotypal personality disorder, 17 (21%) avoidant personality disorder, 11 (14%) dependent personality disorder and nine (11%) schizoid personality disorder. Eight-five percent of participants also had a lifetime diagnosis of an axis I mental disorder. The authors found that prisoners with paranoid personality disorder were six times (OR 6.4; 95% CI 2.28-17.92) more likely to commit violence against an inmate. Prisoners with narcissistic personality disorder were nearly three times (OR 2.84) more likely to be violent to inmates (95% CI 1.08-7.47) and violent to self (95% CI 1.08-7.42). Borderline personality disorder was associated with hostage taking (OR 4.11; 95% CI 1.57-10.70). As a result the author argued that narcissistic characteristics of grandiosity and over-inflated self-confidence corresponded to prisoners' beliefs that violence was their only solution to interpersonal problems. Although this study suggested that personality disorders, in particular paranoid and narcissistic personality typologies were associated with violence, the focus was on behaviour of participants whilst they were in prison and not on their offending behaviour in the community. As a result, this study only gives an indication of the sample's propensity for violence and their behaviour type as opposed to identifying a causal connection between personality disorders and offending. It must also be acknowledged that personality disorders may not have been present at the commission of the offence that led to their imprisonment. However, as a diagnosis of ASPD requires the presence, from a young age, of certain enduring characteristics, the role of personality disorder in the index offence should not be ruled out. In addition, the sample was drawn from specialist personality disorder units within the prison estate, therefore, disorder presentations were likely to be at the more extreme end of the spectrum, with high levels of institutionally disruptive behaviour, e.g. assaults.

Johnson et al (2000) investigated violence and personality disorders in a community sample of adolescents in New York, USA. The authors conducted interviews with randomly selected adolescents and their mothers in 1983, 1985-1986, and 1991-1993. Measures used included the Personality Diagnostic Questionnaire (Hyler et al, 1988), Disorganising Poverty Interview (Kogan et al, 1977), and parent and youth versions of the Diagnostic Interview Schedule for Children (Costello et al, 1984). Their sample comprised 717 participants of which 351 (49%) were male and 366 (51%) female. Of the 717 participants, 103 (14%) met the criteria for personality disorder; of these 51 (50%) had a single personality disorder, and 52 (50%) had two or more. For those with at least one personality

disorder, violent acts had been committed by 39 (38%). This contrasted with violent acts carried out by 117 (19%) of the remaining 614 participants without personality disorder. When analysing for specific personality disorder clusters, the authors reported 42 (6%) participants had Cluster A, 51 (7%) Cluster B, and 35 (5%) Cluster C disorders. Those with Cluster B disorders were five times more likely to initiate physical fights (OR 4.64; 95% CI 2.24-9.63), seven times (OR 7.26; 95% CI 1.98-25.56) more likely to commit mugging/robbery, and four times OR 4.24; 95% CI 2.20-8.18) more likely to engage in violent acts against others than those without such disorders. In relation to Cluster A disorders, the authors reported they were five times (OR 5.37; 95% CI 1.80-16.03) more likely to assault others and five times (OR 5.04; 95% CI 1.26-20.14) more likely to commit mugging/robbery. They reported that Cluster C personality disorders were not associated with an increased risk of violence. With regards to specific symptoms, those with paranoid symptoms were twice (OR 1.91; 95% CI not reported) as likely to initiate physical fights and those with narcissistic symptoms were twice (OR 2.31) as likely to assault others, initiate physical fights (OR 1.86), and threaten to injure others (OR 2.31). They reported that those with passive aggressive symptoms were twice (Or 2.07) as likely to threaten to injure others and initiate physical fights (OR 1.85). The study focused on adolescents only and therefore its generalisability is limited. ASPD was not measured in this sample due to the young age of the participants and, as a result, the authors argued that the associations between Cluster B personality disorders and violent offending may have been stronger than would be demonstrable if diagnoses of ASPD had been made. However this is one of only few studies that have followed a cohort of people over time. These types of studies are crucial to settling the issue of a causal link between personality disorder and violence.

6.2.1 Conclusion

The research suggests that there is a link between personality disorder and violent offending, especially with regards to Cluster B personality disorders including anti-social, narcissistic, and paranoid personality disorder. More research is needed; in particular community based longitudinal research, as argued by Coid (2003), as well as further robust data from studies employing larger sample sizes.

6.3 Personality Disorders and Sexual Offending

McElroy et al (1999) conducted a study of 36 male sexual offenders admitted from prison, jail or probation to a residential treatment facility in Cincinnati, USA. Facility admission criteria included being male, eighteen years or over, conviction of at least one sexual crime and admission of guilt by the individual. All participants received a psychiatric evaluation which included the SCID I & II, assessment of participants' legal histories, history of sexual and physical abuse, and family histories of psychiatric disorders. Information was corroborated by medical records and polygraph examinations. The authors reported that 10 (28%) participants had raped or attempted to rape an adult, 20 (56%) had raped or attempted to rape a minor. As regards diagnoses of personality disorder in this sample, the authors reported that 34 (94%) met DSM-IV criteria for at least one Axis II disorder, and 12 (33%) met the criteria for three or more. Cluster B was the most common category of personality disorder in the sample, diagnosed in 33 (92%) participants, followed by Cluster C in 13 (36%) participants and Cluster A in 10 (28%) participants. Of those displaying Cluster B personality disorder symptoms, 26 (72%) met the criteria for ASPD, 15 (42%) for borderline personality disorder, 6 (17%) narcissistic personality disorder and 2 (6%) for histrionic personality disorder. In addition, 30 (83%) participants were diagnosed with substance abuse problems, 22 (61%) with mood disorders and 21 (58%) with paraphilias. Although this study reported a high prevalence of personality disorders, it is limited by its small sample size. Also the study does not have a control group; therefore comparisons cannot be made regarding any links between personality disorder and sexual offending.

Dunsieth et al (2004) studied 113 male sexual offenders who were referred from prison, jail or probation to a residential treatment facility in Ohio, USA. Participants had been convicted of at least one sexual offence and admitted to the facility between November 1996 and March 2001. SCID I & II were administered, as well as assessments of legal history, sexual and physical abuse history, and family psychiatric history. Information was corroborated by medical records, legal records and polygraph examinations. The authors reported that 98 (87%) participants met the DSM-IV criteria for at least one personality disorder; 32 (28%) had three or more personality disorders. Cluster B personality disorders were most prevalent, with 63 (56%) meeting the criteria for ASPD, 32 (28%) for borderline personality disorder, and 28 (25%) for narcissistic personality disorder. Ninety-six

(85%) participants met the criteria for a lifetime diagnosis of psychoactive substance use disorder, 84 (74%) for a paraphilia, 66 (58%) for a mood disorder and 43 (38%) for an impulse control disorder. This study has a number of limitations, such as, a small sample size, and a lack of control group. Also participants may have denied, minimised or changed details of their sexual criminal behaviour.

Leue et al (2004) studied sexual offenders recruited from state forensic hospitals in Germany. The sample comprised 55 male sexual offenders, of which 30 (55%) were classified as paraphiliacs and 25 (45%) classified as having an impulse control disorder (without paraphilia). The Diagnostic Interview for Psychiatric Disorders was used to measure point and lifetime prevalence of psychiatric disorders, and personality disorders were measured using the German version of the SCID II. They reported that all participants classified as having an impulse control disorder and 28 (93%) of those classified as paraphiliacs met the criteria for one or more lifetime Axis I disorder or personality disorder. The authors observed that 93% (28 of the paraphiliacs and 23 with impulse control disorder) suffered from at least one Axis I disorder or personality disorder prior to the commitment of their offence. Cluster B and Cluster C personality disorders were most prevalent, with 14 (47%) of the paraphiliacs and 10 (40%) of those with an impulse control disorder meeting the criteria for at least one Cluster B personality disorder. As regards prevalence of individual personality disorders, they reported that ASPD was the most prevalent (19; 35%), followed by avoidant (13; 24%), and borderline personality disorder (8, 15%).

Raymond et al (1999) conducted a study of 45 paedophilic males recruited from seven outpatient and one residential sex offender treatment programme. All participants were interviewed using the SCID I and 40 participants (89%) completed the SCID II. They found that 24 (60%) out of 40 participants had a personality disorder. However, in contrast to the previously discussed studies, they reported that Cluster C, rather than Cluster B disorders were most prevalent. Of their sample, 17 (43%) had a Cluster C personality disorder, with obsessive-compulsive personality disorder being the most common (10, 25%), followed by avoidant (n = 8, 20%), and dependent (n = 8, 20%). Thirteen (33%) participants had Cluster B personality disorders, with nine (23%) having ASPD, eight (20%) narcissistic personality disorder, and five (13%) having borderline personality disorder. Although they found a high prevalence of personality disorders, they also found a higher prevalence of both mood and anxiety disorders in the sample. They

reported that 30 (67%) out of 45 participants were diagnosed as having a lifetime history of mood disorder, and that 14 (32%) had a current mood disorder. They observed that 29 (64%) were diagnosed with a lifetime history of anxiety disorder, with 24 (53%) having a current anxiety disorder. However, although the lifetime prevalence rates were higher for mood disorders and anxiety disorders in the sample compared to personality disorders, it must be noted that the figures for personality disorders reflect current prevalence rates only and lifetime prevalence rates of personality disorders were not measured. The authors also found a higher prevalence of Cluster C than Cluster B personality disorders; this difference may be explained by the small sample size, included only paedophilic sexual offenders. In comparison, the previously discussed studies had samples that included participants who had committed various types of sexual crimes.

In a more recent study Bogaerts et al (2008) looked at the differences between different sexual offenders. Their sample comprised 70 male paedophilic sexual offenders, 36 (51%) were paraphilic child molesters, and 34 (49%) of whom were non-paraphilic child molesters. The participants were selected from either a sex offender educational training programme (n = 41, 59%) or a Belgian prison (n = 29, 41%). Personality disorders were measured by the Assessment of DSM-IV Personality Disorders, a self-report inventory measuring typicality and distress/impairment of personality disorders. Axis I disorders were not measured. The authors reported that personality disorders differed significantly between the paraphilic and the non-paraphilic groups, with the paraphilic group having significantly higher rates of borderline, histrionic, obsessive-compulsive, and depressive personality disorders. However, the findings from this study are of limited generalisability to sexual offenders as a whole, as the sample comprised only of paedophilic sexual offenders.

In contrast to previous studies Fazel et al (2002) investigated both personality disorders and personality traits by comparing sexual offenders to non-sexual offenders. Fazel et al (2002) selected 101 elderly sexual offenders who were then compared to 102 elderly non-sexual offenders. Participants were selected from those who were incarcerated in 15 prisons within 100 miles of Oxford, UK. Interviews were conducted between April 1999 and March 2000 by a registrar psychiatrist. Semi-structured interviews were also conducted to ascertain offence data from the sexual offender group. The age of the participants ranged from 60 to 88 years of age and the mean age was 65.9 years. They found that 33 (33%) of the sexual offender group had a personality disorder diagnosis; prevalence did

not differ significantly in the non-sexual offender group. However, the authors found that personality traits between the two groups differed significantly, with sexual offenders having more schizoid traits (characterised by social detachment and restricted emotionality), obsessive-compulsive traits, avoidant traits and fewer anti-social traits. As a result, the authors argued that personality factors were more relevant in sexual offending than mental illness. However, 6% of the sex offender group were diagnosed with a psychotic illness, although this group were not significantly different than the non-sex offender group in terms of axis I diagnoses. The generalisability of these findings may be limited as this study, although it used a comparison group, focused only on elderly offenders in prison and therefore may not be generalisable to all sexual offenders.

6.3.1 Conclusion

Studies report a high prevalence rate of personality disorders, in particular Cluster B. However, none of these studies attempted to establish a causal link between sexual offending and personality disorder as most studies measure only point prevalence in offenders located either in prison or treatment centres. Therefore, it cannot be presumed that the personality disorders were present at the commission of the sexual offence. More research is needed with larger sample sizes and more importantly, comparison groups.

Table 4: Summary of Personality Disorder Studies

Authors	Country	Participants	Methodology/Assessments	Findings
Coid et al (1999)	UK	511 psychiatric patients with PD and 2575 with MI resident within the secure estate	ICD-10 criteria	Cluster B was the most prevalent class of PD. Of these, 44% had ASPD, 35% borderline PD. Twenty-three percent of those charged with attempted murder/wounding had a PD diagnosis, as did 14% of those charged with murder.
Warren et al (2002)	USA	250 female prisoners; 200 with Cluster B PD and 50 without	SCID I & II	Narcissistic PD were eight times more likely to commit a violent offence compared to those with other PDs.
Coid (2002)	UK	81 male prisoners resident in specialist PD units	Schedule for schizophrenia and affective disorders- lifetime version; Structured Clinical Interview DSM IV, Axis II Disorders; PCL.	Prisoners with paranoid personality disorder were six times more likely to commit violence against an inmate. Prisoners with narcissistic personality disorder were nearly three times more likely to be violent to inmates and self.
Johnson et al (2000)	USA	Adolescents and mothers; 351 males and 366 females	Personality Diagnostic Questionnaire; Disorganising Poverty Interview; Diagnostic Interview Schedule for Children	Cluster C disorder was not associated with violence. Those with Cluster B disorders were four times as likely to be violent as those without a PD and those with Cluster A PDs were five times as likely to injure other than those without.

7 Summary and Conclusions

The purpose of this scoping review was to examine literature on mental illness and offending, to determine whether a relationship exists and if so, the nature of this relationship. This review has considered a number of mental illnesses, including schizophrenia, mood and affective disorders, and personality disorders.

Literature on schizophrenia, one of the more widely researched mental illnesses, has found associations with both violent and sexual offending. In general, findings indicate those with schizophrenia are more likely to be violent than those without. Studies have also reported a link between sexual offending and schizophrenia, but the nature of this connection is unclear particularly in relation to whether offending behaviour stems from pre-existing pathology or is a product of the illness. Despite evidence of association, further research, consideration of the broader social context of schizophrenia and further attention to methodological limitations is required before a causal link between schizophrenia and violent and sexual offending can be established.

Research has also demonstrated a link between affective disorders and offending behaviour. Again, the research in this area suffers from certain methodological limitations, such as selection bias, use of self-reporting and small sample size; all hinder the drawing of firm conclusions regarding these illnesses and their affect on violent offending.

A relationship between Personality Disorder and offending had been reported, relating to both violent and sexual crimes. In particular, a link between Cluster B disorders such as Antisocial, Borderline, Histrionic and Narcissistic has been shown, as these are the most prevalent within offender samples. As above, more research, over longer periods of time, using larger samples would clarify the nature of this relationship.

Studies focusing on factors that may mediate the relationship between mental illness, personality disorder and violence are out of the scope of this review. However, there is a body of literature which focuses on these mediating factors

such as gender (e.g. Maden 1996; Monahan et al, 2001; Watzke et al, 2006), ethnicity (e.g. Hawkins et al, 2000; Sampson et al, 2005) and personality traits (e.g. Krueger et al, 1994; Nestor, 2002).

Overall, studies have shown that a number of mental illnesses are linked to offending, but as yet, no causal relationships have been established. Further research exploring the nature of these links and addressing well-documented methodological problems is therefore required.

8 References

Addington D, Addington J, Schissel B. 1990. A depression rating scale for schizophrenics. *Schizophrenia Research* 3: 247-51.

Alish Y, Birger M, Manor N, Kertzman S, Zerzion M, Kotler M, Strous R. 2007. Schizophrenia sex offenders: A clinical and epidemiological comparison study. *International Journal of Law and Psychiatry* 30: 459-66.

American Psychological Association. 1987. *Diagnostic and Statistical Manual of Mental Disorders,* Third Edition- Revised. Washington DC: APA.

American Psychological Association. 2000. *Diagnostic and Statistical Manual of Mental Disorders,* Fourth Edition- Text Revision. Washington DC: APA.

Andersen H, Sestoft D, Lillebæk T, Gabrielsen G, Kramp P. 1996. Prevalence of ICD-10 psychiatric morbidity in random samples of prisoners on remand. *International Journal of Law and Psychiatry* 19: 61-74.

Anderson M. 1997. Mental illness and criminal behaviour: a literature review. *Journal of Psychiatric and Mental Health Nursing* 4: 243-50.

Appelbaum P, Clark Robbins P, Monahan J. 2000. Violence and delusions: Data from the MacArthur risk assessment study. *American Journal of Psychiatry* 157(4): 566-72.

Asberg M, Montgomery SA, Perris C et al. 1978. A comprehensive psychopathological rating scale. *Acta Psychiatrica Scandinavica Supplementum* 271: 5-27.

Bailey J, MacCulloch M. 1992. Patterns of reconviction in patients discharged directly to the community from a Special Hospital: implications for after care. *Journal of Forensic Psychiatry and Psychology* 3: 445-61.

Battle J. 1981. *Culture-free SEI self-esteem inventories for children and adults*. Seattle: Special Child Publications.

Bennet S, Farrington D P, Huesmann L R. 2005. Explaining gender differences in crime and violence: the importance of social cognitive skills. *Aggression and Violent Behavior* 10(3): 263-88.

Bogaerts S, Daalder A, Vanheule S, Desmet M, Leeuw F. 2008. Personality disorders in a sample of paraphilic and nonparaphilic child molesters. *International Journal of Offender Therapy and Comparative Criminology* 52: 21-30.

Bradley K. 2009. *The Bradley Report: Lord Bradley's Review of People with Mental Health Problems or Learning Disabilities in the Criminal Justice System*. London: Department of Health.

Brener N, Billy J, Grady, W. 2003. Assessment of Factors Affecting the Validity of Self-Reported Health-Risk Behavior Among Adolescents: Evidence From the Scientific Literature. *Journal of Adolescent Health* 33: 436–457.

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

Burke H, Hart S. 2000. Personality disordered offender: conceptualisation, assessment and diagnosis of personality disorder. In: Hodgins S & Muller-Isberner R. (Eds.), *Violence, Crime and Mentally Disordered Offenders*. Chichester: Wiley.

Coid J. 2002. Personality disorders in prisoners and their motivation for dangerous and disruptive behaviour. *Criminal Behaviour and Mental Health* 12: 209-26.

Coid J. 2003. Epidemiology, public health and the problem of personality disorder. *British Journal of Psychiatry* 182 (suppl. 44): 3-10.

Coid J, Kahtan N, Gault S, Jarman S. 1999. Patients with personality disorder admitted to secure forensic psychiatry services. *British Journal of Psychiatry* 175: 528-36.

Coid J, Yang M, Tyrer P, Roberts A, Ullrich S. 2006a. Prevalence and correlates of personality disorder in Great Britain. *British Journal of Psychiatry* 188: 423-31.

Coid J, Yang M, Roberts A, Ullrich S, Moran P, Bebbington P, et al. 2006b. Violence and psychiatric morbidity in a national household population – A report from the British Household Survey. *American Journal of Epidemiology* 164: 1199-1208

Collins J, Bailey S. 1990. Relationship of mood disorders to violence. *The Journal of Nervous and Mental Disease* 178(1): 44-7.

Copeland JRM, Kelleher MJ, Kellett JM, Gourlay AJ, Gurland BJ, Fleiss JL et al. 1976. A semi-structured clinical interview for the assessment of diagnosis and mental state in the elderly: the Geriatric Mental State Schedule I: Development and reliability. *Psychological Medicine* 6: 439-49.

Corrigan P, Watson A. 2005. Findings from the national comorbidity survey on the frequency of violent behaviour in individuals with psychiatric disorders. *Psychiatry Research* 136: 153-62.

Costello EJ, Edelbrock CS, Duncan MK, Kalas R. 1984. *Testing of the NIMH Diagnostic Interview Schedule for Children (DISC) in a Clinical Population: Final Report to the Center for Epidemiological Studies, NIMH*. Pittsburgh: University of Pittsburgh.

Craissati J, Hodes P. 1992. Mentally ill sex offenders: The experience of a regional secure unit. *British Journal of Psychiatry* 161: 846-49.

Dean K, Walsh E, Moran P, Tyrer P, Creed F, Byford S, Burns T, Murray R, Fahy T. 2006. Violence in women with psychosis in the community: prospective study. *British Journal of Psychiatry* 188: 264-70.

Dohrenwend BP, Levav I, Shrout P, Egri G et al. 1980. Measures of non-specific psychological distress and other dimensions of psychopathology in the general population. *Archives of General Psychiatry* 37: 1229-36.

Drake C, Pathe M. 2004. Understanding sexual offending in schizophrenia. *Criminal Behaviour and Mental Health* 14: 108-20.

Dunsieth N, Nelson E, Brusman-Lovins L, Holcomb J, Beckman D, Welge J, Roby D, Taylor P, Soutullo C, McElroy S. 2004. Psychiatric and legal features of 113 men convicted of sexual offenses. *Journal of Clinical Psychiatry* 65: 293-300.

Eagly AH, Steffen V. 1986. Gender and aggressive behavior: A meta-analytic review of the social psychological literature. *Psychological Bulletin* 100 (3): 309–330.

Eaves D, Tien G, Wilson D. 2000. Offenders with major affective disorders. In: Hodgins S & Muller-Isberner R. (Eds.), *Violence, Crime and Mentally Disordered Offenders*. Chichester: Wiley.

Endicott J, Spitzer RL, Fleiss JL, Cohen J. 1976. The global assessment scale. A procedure for measuring severity of psychiatric disturbance. *Archives of General Psychiatry* 33: 766-71.

Endicott J, Spitzer RL. 1978. A diagnostic interview: the Schedule for Affective Disorders and Schizophrenia. *Archives of General Psychiatry* 35: 837-44.

Fazel S, Danesh J. 2002. Serious mental disorder in 23, 000 prisoners: a systematic review of 62 surveys. *The Lancet* 359: 545-50.

Fazel S, Hope T, O'Donnell I, Jacoby R. 2002. Psychiatric, demographic and personality characteristics of elderly sex offenders. *Psychological Medicine* 32: 219-26.

Fazel S, Sjostedt G, Langstrom N, Grann M. 2007. Severe mental illness and risk of sexual offending in men: A case control study based on Swedish National Registers. *Journal of Clinical Psychiatry* 68: 588-96.

First MB, Gibbon M, Spitzer RL, Williams JBW, Benjamin LS. 1997. *Structured Clinical Interview for DSM-IV Axis II Personality Disorders* (SCID-II). Washington DC: American Psychiatric Press, Inc.

First MB, Spitzer RL, Gibbon M, Williams JBW. 2002. *Structured Clinical Interview for DSM-IV-TR Axis I Disorders*, Research Version, Patient Edition. (SCID-I/P) New York: Biometrics Research, New York State Psychiatric Institute.

Folstein M, Folstein S, McHugh P. 1975. Mini-Mental State: A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research* 12: 189-98.

Grant BF, Dawson DA, Hasin DS. *The Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV Version.* Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism; 2001.)

Graz C, Etschel E, Schoech H, Soyka M. 2009. Criminal behaviour and violent crimes in former in-patients with affective disorder. *Journal of Affective Disorders* 117 (1-2): 98-103.

Grekin E, Brennan P, Hodgins S, Sarnoff M. 2001. Male criminal s with organic brain syndrome: two distinct types based on age at first arrest. *American Journal of Psychiatry* 158: 1099-104.

Gudjonsson GH, Clare I, Rutter S, Pearse J. 1993. *Persons at risk during interviews in police custody: the identification of vulnerabilities*, The Royal Commission of Criminal Justice, Research Study 12. London: HMSO.

Gunn J, Maden A, Swinton M. 1991a. Treatment needs of prisoners with psychiatric disorders. *British Medical Journal* 303: 338-41.

Gunn J, Maden A, Swinton M. 1991b. *Mentally Disordered Prisoners*. Home Office: London.

Guy, W. 1976. *ECDEU Assessment Manual for Psychopharmacology*. US Dept. Health, Education and Welfare publication (ADM), Vol. 76-338: 218-22. Rockville Md: National Institute of Mental Health.

Hare RD. 1991. *The Hare Psychopathy Checklist-revised Manual*. Toronto: Multi-Health Systems Inc.

Harsch S, Bergk J, Steinert T, Keller F, Jockusch U. 2006. Prevalence of mental disorders among sexual offenders in forensic psychiatry and prison. *International Journal of Law and Psychiatry* 29: 443-49.

Hawkins DF, Laub JH, Lauritsen JL, Cothern L. 2000. Race, Ethnicity, and Serious and Violent Juvenile Offending. *Juvenile Justice Bulletin,* June 2002. Washington: US Department of Justice.

Helfritz L, Stanford M, Conklin S, Greve K, Villemarette-Pittman N, Houston R. 2006. Usefulness of self-report instruments in assessing men accused of domestic violence. *The Psychological Record* 56, 171-180.

Hiday V A, Swartz M S, Swanson J W, Borum R, Wagner H R. 1998 Male-female differences in the setting and construction of violence among people with severe mental illness. *Social Psychiatry & Psychiatric Epidemiology* 33: 68-74.

Hodgins S. 1998. Epidemiological investigations of the associations between major mental disorders and crime: methodological limitations and validity of the conclusions. *Social Psychiatry & Psychiatric Epidemiology* 33: 29-37.

Hodgins S, Lapalme M, Toupin J. 1999. Criminal activities and substance use of patients with major affective disorders and schizophrenia: a 2 year follow-up. *Journal of Affective Disorders* 55: 187-202.

Home Office. 2010. *Crime in England and Wales 2009/10*. London: Home Office.

Hull DB, Hull JH. 1976. Rathus Assertive Schedule: Normative and factor analytic data. *Behaviour Therapy* 9: 673.

Hume D. 1938. *An abstract of a treatise of human nature*. London: Cambridge University Press (original work published in 1740).

Hyler SE, Rieder RO, Williams JBW, Spitzer RL, Hendler J, Lyons M. 1988. The Personality Diagnostic Questionnaire: development and preliminary results. *Journal of Personality Disorder* 2: 229–37.

Johnson J, Cohen P, Smailes E, Kasen S, Oldham J, Skodol A, Brook J. 2000. Adolescent personality disorders associated with violence and criminal behaviour during adolescence and early adulthood. *American Journal of Psychiatry* 157: 1406-12.

Kafka M, Hennen J. 2002. A DSM-IV Axis I comorbidity study of males (n = 120) with paraphilia and paraphilia-related disorders. *Sex Abuse* 14: 349-66.

Kay SR, Fiszbein A, Opler LA. 1987. The Positive and Negative Syndrome Scale (PANSS) for schizophrenia. *Schizophrenia Bulletin* 13: 261-76.

Kessler R, Chiu W, Demler O, Walters E. 2005.   Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the national comorbidity survey replication. *Archives of General Psychiatry* 62: 617-709.

Knight RA, Prentky RA. 1990. Classifying sexual offenders: The development and corroboration of taxonomic models. In Marshall LW, Laws DR, Barbaree HR (Eds.) *Handbook of Sexual Assault- Issues, Theories and Treatment of the Offender*. New York: Plenum.

Kogan LS, Smith J, Jenkins S. 1977. Ecological validity of indicator data as predictors of survey findings. *Journal of Social Service Research* 1: 117–32.

Krueger RF, Schmutte PS, Caspi A, Moffitt TE, Campbell K, Silva PA. 1994. Personality traits are linked to crime among men and women: evidence from a birth cohort. *Journal of Abnormal Psychology* 103, 328–338.

Kruttschnitt C. 1994. Gender and interpersonal violence. In Roth J, Reiss A (Eds.), *Understanding and preventing violence: Social influences* 3: 293-376. Washington DC: National Academy of Sciences.

Leue A, Borchard B, Hoyer J. 2004. Mental disorders in a forensic sample of sexual offenders. *European Psychiatry* 19: 123-30.

Lindqvist P, Allebeck P. 1990. Schizophrenia and Crime: A longitudinal follow-up of 644 schizophrenics in Stockholm. *British Journal of Psychiatry* 157: 345-50.

Link B, Steuve A. 1994. Psychotic symptoms and violent/illegal behaviour of mental patients compared to community controls. In: Monahan J & Steadman H. (Eds.), *Violence and Mental Disorder*. Chicago: University of Chicago Press.

Link B G, Stueve A. 1995. Evidence Bearing on Mental Illness as a Possible Cause of Violent Behaviour. *Epidemiologic Reviews* 17(1): 172-80.

Link B, Steuve A, Phelan J. 1998. Psychotic symptoms and violent behaviours: probing the components of "threat/control-override" symptoms. *Social Psychiatry and Psychiatric Epidemiology* 33: S55-S60.

Maden A. 1996. *Women, prisons and psychiatry: Mental disorder behind bars*. Oxford: Butterworth-Heinemann.

Mair G, May C. 1997. *Offenders on probation*. London: Home Office

Margraf J, Schneider S, Soeder U, Neumer S, Becker ES. 1996. Mini-DIPS, Diagnostisches Interview bei Psychischen Störungen (Forschungsversion), Interviewleitfaden, Version 1.1, 7/96. [*Diagnostic interview for psychological disorders, research version, user manual, version 1.1 7/96*]. Dresden: Technische Universität.

McElroy S, Soutullo C, Taylor P, Nelson E, Beckman D, Brusman L, Ombaba J, Strakowski S, Keck P. 1999. Psychiatric features of 36 men convicted of sexual offenses. *Journal of Clinical Psychiatry* 60: 414-20.

Modestin J, Ammann R. 1996. Mental disorder and criminality: male schizophrenia. *Schizophrenia Bulletin* 1: 69-82.

Modestin J, Hug A, Ammann R. 1997. Criminal behaviour in males with affective disorders. *Journal of Affective Disorders* 42: 29-38.

Monahan J, Steadman H. 1983. Crime and mental disorder: an epidemiological approach. In: Tonry M, Morris N, (Eds.). *Crime and justice: an annual review of research*. Chicago: Chicago University Press.

Monahan J, Steadman HJ, Silver E, Appelbaum PS, Robbins PC, Mulvey EP et al. 2001. *Rethinking risk assessment: The Macarthur study of mental disorder and violence.* Oxford: Oxford University Press.

Mullen P, Burgess P, Wallace C, Palmer S, Ruschena D. 2000. Community care and criminal offending in schizophrenia. *The Lancet* 355: 614-17.

Nedopil N. 2000. Offenders with brain damage. In: Hodgins S, Muller-Isberner R. (Eds.), *Violence, Crime and Mentally Disordered Offenders*. Chichester: Wiley.

Nestor PG. 2002. Mental disorder and violence: Personality dimensions and clinical features. *American Journal of Psychiatry* 159, 1973-78.

Nichols HR, Molinder I. 1984. *Multiphasic Sex Inventory Manual*. Tacoma: Tacoma WA.

O'Carroll R. 1995. The assessment of pre-morbid ability: A critical review. *Neurocase* 1: 83-89.

Packard W, Rosner R. 1985. Psychiatric evaluations of sexual offenders. *Journal of Forensic Sciences* 30: 715-20.

Phelan JC, Link BG, Stueve A, Pescosolido BA. 2000. Public Conceptions of Mental Illness in 1950 and 1996: What is Mental Illness and is it to be Feared? *Journal of Health and Social Behaviour* 41(2): 188-207.

Prins H. 2005. Mental disorder and violent crime: A problematic relationship. *The Journal of Community and Criminal Justice* 52(4): 333-57.

Quanbeck C, Stone D, Scott C, McDermott B, Altshuler L, Frye M. 2004. Clinical and legal correlates of inmates with bipolar disorder at time of criminal arrest. *Journal of Clinical Psychiatry* 65(2): 198-203.

Rasmussen K, Levander S. 1996. Symptoms and personality characteristics of patients in a maximum security psychiatric unit. *International Journal of Law and Psychiatry* 19: 27-37.

Rasmussen K, Storsæter O, Levander S. 1999. Personality disorders, psychopathy, and crime in a Norwegian prison population. *International Journal of Law and Psychiatry* 22: 91-7.

Raymond N, Coleman E, Ohlerking F, Christenson G, Miner M. 1999. Psychiatric comorbidity in pedophilic sex offenders. *American Journal of Forensic Psychiatry* 156: 786-8.

Robins LN, Helzer JE, Croughan J, Ratcliff KS. 1981. National Institute of Mental Health Diagnostic Interview Schedule: Its history, characteristics, and validity. *Archives of General Psychiatry* 38: 381-89.

Robins L, et al. 1989. *NIMH diagnostic interview schedule, version III, revised (DIS-III-R)*. St. Louis: Washington University.

Robbins P C, Monahan J, Silver E. 2003. Mental Disorder, Violence, and Gender. *Law and Human Behaviour* 27(6): 561-71.

Saha S, Chant D, Welham J, McGrath J. 2005. A systematic review of the prevalence of schizophrenia. *Public Library of Science Medicine* 2(5): 0413-33.

Sahota K, Chesterman P. 1998a. Mentally ill sex offenders in a regional secure unit. II: Cognitions, perceptions and fantasies. *Journal of Forensic Psychiatry* 9: 161-72.

Sahota K, Chesterman P. 1998b. Sexual offending in the context of mental illness. *Journal of Forensic Psychiatry* 9: 267-80.

Sampson RJ, Morenoff JD, Raudenbush S. 2005. Social Anatomy of Racial and Ethnic Disparities in Violence. *American Journal of Public Health* 95 (2), 224-232.

Schepank H. 1995. Der Beeinterachtigungs-Schwere-Sore (BSS): Ein Instrument zur Bestimmung der Schwere einer Psychogenen Erkrankung Manual. Gottingen: Beltz Test GmbH.

Shaw J, Creed F, Price J, Huxley P, Tomenson B. 1999. Prevalence and detection of serious psychiatric disorder in defendants attending court. *Lancet* 353 (9158): 1053-56.

Shrout PE, Dohrenwend BP, Levav I. 1986. A discriminant rule for screening cases of diverse diagnostic types: preliminary results. *Journal of Consulting & Clinical Psychology* 54: 314-19.

Silver E. 2000. Race, Neighbourhood Disadvantage, and Violence among Persons with Mental Disorders: The Importance of Contextual Measurement. *Law and Human Behavior* 24(4): 449-56.

Singh SP, Greenwood N, White S, Churchill R. 2007. Ethnicity and the Mental Health Act 1983. *British Journal of Psychiatry* 191: 99-105.

Singleton N, Meltzer H, Gatward R, Coid J, Deasy D. 1998. *Psychiatric Morbidity among Prisoners in England and Wales.* London: HMSO.

Smith A. 2000. Motivation and psychosis in schizophrenic men who sexually assault women. *Journal of Forensic Psychiatry* 11: 62-73.

Smith A, Taylor P. 1999. Serious sex offending against women by men with schizophrenia: Relationship of illness and psychotic symptoms to offending. *British Journal of Psychiatry* 174: 233-7.

Spitzer RL, Endicott J, Robins E. 1978. *Research diagnostic criteria (RDC) for a selected group of functional disorders*. New York: New York State Psychiatric Institute.

Spitzer RL, Williams JBW. 1986. *Structured Clinical Interview for DSM–III–R Personality Disorders*. New York: New York State Psychiatric Institute.

Somers J, Goldner E, Waraich P, Hsu L. 2006. Prevalence and incidence studies of anxiety disorders: A systematic review of the literature. *Canadian Journal of Psychiatry* 51: 100-13.

Steadman H, Mulvey E, Monahan J, Clark Robbins P, Appelbaum P, Grisso T, Roth L, Silver E. 1998. Violence by people discharged from acute psychiatric in-patient facilities and by other in the same neighbourhoods. *Archives of General Psychiatry* 55: 393-401.

Stueve A, Link B G. 1998. Gender differences in the relationship between mental illness and violence: evidence from a community-based epidemiological study in Israel. *Social Psychiatry and Psychiatric Epidemiology* 33 (Supp. 1): 61-7.

Swanson J, Borum R, Swartz M, Monahan J. 1996. Psychotic symptoms and disorders and the risk of violent behaviour in the community. *Criminal Behaviour and Mental Health* 6: 309-29.

Swanson J, Swartz M, Van Dorn R, Elbogen E, Wagner H R, Rosenheck R, Stroup T S, McEvoy J, Lieberman A. 2006. A national study of violent behaviour in persons with schizophrenia. *Archives of General Psychiatry* 63: 490-9.

Taylor P, Leese M, Williams D, Butwell M, Daly R, Larkin E. 1998. Mental disorder and violence. *British Journal of Psychiatry* 172: 218-26.

Tiihonen J, Isohanni M, Rasanen P, Koiranen M, Moring J. 1997. Specific major mental disorders and criminality: A 26-year prospective study of the 1966 Northern Finland birth cohort. *American Journal of Psychiatry* 154: 840-5.

Torgersen S, Kringlen E, Cramer V. 2001. The prevalence of personality disorders in a community sample. *Archives of General Psychiatry* 58: 590-6.

Tyrer P, Alexander MS, Cicchetti D et al. 1979. Reliability of a schedule for rating personality disorders. *British Journal of Psychiatry* 135: 168-174.

UK700 Group. 1999. Intensive versus standard case management for severe psychotic illness: a randomised trial. *Lancet* 353, 2185– 2189.

Wallace C, Mullen P, Burgess P. 2004. Criminal offending in schizophrenia over a 25-year period marked by deinstitutinalization and increasing prevalence of comorbid substance use disorders. *American Journal of Psychiatry* 161(4): 716-27.

Warren J, Burnette M, South S, Chauhan P, Bale R, Friend, R. 2002. Personality disorders and violence among female prison inmates. *Journal of the American Academy of Psychiatry and the Law* 30: 502-9.

Watzke S, Ullrich S, Marneros A. 2006. Gender- and violence-related prevalence of mental disorders in prisoners. *European Archives of Psychiatry and Clinical Neuroscience* 256:414–421.

Wessely S. 1998. The Camberwell study of crime and schizophrenia. *Social Psychiatry and Psychiatric Epidemiology* 33: S24-S28.

Wing JK, Cooper JE, Sartorius N. 1974. *The description and classification of psychiatric symptoms: An instruction manual for the PSE and catego system*. London: Cambridge University Press.

World Health Organisation. 2002. *World Report on Violence and Health*. Geneva: WHO.

World Health Organisation. 2007. *International statistical classification of diseases and related health problems*: 10th revision, version for 2007. http://apps.who.int/classifications/apps/icd/icd10online/

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