# Personality Disorder: Complex Cases or Difficult Cases?

# A Question of Placement in Forensic Services

## Antonia C. Harrison, BSc., PGDip., MSc.

**Thesis submitted to the University of Nottingham**

**for the degree of Doctorate in Forensic Psychology  (D.Foren.Psy)**

**July 2015**

# THESIS ABSTRACT

This thesis explored whether patients in high security hospitals are more 'Complex Cases' or more 'Difficult Cases' than their counterparts in lower security settings. Herein, case complexity is associated with co-morbid diagnoses or clinical needs, whilst case difficulty refers to challenging, violent and aggressive behaviour.

A systematic literature review examined institutional violence and aggression in different security settings within healthcare and prison environments. No clear differences were found in frequency of incidents between the security levels, and a suggestion that the severity of incidents were greatest in lower security had limited generalisability. The results were confounded by data incompatibility, meaning that it could not be concluded that higher security sites house the more 'Difficult Cases'.

An empirical research study examined differences in clinical complexity between personality disordered (PD) patients living in high and medium security units (MSUs). Statistical differences were found on several clinical and forensic variables between settings, including age at first conviction, and difficulties with affective instability, paranoia and depression (assessed with the Personality Assessment Inventory; PAI). This led to the development of a Model of a Complex Case of PD. The results suggested that higher security sites do treat a greater number of 'Complex Cases' of PD. Interestingly, they were also found to house a greater number of physically violent patients than the MSUs, ie. more 'Difficult Cases'.

A case study examined a high security PD patient, 'Andrew'. His assessment, formulation and violence relapse prevention treatment were presented and discussed. It was identified that on admission Andrew was a match to the Model of a Complex Case of PD, and that a lowering of his PAI score profile over time reflected his treatment gains and lessening of his clinical difficulties. When preparing to transition to an MSU, Andrew could no longer be classified as complex, according to the Model.

Finally a critique of the PAI psychometric was presented. The tool was assessed for reliability and validity as a measure of clinical psychopathologies, interaction styles and treatment needs, and was praised for its utility with PD patients.

The findings from the thesis chapters were reviewed, and the application of the Model of a Complex Case of PD was also discussed. It was concluded that the high security hospital currently provides treatment services to more 'Complex Cases' of PD *and* more 'Difficult Cases' than the investigated medium security counterparts.

# PREFACE

This thesis explores whether forensic patients living in high security hospital settings in England are 'Complex Cases' or 'Difficult Cases', in the expectation that justification will be found for the dispersal of patients to different clinical environments, managed under differing levels of security.

The empirical study herein proposed that patients living in high security environments are more 'Complex Cases', whilst the systematic literature review study proposed that residents placed in higher security environments are the more 'Difficult Cases'. Definitions of these terms were presented before these hypotheses were investigated, the research outcomes synthesised, and the overall thesis question answered in the final chapter. The thesis content is structured as follows;

Chapter one reviews literature using a systematic method, in an exploration of the expression of institutional violence and aggression across different security settings within both healthcare and prison environments. Specifically, the review aimed to discover whether higher security facilities experience the greatest volume of violent and aggressive behaviour and whether these incidents would be considered more severe than those in lower security institutions. This literature review utilised stringent inclusion and exclusion criteria and studies had to meet a quality threshold to be included. Nineteen studies met the requirements, and the findings of each were discussed in terms of the violence and aggression outcomes reported. In this way, this chapter explored the placement of the 'Difficult Case' within forensic settings; the violent and aggressive patient or offender who requires careful management with regard to their physical risk of harm to self or others.

Chapter two examines differences in clinical complexity between personality disordered (PD) patients living in high and medium security units (MSUs). A definition of a 'Complex Case' is proposed, and subsequently explored using an

empirical design. To this end, patients from PD wards of a high security hospital are compared with counterparts in three MSUs to investigate potential differences between the participant groups. A total of 59 male patients (33 high and 26 medium security) took part in this study and completed the Personality Assessment Inventory (PAI) as a means of assessing their clinical difficulties. In addition, data pertaining to diagnoses, other clinical information, offence-focussed variables and institutional incidents were collected. A number of significant differences were observed in the data between the hospital settings. The results were further analysed and informed the development of a Model of a Complex Case of PD. The clinical utility of the model, the study's limitations, and avenues of further research are discussed.

Chapter three presents a case study of a personality disordered violent offender resident in the high security hospital. 'Andrew' is a prototypical example of a 'Complex Case' of PD, who is about to transition to an MSU following treatment and a significant improvement in his clinical presentation – as explored with the PAI. Andrew's assessment, formulation and violence relapse prevention treatment is presented.

Chapter four assesses the effectiveness of the PAI as a psychometric assessment. The PAI was the preferred tool for use within this thesis as it encompasses a wide variety of clinical and treatment scales in order to provide a holistic view of patients' areas of clinical strength and difficulty. This chapter explores the validity and reliability of the tool, its ability to assess the clinical needs of a forensic population, and the limitations of the measure.

Lastly, Chapter five concludes this thesis by providing an overview and discussion of the work and findings presented in previous chapters, a discussion of the application of the proposed Model of a Complex Case of PD, and a consideration of the answer to the overarching thesis question.

# ACKNOWLEDGEMENTS

# TABLE OF CONTENTS

# LIST OF APPENDICES

# LIST OF TABLES

# LIST OF FIGURES

# INTRODUCTION

This thesis explores whether forensic patients living in high security hospital settings in England are 'Complex Cases' or 'Difficult Cases', in the expectation that justification will be found for the dispersal of patients to different clinical environments, managed under differing levels of security. The use of such classification systems can have potential value when there is heterogeneity in a patient group, with a wide variety of difficulties and different levels of impact on functioning within the group. In such cases, classification becomes useful when planning and delivering treatments (Crawford, Koldobsky, Mulder, & Tyrer, 2011) as well as when managing the placement of patients.

The empirical research study herein (Chapter two) proposes that patients living in high security environments are more 'Complex Cases', whilst the systematic literature review study proposes that residents placed in higher security environments are the more 'Difficult Cases' (Chapter one). These hypotheses are each investigated separately, and the research outcomes synthesised, with the overall thesis question answered in the final chapter.

The term 'Complex Case' is currently an oddity of informal diagnosis; a term possessing subjective meaning as interpreted by each clinician. Whilst a complex case has not been formally defined within mental health care, a perusal of the literature on the matter (see Chapter two of the thesis) finds that there is clear consensus that the notion of complexity *must* reflect co-morbidity of diagnoses or clinical difficulties, *perhaps* reflect a chronic presentation, and at times *may* include difficulties with treatability. The empirical research study in this thesis serves to investigate the components that potentially contribute to a complex case of personality disorder (PD) specifically, with variables explored in a comparison between PD

patients resident in high and medium security hospitals, and the resultant findings informing the development of a Model of a Complex Case of PD. This model is discussed in the context of differences in the groups of PD patients cared for in high security and medium security hospitals.

A 'Difficult Case', as referred to in this thesis, is unambiguous. This term is given to patients who engage in violent and aggressive behaviours in forensic institutions. Difficult cases may engage in frequent episodes of violence and aggression, and/or incidents of high severity. Difficult cases are those who have to be carefully managed with regard to their risk of harm to self or others, which may potentially influence the security setting in which they are cared for. As such, herein the 'difficult case' is applied as a universal term that does not address the causes of violence, but instead refers to its outcome. The systematic literature review within this thesis (Chapter one) serves to investigate whether forensic institutions of higher levels of security exist to provide expert containment and management of difficult cases.

This research thesis was initiated at a time when the future of hospital-based forensic PD treatment services was in question. In 2011, a new strategy for the management of offenders with PD had been launched as a joint initiative between the Department of Health (DH) and the National Offender Management Service (NOMS). The strategy proposed the redevelopment of PD services into a new 'Offender Personality Disorder Pathway' (OPDP), with the expansion of treatment capacity in prisons and the community, and clarification in the route of onward progression from treatment (O'Loughlin, 2014).

Whilst reiterating the joint responsibility of the DH and NOMS to continue to provide treatment services for offenders with PD, the strategy emphasised that where

PD offenders were at high risk of serious harm to others (ie. offenders with 'severe PD', including those previously provided for within DSPD services), these men and women would be primarily managed through the criminal justice system (Joseph & Benefield, 2012).

The implementation of the strategy would see a reallocation of funds from decommissioned DSPD units, to enable expansion of services in the new OPDP. The strategy confirmed the inclusion of high and medium security healthcare facilities within the OPDP, and specified that hospitals could continue to provide for PD offenders "*with co-morbid severe mental health problems*" (Joseph & Benefield, 2012, p.212).

As above, difficulties with inadequate definition of clinical terms have appeared within the new OPDP strategy. A 'severe' case of PD is not a recognised clinical term at present in either the DSM-5 (American Psychiatric Association, 2013) or ICD-10 (WHO, 1992) classification systems. Similarly, the phrase 'co-morbid severe mental health problems' appears to be as open to interpretation as the phrase 'Complex Case'. This being said, the release of the new strategy implied that the OPDP would rapidly change the landscape of PD services provision in England and Wales, potentially by severely restricting the health service's remit in providing PD treatment services in the near future. It was seen as entirely possible that there would be no future admissions to hospital services for PD offenders without evidence of active co-morbid psychotic illness, severe mood disorder or learning disability.

With this in mind, psychologists working in high security hospital services began to discuss their client base, considering the clinical composition of the current PD service patient cohort, and conceptualising how this may change in the future. Several psychologists at Rampton Hospital perceived the site's PD wards to be

generally housing 'Complex Cases' of PD, defining this as clients with multiple diagnoses of PD and/or a co-morbid mental illness. However, they also identified that a key service speciality was in the provision of care for clients who had proved difficult to manage elsewhere. Examples of such clients included those with significant self-harming behaviours, or serious subversive or violent behaviours, which exceeded the management capabilities of care teams in less secure settings.

In order to gain an increased understanding of their current clients and their treatment needs, Rampton Hospital's PD psychology team welcomed the launch of this thesis project, and the comparison of their patients with PD services at other hospital sites. The team were keen to understand whether their current *niche* in service provision was in working with the 'Complex', the 'Difficult' or perhaps both types of patient. Gaining a clear understanding of the client base in this way, would enable the team to adapt more strategically to the imminent pathway changes ahead.

The thesis' research study proposal was found to be entirely unique. No literature could be identified that modelled complex cases, or served to compare case complexity of PD groups. The greater number of research studies instead tended to examine PD comorbidity with one specific other mental health difficulty (eg. Grant et al., 2006, PD and substance misuse), whilst others focussed on a definition and examination of the *severity* of PD. This thesis, however, proposes that *complex* cases of PD and *severe* cases of PD are not the same thing (this notion will be returned to in the thesis discussion, Chapter five).

The notion of severity of PD has increasingly been examined in recent years, with the research literature reflecting a focus on the use of severity in the understanding and treatment of clients, and potentially in disorder classification

systems. Crawford et al. (2011) conducted a review of relevant published literature, and acknowledged the prolific use of the term 'severe PD' without explanation. In collating the definitions of severity that were provided within some studies, recurring themes were found that were said to indicate increased severity; a greater number of traits of a specific PD, a resultant greater level of impairment in social functioning, a resultant greater risk of harm to self or others, a greater number of PDs, and/or the presence of PDs from Clusters A or B rather than Cluster C (Crawford et al., 2011).

All these features of severity lie within the boundaries of the PD diagnosis and its resultant impact, and do not examine issues of mental health outside this realm. The notion of case complexity to be studied herein, however, permits reference to clinical and behavioural problems contributed by other mental health difficulties. In this way, clinical complexity in PD reflects interrelationships between all aspects of mental health functioning, whilst an examination of PD severity is a closer analysis of personality functioning alone. This distinction between clinical complexity and severity has been supported by researchers in other areas; for example by Briere, Kaltman and Green (2008) when examining the impact of childhood trauma. In this case distinction was made between symptom severity, as the likelihood that any symptom will be more greatly endorsed, and symptom complexity, as the likelihood that different types of symptoms will be present simultaneously.

There has been one notable crossover use of the term 'complex PD' in the literature, within a classification system for severity of PD. In 2000, Tyrer and Ferguson proposed a transition to a severity-based classification system for PD (derived from earlier work by Tyrer & Johnson, 1996), where patients could be defined as having PD, complex PD or severe PD in relation to the number and cluster organisation of their diagnoses. Complex PD in this system was defined as the

presence of two or more PDs in two or more PD clusters.  As this definition did not go beyond the boundary of personality functioning, herein such a description would be considered to reflect increased severity, but not necessarily increased case complexity. The use of a mixture of 'complex PD' and 'severe PD' within a single severity scale is thus somewhat confusing in terms of its terminology.

Subsequently, under the remit of the ICD-11 Work Group for Revision of Classification of Personality Disorders (Bucci, 2013), Tyrer and colleagues replaced this severity classification system with proposed classifications of mild, moderate and severe PD, spanning trait domains rather than diagnoses (Tyrer et al., 2014).  As such, definitions of 'complex cases' and 'severe cases' can again be separated without confusion, with this thesis focussing on the former.

In the absence of any previous similar work in the research literature, the generation of a list of variables potentially contributing to case complexity was borne of literature that measured single variables in between-subjects designs. In order to ensure that all variables were considered that may impact the security level of patient placement, clinical colleagues at Rampton Hospital supported the research process by suggesting confounding variables that should also be measured.  This ensured that a robust and defensible construct of case complexity would be employed in the study.

The thesis' systematic literature review proposal is not, at initial glance, quite as unique as that of the empirical study.  In order to investigate the placement of 'difficult cases' in forensic facilities, Chapter one synthesises literature on institutional violence and aggression, which is a well-studied area of forensic psychology with many thousands of studies published (more than 33,000 literature 'hits' were identified at the outset of the research).   This is also a topic area that was drawn

significant attention from researchers conducting meta-analyses and literature reviews summarising the wealth of studies available. The unique approach used in the systematic review literature herein, however, is that the review examines the perpetration of violence and aggression across different institutional security levels. As this specific approach has not previously been taken by other researchers, the study findings will be of use within the thesis, and perhaps also of interest to other professionals working in the field. The systematic literature review, Chapter one, now follows.

# CHAPTER ONE

## A systematic review of literature on violence and aggression perpetrated by prisoners and patients in secure forensic settings, across different institutional security levels.

# ABSTRACT

**Aim:**  The aim of this review was to use a systematic method to explore collated literature on institutional violence and aggression in different security level settings, within health care and prison environments in England and Wales. The review addressed two questions;

i. Do higher security facilities experience the greatest volume or severity of violent and aggressive behaviour (are they housing the 'difficult cases')?

ii. With regard to the experience of violent and aggressive behaviour in different security settings, are there any differences between findings between the prison and forensic hospital systems?

**Method:**  Four electronic databases were searched for literature along with five additional electronic gateways, complimented by additional hand-searching and reference to experts in the field.  All relevant studies were assessed using a set of specified inclusion/exclusion criteria. The included studies were then further examined and those meeting a reasonable level of quality were reviewed. The data from these studies were extracted and synthesised using a qualitative approach.

**Results:**  Nineteen studies met the inclusion/exclusion criteria and were of sufficient quality to include in the literature review. The limited number of prison-based studies included in the review prevented a full comparison between the prison and forensic hospital systems.  No clear differences were apparent in the frequency of violent and aggressive incidents in different security level settings within health care, and limited confidence was expressed in the generalisability of the finding that incident severity may be highest in lower security settings.

**Conclusions:**  Although this study did not identify results that would be considered significant, a number of limitations in the reviewed literature prevented this study from obtaining an accurate picture of violence and aggression in different security settings. These issues included the idiosyncratic nature of the definitions of violence and aggression used in each study, and the lack of research papers of sufficient quality originating from the Prison Service. These findings were discussed in respect of future research recommendations (including regarding more useful reporting of violence and aggression data), as well as practical applications associated with the study.

# INTRODUCTION

Theories regarding motivations underpinning violence and aggression are numerous. Tedeschi and Felson (1994, as reported by Markowitz, 2003) suggested that violence has one of three main goals; to coerce or prevent another person's behaviour, to address grievances, or to create or assert a situated identity. These are examples of instrumental (goal-driven) aggression. Conversely, reactive aggression is associated with a less-calculated emotional response, triggered by a situation or event, and characterised by an impulsive reaction (Fontaine, 2007).

Whilst these descriptive accounts of the drivers behind violence and aggression will be as applicable within institutions as in the general population, in recent years research has shown that some violence does not cross the boundary wall between locked facilities and the outside world. The barrier can apply in either direction, with many violent offenders becoming non-violent once institutionalised (Eaton, Ghannam, & Hunt, 2000), and non-violent individuals becoming violent once admitted to a facility. As Cooke, Wozniak and Johnstone (2008) summarise, violent persons may only be violent in certain circumstances. This is an interesting viewpoint, and one that has led to a clear increase in the number of published studies in recent years that focus on situational variables associated with institutional violence.

This systematic review will explore the literature on violence and aggression perpetrated by prisoners and patients in secure forensic settings in England and Wales. The key focus will be the reporting of incident frequency and severity in facilities of differing security levels; low, medium and high security health care establishments, and their equivalencies in the Prison Service. The review will not contrast these institutions with those in other countries, since there are international differences in institutional security classification systems. A focus on facilities in England and

Wales specifically will also allow more useful comparison and discussion regarding the empirical research study in Chapter two of this thesis; a study conducted in England.

The combined efforts of Rutherford and Duggan (2008), Thomas et al. (2004), and Pereira, Dawson and Sarsam (2006a) serve to provide an overview of the characteristics of patients in high, medium and low security hospital care in England and Wales. These reviews indicate that at the time of the studies, there were between 4000 and 4500 forensic inpatients, with approximately 1250 patients in low security facilities, 650 in the three high security hospitals, and the remainder were resident in medium security units.

Up to 1,000 new admissions are received within forensic hospitals each year, directed mainly by the courts or prison system (Rutherford & Duggan, 2008). It is not surprising that many patients originate from the prison service, as within the 90,000 strong population of incarcerated offenders (Ministry of Justice, 2008), a large number are known to have mental health problems. Sirdifield, Gojkovic, Brooker and Ferriter (2009) found that up to 15% of prisoners were in fact diagnosed with four or five co-existing mental health disorders. Such congruence and interconnection between hospital and prison systems validates the consideration of the manifestation of violence and aggression across both settings in tandem.

Whilst statistics pertaining to violent and aggressive incidents are not formally reported across the forensic hospital network (NHS facilities or otherwise), official statistics are published annually for the Prison Service. The Ministry of Justice's *Safety in Custody Statistics 2010* revealed 14,356 recorded assault incidents in the service, 19.9% of which were perpetrated against staff. With a prison population of 84,725 in 2010, this equated to 169 assaults per 1000 prisoners. Those interested in

comparing this information to data from the NHS are at present reliant on individual researchers and hospitals conducting and publishing the results of isolated audits and research studies. As such, the systematic literature review approach is necessary if a comprehensive overview is to be compiled in such a way that makes cross-site comparisons tenable.

The statistics detailed above (Ministry of Justice, 2010) and a perusal of the literature emerging from hospital settings, suggest that the volume of violent and aggressive acts in institutional settings is high. The impact of violence is widespread − from the physical and psychological injury that can occur, to the associated costs of property damage and increased staffing, not forgetting the disruption to the institutional regime, and the impact that violence will have on staff and clients' lives and feelings of safety (Gadon, Johnstone, & Cooke, 2006).

When considering the consequences of violence and aggression in this way, it is surprising that there has been limited formal attempt to systematically review research pertaining to institutional violence and aggression. Furthermore, the relevance of the security level of hospitals and prisons has yet to be examined in any great detail, despite the fact that violent and aggressive behaviour *enacted within the forensic setting* may be a risk factor that is of potentially greater relevance to the management and accommodation of offenders, than the original severity of the crime for which they were convicted, or the risk posed should the person escape.

**Appraisal of Previous Reviews**

Preliminary searches for published systematic literature reviews revealed three of relevance, that of Gadon, Johnstone and Cooke (2006), that of Cornaggia, Beghi, Pavone and Barale (2011), and that of Bowers et al. (2011). An additional newly

published review was later identified during the research process; that of Papadopoulos et al. (2012). Each literature review will now be considered in turn.

Gadon et al. (2006) examined studies from around the world pertaining to the association of situational variables and institutional violence. The review aimed to advance the understanding of the causes of institutional violence, focusing on the impact of situational factors rather than person-centred factors on the manifestation of violence in prisons and psychiatric facilities. The consideration of violence in different security settings was a small part of this review. The researchers reported four prison-based studies (all Canadian and North American) that identified that more assaults and homicides occurred in higher security prisons. Gadon et al. found a conflicting outcome with regards to the hospital system, in that the single identified study (that of Shepherd & Lavender, 1999, also evaluated herein) reported higher rates of violence in low security units. The date range for the considered papers ended in 2004, indicating that a fresh examination is now required in order to evaluate new additions to the literature base.

Cornaggia, Beghi, Pavone and Barale (2011) reviewed studies from all countries, however there was a narrower focus on aggression in psychiatric wards specifically. In contrast to Gadon et al.'s (2006) literature review, this research provided an examination of the person-centred factors most frequently associated with violence or aggression, rather than the situational factors. The evaluated literature indicated that the following factors were most strongly associated with violence and aggression; previous episodes of aggression and a longer period of hospitalisation. Other variables frequently associated with violence and aggression were impulsive or hostile traits and a non-voluntary admission. As the prison service and settings of

different security levels were not considered in this review, it is not of direct relevance to the present study.

Bowers et al. (2011) conducted an extensive review of inpatient violence and aggression in health care settings across the world. This was carried out as part of the Conflict and Containment Reduction Research Programme at the Institute of Psychiatry and Kings College London. Just eight keywords were detailed within the search strategy, and it is of note that the 122 included studies (31 from the UK) do not appear to have been quality-assessed. The research team collated information on inpatient violence and aggression, with a view to examining the available literature on "*the prevalence, antecedents, consequences and circumstances of violence and aggression in psychiatric hospitals*" (p2). Whilst the review examined violent and aggressive incidents 'by country and setting', the settings compared were acute (non-psychiatric), forensic and psychiatric hospitals. Again, security levels of hospital settings were not considered in this review, meaning that it does not discount the work undertaken in the current study.

Papadopoulos et al.'s (2012) recently published meta-analysis contrasted with the earlier literature reviews. This research examined the antecedents of violence and aggression within psychiatric inpatient settings, rather than either situational variables (as with Gadon et al., 2006) or person-centred variables (as with Cornaggia et al., 2011) associated with violence and aggression. The antecedent data were first extracted from each of the multi-national 71 studies, and thereafter thematically analysed. Higher-level themes most frequently identified in relation to antecedents to violence and aggression were 'staff-patient interaction', 'patient behavioural cues', 'no clear cause', and 'patient symptoms'.

The above reviews collectively provide a wealth of material regarding the person-centred variables and situational factors that are associated with violence and aggression, as well as an exploration of antecedents that proceed and perhaps trigger the aggressive outcome.  This being said, they all include international studies rather than focussing on facilities in England and Wales, and it is only the review of Gadon et al. (2006) that considered differences between violence and aggression in facilities of differing security level.  It is hypothesised that with a thorough search strategy, a wider range of literature can be identified for facilities in England and Wales, including studies that have been published since 2004 when Gadon et al.'s research was conducted.  The focussed aims and objectives of this new literature review will thus enable the production of an original study that will add to the existing literature base on institutional violence and aggression.

**Aims and Objectives**

The fundamental question examined in this review is whether reported levels of institutional violence and aggression differ according to the security setting in which offenders reside.  The objectives are:

i. To determine if higher security facilities experience the greatest volume or severity of violent and aggressive behaviour (are these facilities housing the 'difficult cases'?)

ii. With regard to the experience of violent and aggressive behaviour in different security settings, the second objective is to determine if there are any differences in findings between the prison and forensic hospital systems.

The obtained literature will be explored in depth, with the study aim and these research objectives addressed in turn.

# METHOD

**Sources of Literature**

In order to identify studies related to the current review an extensive search of electronic bibliographic databases and other electronic gateways was conducted during the period 07$^{th}$ July – 03$^{rd}$ August 2012.  The sources of literature were as follows:

Electronic bibliographic databases

- PsycINFO (1983 to July 07$^{th}$ 2012)

- MEDLINE (1983 to July 07$^{th}$ 2012)

- Web of Science (Science, Social Sciences and Conference Proceedings Citation Indices;1983 to July 07$^{th}$ 2012)

- NCJRS Abstracts Database (1983 to July 27$^{th}$ 2012)

Other electronic gateways:

- Cochrane library (1983 to July 27$^{th}$ 2012)

- Campbell library (2002 to July 27$^{th}$ 2012)

- NHS Evidence (August 03$^{rd}$ 2012)

- Government Publications Office (1994 to August 03$^{rd}$ 2012)

- EThOS (03$^{rd}$ August 2012)

In addition to these searches, contact was made with experts in the study field. Professor Len Bowers (Institute of Psychiatry, London), Dr Michael Daffern (Centre for Forensic Behavioural Science, Monash University, Australia) and Professor Conor Duggan (University of Nottingham) kindly nominated a number of additional studies that were not identified in the electronic searches.

Once the searches had been completed, all identified systematic and meta-analytical review papers were isolated from the other 'hits', and their reference lists used to identify additional primary studies of interest.

In the final stage of the search process (post quality-assessment), studies due to progress to the data extraction and synthesis stage had their reference lists examined for previously unknown papers. This identified one additional journal paper that was later included in the review. Lastly, hand-searching was undertaken in the single journal identified as publishing the greatest number of articles of the highest quality. This activity did not result in any additional papers being found.

**Search Strategy**

The strategy was predetermined in the study protocol, following initial scoping exercises in March 2012. This strategy was adhered to, and full details of the search methods and syntax can be found in Appendix 1. The search terms presented in Box 1 (below) were applied to the three main electronic bibliographic database searches (PsycINFO, MEDLINE and Web of Science), but modification of the search strings was needed for all other searches as many of the gateways had simplistic search functions that did not support use of such detailed search parameters. Again, full details of the truncated search strings can be viewed in Appendix 1. All references identified via PsycINFO, MEDLINE and Web of Science were saved and later processed using Reference Manager Version 10. The results of all other searches were reviewed in real-time, and studies meeting the inclusion criteria were noted by hand.

Box 1: *Main search terms used*

(ABH*) OR (abuse*) OR (abusive*) OR (aggressi*) OR (assault*) OR (attack*) OR (blade*) OR (bodily harm) OR (conflict*) OR (cruel*) OR (danger*) OR (destructi*) OR (fight*) OR (firearm*) OR (GBH*) OR (homicid*) OR (hostag*) OR (kill*) OR (manslaughter*) OR (murder*) OR (offence*) OR (offense*) OR (rape) OR (riot*) OR (unlawful*) OR (violation*) OR (violen*) OR (weapon*)

- AND -

(Ashworth) OR (Broadmoor) OR (custodial) OR (gaol*) OR (high security) OR (high secure) OR (jail*) OR (low security) OR (low secure) OR (medium security) OR (medium secure) OR (Moss Side) OR (Park Lane) OR (MSU*) OR (prison*) OR (Rampton) OR (RSU*) OR (secure unit*) OR (WEMSS) OR (psychiat* hospital*) OR (psychiat* ward*) OR (mental health hospital*) OR (mental health ward*) OR (mental health care hospital*) OR (mental health care ward*) OR (secure hospital*) OR (secure ward*) OR (forensic hospital*) OR (forensic ward*) OR (special hospital*)

**Study Selection**

All identified studies were subject to review against the inclusion/exclusion criteria. A summary of the inclusion criteria is presented in Box 2 below, with the full PICO/PECO (Population, Intervention or Exposure, Comparator, Outcome) details provided in Appendix 2. Excluded populations included residents of healthcare facilities for children, the elderly and learning disabled clients, as the prison service does not have comparable counterparts for such facilities.

The obtained studies were screened for topic relevance upon consideration of their title and abstract content. Irrelevant and duplicate studies were excluded. The remaining potentially appropriate studies were obtained in full-text versions from online journals, hospital libraries, and where necessary from the British Library, London (one unpublished dissertation was unobtainable, as the author did not respond to personal email). These studies were examined in detail against the PICO/PECO criteria using the Study Eligibility Assessment Form (see Appendix 2). Studies using

duplicate data (ie. the same participants / results had been published elsewhere) were also excluded to avoid double-counting.

Box 2: *Summary of inclusion criteria*

| | |
|---|---|
| *Population:* | Male and female adults, or adolescents considered to be young offenders, resident as inpatients or prisoners in England & Wales.  These persons may have any offence history and may be categorised as mentally ill or personality disordered. |
| *Exposure:* | To a period of residence in publically or privately owned facilities; secure mental health facilities or psychiatric hospitals with mixed ward types, or a prison facility. |
| *Comparator:* | Any distinct group as permitted within the defined inclusion populations (see above), or no specified comparator. |
| *Outcome:* | Violence and aggression as measured by offending behaviour records and formal records of the facilities. |
| *Study design:* | Cohort, case-control and case series studies primary studies dated since the introduction of the Mental Health Act, 1983. |
| *Language:* | English and Welsh only (as it is unlikely that studies of facilities in England and Wales have been published in other languages). |

**Quality Assessment**

Studies that met the inclusion criteria were quality assessed using the pro-forma presented in Appendix 3.  The quality assessment criteria were adapted from the CASP critical appraisal toolkits (CASP UK, 1993) and examined the presence of potential research bias within the studies (selection, performance, detection and attrition biases). The quality assessment criteria were developed with an accompanying scoring system to ensure that higher quality studies attracted higher scores.  Each criterion was scored as follows:

- 1 point for every high quality 'Yes' (Y) response

- 0.5 point for every 'Partial' (P) or 'Unclear' (U) response

- 0 points for every low quality 'No' (N) response

Unclear (U) classifications were further investigated when studies were potentially of sufficiently high quality to progress to the next stage. Where studies failed to score highly on the other criteria, this further investigation did not take place. The key method of investigation was contacting the study authors by email. Where no response was received, no scoring adjustments were made. The overall quality score for each study was calculated by summing the scores given for each item. The maximum possible score was 31 for cohort studies and 30 for case-control and case series studies, although frequently the denominator in the subsequent quality-percentage calculation was less than these maximums, due to some criteria being non-applicable.

Quality assessment was carried out independently by the primary author and an additional reviewer (a fellow trainee forensic psychologist schooled in systematic literature review methodology). Inter-rater reliability was assessed using a two-way mixed, absolute, average-measures intra-class correlation (ICC) to assess the degree to which the two reviewers provided consistency in their quality ratings. The resulting ICC of 0.91 was in the excellent range demonstrating that the two reviewers had a high level of agreement and a minimal level of measurement error (Hallgren, 2012).

The quality scoring system enabled the two reviewers to determine a cut-off point whereby studies would progress or not progress to the data extraction stage of the review. The cut-off point was initially determined to be 75%, when the range of quality scores were examined (46% – 85%), however there was some minor disagreement between the scorings of the two independent reviewers, which

potentially impacted the inclusion/exclusion of two studies. When resolution by discussion proved difficult, the quality score cut-off point was moved to 74% to overcome this problem, allowing the two debated studies to be included in the review. The cohort of good quality studies (scoring 74%+) was separated from the cohort of poorer quality studies by a natural divide, as the majority of the latter scored in the 65-70% range.

Of the two studies scoring 74%, one had an additional 'unclear' item, losing it half a point more than its nearest match. The other had an atypical presentation of data, which also led to a small score reduction. There were no other obvious differences between the two studies scoring 74% and the other included studies, and study findings were not considered within the quality review and study scoring process. The conceptual focus of the literature review was unaltered by the inclusion of these two additional studies. One of the studies was set in a medium security unit and the other a high security hospital, and their primary aims were to study violent incidents, which included an examination of the frequency of incidents. This was also a primary aim of the majority of the other included studies, meaning that no new thematic areas were introduced through the inclusion of these papers. The decision to move the score cut-off point to 74% was therefore a practicality that did not change the focus of the literature review, and the two additional studies did not later have any unique impact on the discussion of violence and aggression in secure environments.

**Data Extraction**

Relevant information and data were extracted from the studies with quality scores of 74% or above using a prepared pro-forma (see Appendix 3). The pro-forma was used to ensure that a consistent approach was taken to this lengthy task, which was carried out by the primary author alone. Information on each study's aim and

eligibility for inclusion was recorded, alongside participant population characteristics, details of the study methods, the study results, analyses undertaken and key conclusions drawn.

## RESULTS

The full search process yielded 33,540 hits, of which 30,949 (92%) originated from the three main electronic bibliographic database that were searched; PsycINFO, MEDLINE and Web of Science. A number of additional studies were identified from searches of the Government Publication Offices (992), the Cochrane Library (541), the NCJRS Abstracts Database (500) and the NHS Evidence website (386). Searches of the Campbell Library and EThOS proved less fruitful (77 and 40 studies respectively).

Hand-searching of existing systematic and meta-analytical review reference lists yielded 44 additional journal articles, and one further study was identified when examining the reference lists of the high quality included studies. Hand-searching of the 'Medicine, Science and the Law' journal (as the source of the highest number of included studies, of the highest quality) did not prove to be useful. The contacted experts in the field kindly suggested 11 studies, some of which later proved to be duplicates of material previously obtained.

The vast majority of the studies (29,849) were excluded as irrelevant following review of study title alone, or both title and abstract when needed. A further 3,219 duplicates were also removed, before the remaining possibly-relevant 472 studies had their abstracts more closely examined against the inclusion/exclusion criteria. This resulted in a further 299 exclusions. The remaining 173 study papers were obtained in hard copy for full article review. Upon examination of the articles, 126 of the 173 did

not meet the inclusion criteria, and it was noted that one unpublished dissertation was unobtainable, and thus also excluded. Five articles were removed when they were found to report the same data as other studies, albeit with a slightly different focus in the data analysis.

Lastly, a further 23 studies were excluded due to low study quality when they did not meet the minimum threshold of 74% for inclusion. The remaining 19 studies (in 19 publications) were included in the review. Figure 1 below pictorially displays the search results and the systematic process of study selection. A descriptive summary of the findings from the final 19 studies included in the review can be found in the data synthesis section.

**Characteristics of Included Studies**

There are considerable differences in the sample sizes used in each of the 19 studies, with the larger studies tending to sample entire facilities or long time periods, and the smaller studies tending to review individual wards or collections of cases monitored over short durations. The total number of participants in this systematic review was 2461, with an average of 130 per study, and a range of 17 to 587 participants. The average data collection period of the research studies was 2.9 years, with a range of 1 month to 17 years.

Just two of the studies in the review originated from prison environments, with one being a national-study and the other based in a Category B facility. The remaining 17 were conducted in health care environments; three in low security services, one in a facility with low and medium security wards, eight in medium security services, and five in high security hospitals (the security labelling systems of prison and health care services are briefly described in the glossary in Appendix 4).
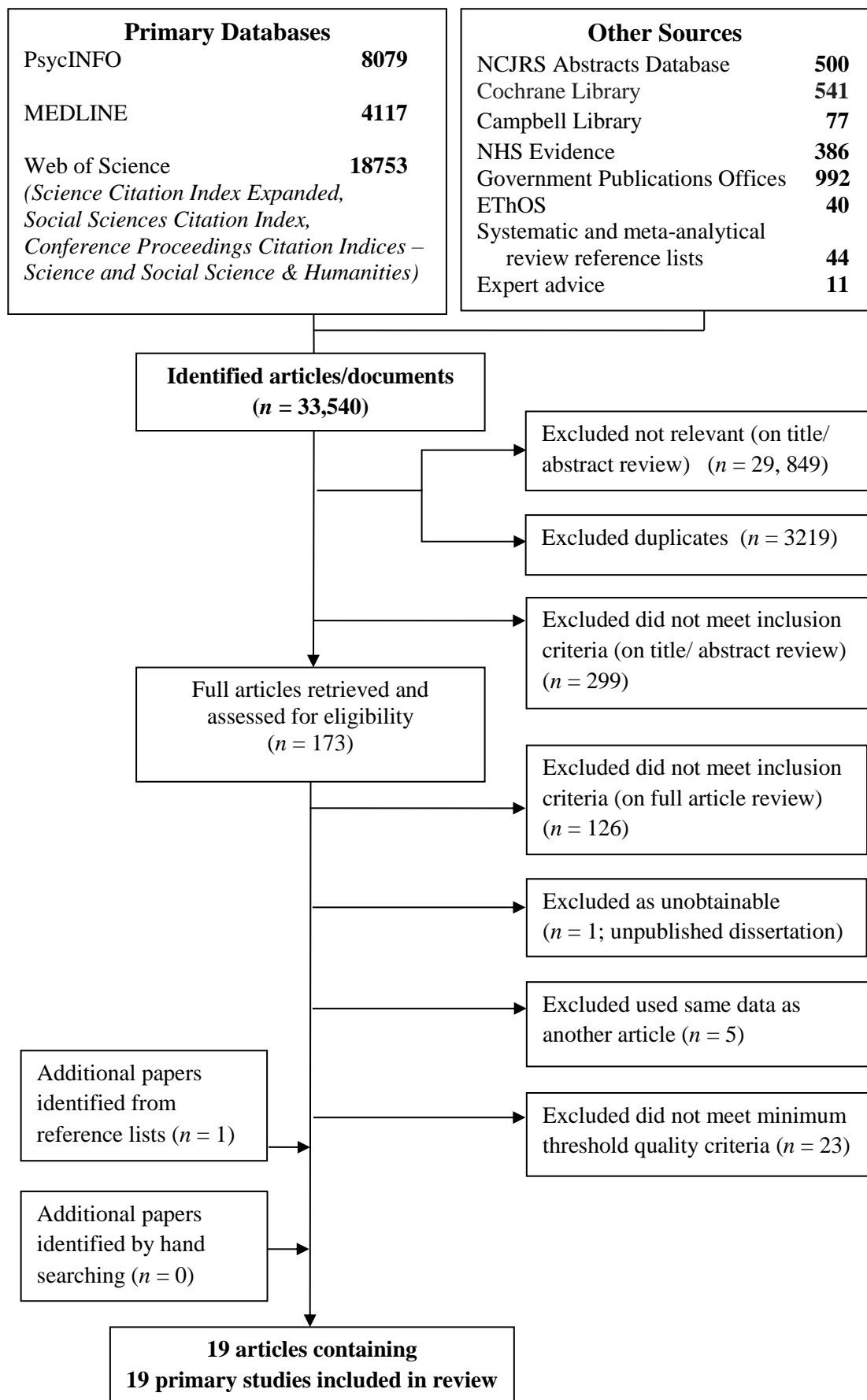
| Primary Databases | | Other Sources | |
|---|---|---|---|
| PsycINFO | **8079** | NCJRS Abstracts Database | **500** |
| | | Cochrane Library | **541** |
| MEDLINE | **4117** | Campbell Library | **77** |
| | | NHS Evidence | **386** |
| Web of Science | **18753** | Government Publications Offices | **992** |
| *(Science Citation Index Expanded,* | | EThOS | **40** |
| *Social Sciences Citation Index,* | | Systematic and meta-analytical | |
| *Conference Proceedings Citation Indices –* | | review reference lists | **44** |
| *Science and Social Science & Humanities)* | | Expert advice | **11** |

**Identified articles/documents**
**(*n* = 33,540)**

Excluded not relevant (on title/ abstract review) (*n* = 29, 849)

Excluded duplicates (*n* = 3219)

Excluded did not meet inclusion criteria (on title/ abstract review) (*n* = 299)

Full articles retrieved and assessed for eligibility (*n* = 173)

Excluded did not meet inclusion criteria (on full article review) (*n* = 126)

Excluded as unobtainable (*n* = 1; unpublished dissertation)

Excluded used same data as another article (*n* = 5)

Additional papers identified from reference lists (*n* = 1)

Excluded did not meet minimum threshold quality criteria (*n* = 23)

Additional papers identified by hand searching (*n* = 0)

**19 articles containing**
**19 primary studies included in review**

*Figure 1.* Process of study selection

The Category B prison study utilised participants with personality disorder specifically, as did one of the health care studies. Fourteen health care studies identified that their participants were mentally disordered (with the host units providing treatment for both mental illness and personality disorder). The final two health care studies were conducted in the same high security hospital and both sampled the entire hospital site, including patients with mental illness diagnoses, personality disorder, and learning disabilities. As demonstrated, other than the national-study, none of the included studies utilised generic prisoner populations.

The selected studies were variants of observational studies. Five of the studies used a cohort design (three prospectively, and two retrospectively), for example to compare the frequency of violence between several ward-types. A further five used a case-control design where the subjects were retrospectively divided into violent and non-violent groups before group characteristics were examined. One of these was a nested case control study, where some features of the data-collection occurred prospectively. The remaining nine studies were case series studies (four prospective and five retrospective), often examining a range of variables concerned with violence and aggression in a facility over a set time period, or in relation to a consecutively-admitted sample of residents.

Statistical combination of data from these observation studies will not be attempted herein, primarily due to the lack of consistency found in study methods, including the timeframes of the studies, the catchment criteria (ie. what aspects of 'violence' and 'aggression' were monitored), and the measurements used. In an examination of the validity of meta-analysis of observational studies, Egger, Schneider and Smith (1998) found that observational studies can produce precise but spurious results, due to the distortion inherent in the types of studies that fall lower in

the hierarchy of research design; distortions originating in particular from selection biases and uncontrolled confounds. With reference to the quality assessment undertaken herein, a range of biases and confounds were indeed identified (see Table 3) which suggest that a meta-analysis would be unsuitable. As such, a descriptive data synthesis is provided, following an initial summary of the characteristics and principal findings of the included studies, presented in Table 2.

The vast majority of the studies (15) made use of a variant of a standardised incident report form or incident database to collect data pertaining to violence and aggression. This being said, the definitions of 'violence' and 'aggression' employed, and the subcategories of each that were included in the study (eg. verbal aggression, damage to property, physical assault, self-harming) varied substantially, with no two studies appearing to use identical parameters. As above, this was a further limitation that precluded the confident use of meta-analysis to explore the study outcomes.

As summarised in Table 1 below, eighteen of the studies examined person-centred variables in relation to outcomes of institutional violence and aggression, with the most frequently identified variables relating to these outcomes being female gender, younger age, negative interpersonal style, and admission from a prison or general psychiatric service rather than a secure hospital. Eleven of the studies examined situational and other variables, with the most frequently identified variables associated with institutional violence and aggression being time of day, day of week, location of incidents, and day/night differences. Two studies reported neutral findings wherein no significant correlation was found between any of the measured variables and institutional violence and aggression, meaning that the violence appeared unpredictable and random.

Table 1: *Frequency of association of variables with violence and aggression.*

| Variables identified as associated with violence and aggression | Low security studies | Medium security studies | High security studies | Prison service studies |
|---|---|---|---|---|
| *Situational and other variables:* | | | | |
| Location (communal ward areas) | | 1 | 3 | |
| Time of day (peaks in afternoon/evening and at mealtimes) | | 3 | 1 | |
| Day or Night (daytime) | 1 | 1 | 2 | |
| Day of week (weekdays) | 1 | 1 | 2 | |
| Season:  Peak in Spring | | 1 | | |
| Peak in Summer | | | 1 | |
| Peak in Winter | | | 1 | |
| *Person-centred variables:* | | | | |
| Longer length of stay | | 1 | | |
| Female gender | 1 | | 2 | |
| Younger current age | | 2 | 1 | |
| Negative interpersonal style | | | 1 | 1 |
| Presence of auditory hallucinations | 1 | | | |
| Use of illicit drugs | 1 | | | |
| Previous hospital admissions | 1 | | | |
| Younger age at first hospitalisation | | 1 | | |
| Transfer of patient from prison / general hospital rather than secure healthcare | | 2 | | |
| Presence of criminal record | 1 | | | |
| Lower number of previous offences | | 1 | | |
| No history of violence or criminal damage | | 1 | | |
| Civil  rather than criminal detention | | 1 | | |
| *No association with any examined variables* | 1 | 1 | | |

Surprisingly, only four of the studies provided a very useful incident-rate figure to describe the frequency of violent and aggressive incidents in their samples (three used incidents-per-patient figures, and one used incidents-per-occupied-bed-day). This is disappointing considering the ease of calculation from raw data.  A great deal more studies (17), however, provided a figure as to the number or percentage of the participants who were involved in violent or aggressive incidents.  This being said,

none of the studies were easily directly comparable due to differences in data collection method, time periods and so on, rendering the use of such figures difficult.

Five studies (one in the Category B prison, one in a high security hospital and three in MSUs) examined the predictive validity of risk assessment and psychometric tools for inpatient violence and aggression. Such tools included the VRAG and HCR-20 risk assessments, and the PCL-R and BPRS psychometrics (all tools are briefly described in the glossary in Appendix 4, where full tool names are given). All studies identified tools that had either moderate or high predictive validity, and thus all supported use of the tools in prisoner and patient management to predict and prevent institutional violence and aggression.

There were no studies that compared populations from different facilities of either the same or a different security level. There was one study based in a general psychiatric hospital that compared populations from a low security ward and a medium security ward (amongst others). This study presented the conclusion that the incident rate for aggression was significantly higher on the low security ward than on the medium security ward (more than eight times higher). It was an unanticipated outcome that the systematic review process would fail to identify any studies that compared establishments of differing security levels, and it was again an unexpected finding that all of the included studies (bar the national prison service study) were conducted in single institutions. The characteristics and principal findings of the 19 included studies are presented in Table 2 below.

Table 2. *Summary of the characteristics and principal findings of the included studies*

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| **Prison Service** | | | | | | | |
| Sattar, 2004<br><br>Entire prison service | To examine the nature and extent of prisoner-on-prisoner homicides in England & Wales | Case series (retro.) | *Homicide*<br><br>Victim and perpetrator-centred variables: Age, sex, ethnicity, violence history, sentence type<br><br>Other variables: Type of prison, homicide method and motive. | 12 years | Case files of prisoners considered to have been unlawfully killed. | n = 26 | Identified 26 homicides; 2.2 on average per year of the study period.<br>Disproportionately high numbers of homicides identified in high security prisons (35% of homicides, when housing 10.6% of the total prison population), and Open YOIs (12% when housing 0.8%).<br>Strangulation or hanging was the most common method (9) followed by use of sharp instruments (7). Motives were most commonly unknown (8) or a result of drug of debt-related altercations (7). Cell-mates were assailants in 11 cases, with 8 homicides occurring after lock-up.<br>Victims, perpetrators and the general prison population had similar background profiles. |
| Dolan & Blackburn, 2006<br><br>Cat B Prison<br><br>(males only) | To examine whether inter-personal style and psychopathy personality factors in PD offenders play a role in violence risk prediction. The predictive validity of the PCL:SV and CIRCLE tools for aggression were assessed at 12 month follow-up | Case series (pro.) | *Violence (towards others only) and Aggression (verbal and physical)*<br><br>Prisoner-centred variables: Age, years in education, length of stay, CIRCLE and PCL:SV scores. | 12 months | Disciplinary reports and inmate files | n = 100 recruited, n = 98 completed<br><br>All participants defined as anti-social PD and were not new admissions. | In 12 months 28.6% of cases were involved in physical violence or aggression, and 25.5% in verbal aggression (42.4% in either). Age, years in education, and length of stay were not significantly different for those who were and those who were not violent.<br>Moderate predictive validity (AUC range .71 to .74) of CIRCLE subscales of dominance, hostility and coercion (except dominance for physical aggression). Moderate predictive validity (AUC .63) of PCL:SV Factor 1 for 'any incidents'. Moderate predictive validity of PCL:SV total scale and PCL:SV Factor 1 for physical aggression (AUCs .73, .67 respectively). No significant results for verbal aggression. Concluded that the CIRCLE is a better predictor of institutional aggression than the PCL:SV. High scores on both measures associated with a shorter time to an incident of aggression, particularly verbal incidents. |

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| ***Low security mental health care services*** | | | | | | | |
| Eaton et al., 2000<br><br>PICU* in General Psychiatric Hospital<br><br>(mixed gender) | To determine which patient-centred demographic, historical and clinical factors link to violence in first month of admission; with a view to future identification of patients at risk of violent behaviour. | Case-control | *Violence (making physical contact or causing injury) and Aggression (verbal abuse, physical threats with/ without weapon, destruction of property)*<br><br>Patient-centred variables: Sex, ethnicity, housing, employment, age, clinical history / diagnosis, forensic / violence history | 16 months overall,<br><br>Period of 1 month for each case | Incident forms and clinical records | n = 52<br><br>Consecutive sample of inpatients on one ward, first month of admission only | 17/52 patients were violent, 30 were verbally abusive, 23 made physical threats, 7 made physical threats with weapon, 16 were destructive to property.<br>Majority of incidents were accounted for by a minority of the patients (19/56 violence incidents – or 34% - were committed by just 2 patients).<br>Violent (17) versus non-violent (35); mean age of violent group was 30, non-violent group 33. No variable occurred significantly more frequently in the violent group than the non-violent, so they were not able to identify (predict) the violent from non-violent using variables available for scrutiny at admission. |
| Muthukum-araswamy et al., 2008<br><br>Low Security Unit*<br><br>(mixed gender) | To describe the pattern of aggressive incidents, compare clinical characteristics of aggressive and non-aggressive inpatients, and determine predictors of aggressive behaviours. | Case-control | *Aggression (to others and property). Also classified as aggression were sexually inappropriate behaviours, disturbed behaviour (aggression towards no one) and fire setting.*<br><br>Patient-centred variables: Age, gender, legal status, smoker, ethnicity, referral source, history of aggression or self-harm, history of psychiatric admission, substance misuse, forensic history, insight to illness/ clinical diagnosis, psychotic symptoms, delusions of control / persecution, and auditory hallucinations. | 6.5 years | Critical incident reports extracted from critical incident database | n = 78<br><br>Patients admitted to unit during study period.<br><br>All were referred to the unit due to displaying aggressive behaviour. | In 6.5 years, 425 incidents were reported; aggression to staff (229, 54%), to patients (64, 15%), to others (5, 1%), to property (70, 16%), sexually inappropriate behaviours (19, 4%), disturbed behaviours (36, 8%) and fire setting (2, 0.5%).<br>Majority of incidents were accounted for by a minority of patients (64% of incidents by 5 patients). Overall a greater proportion of females than males (48% rather than 41%) engaged in aggression.<br><br>Aggressors (44%) versus non aggressors (56%); the aggressor group had higher percentages of those with history of more than one psychiatric admission (56%), presence of delusions of control and persecution (63%), and presence of auditory hallucinations (60%). Whilst these three variables were statistically significant, after logistic regression, only history of more than one psychiatric admission and presence of auditory hallucinations remained significant. The aggressor group also had a slightly higher proportion of those aged over 35 years of age, but this finding was not found to be statistically significant. |

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| Walker & Seifert, 1994<br><br>PICU*<br>in a General Hospital<br><br>(mixed gender) | To investigate physical assaults in a newly opened unit, exploring related patient-centred variables correlating with assaults. | Nested case control | *Violence (physical assault to another person only)*<br><br>*Severity of violence*<br><br>Patient-centred variables: Sex, ethnicity, legal status, clinical diagnosis, poor previous compliance with treatment, number of previous admissions, use of illicit drugs, marital / living status, forensic history, employment.<br><br>Other: timing of incident (hour/day) | 6 months | Question-naire completed at time of assault, plus use of incident forms and clinical records | n = 48<br><br>All patients admitted during study period. | There were 37 assaults; 34 on staff, 3 on other patients. Reported 6 first degree assaults (no injury), 28 second degree and 3 third degree (major injury). Weapons were used on 3 occasions.<br>Assaults occurred approximately every 5 days; more frequently on weekdays than at weekends, and more often during the day.<br>Majority of incidents were by a minority of the patients (21/37 assaults – 57% - committed by 4 patients, or 15/37 assaults – 41% - committed by 2 patients).<br>Violent versus non-violent; 16 vs 32 patients. The violent group were significantly more likely to have a criminal record (81% vs 31%), and to admit to use of illicit drugs (75% vs 38%) Violent patients were also significantly more likely to abscond from the ward during their stay (4/16, compared with 0/32).<br>Poor previous compliance with treatment, number of previous admissions, ethnicity, sex, psychiatric diagnosis, legal status, marital /living and employment status were not significant variables. |

***Low and medium security mental health care services***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Shepherd & Lavender, 1999<br><br>A Low Security** and a Medium Security ward<br><br>In a General Psychiatric Hospital<br><br>(mixed gender) | To investigate aggressive incidents and related contextual variables (environmental and interpersonal), in order to increase understanding of antecedents, incidents themselves, and their consequences | Pro. cohort | *Aggression (physical and sexual aggression, verbal aggression and property damage)*<br><br>*Severity of aggression*<br><br>Patient-centred variables: Internal incident antecedents.<br><br>Other variables: External antecedents, management strategies used. | 5 months | Incident report forms and structured staff interview | n = 72<br><br>'Assailants' across hospital; unknown number in low and medium security wards specifically | *Findings for the low and medium security wards:*<br>Incident per patient (5 month period) ratio calculations by ward type: IPP 2.4 (36 incidents) on Low Security Ward, IPP 0.27 (6 incidents) on Medium Security Ward. This difference was significant ($\chi^2 = 21.45$, d.f. 1, $p<0.001$).<br><br>*Findings for the entire hospital site:*<br>In 5 months there were 130 incidents; 110 of physical aggression (inc 3 sexual), 6 of verbal aggression, and 14 of property damage.<br>Severity of physical aggression; 1 minor, 46 not so serious, 51 serious, 12 very serious incidents.<br>(CONT/) |

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| | | | | | | | There were 72 assailants, and descriptive data is reported. Approximately one third of patients accounted for two thirds of incidents. The 130 incidents had 115 victims; 57% patients, 41% staff, 2% visitors. Taking male/ female staff numbers into account, 34% of male and 11% of female staff were victims – this difference was significant (p<0.01). Antecedents; incidents were significantly (p<0.05) more likely to be preceded by external factors (interpersonal and hospital-related) than internal factors (mental state, substance use). Frequency of different incident management strategies were reported; staff were significantly more likely to manage incidents with physical interventions (eg. C&R or PRN) than verbal ones (p<0.001). |

*Medium security mental health care services*

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| Doyle et al., 2002<br><br>MSU<br><br>(mixed gender) | To explore the predictive validity of Risk Assessment Tools (PCL:SV, VRAG and HCR-20) in predicting inpatient violence. | Case-control | *Violence (towards people and property); actual, attempted or threatened*<br><br>Patient-centred variables: Age, sex, ethnicity, diagnosis, index offence, marital status and source of referral. Additionally, PCL:SV, H-10 (of the HCR-20) and VRAG scores. | 12 weeks per case | Continuous nursing and MDT file records | n = 87<br><br>Consecutive sample of newly admitted patients who went on to stay 3+ months during 1993-1999 | In 12 weeks, 52% of sample involved in violence, and 28% at Level 1 (actual assault). Of the incidents, 58% occurred in the first 14 days of admission. The non-violent were significantly more likely to have been referred by Special Hospitals, with the violent more likely to have transferred from prisons or general hospitals. Age, sex, ethnicity, diagnosis, index offence, and marital status were not significant variables.<br><br>Moderate-high predictive validity of PCL:SV (full scale, and factor scales) found for both overall and Level 1 violence (AUC range .72 to .76). Moderate predictive validity also found for VRAG (AUCs .64 to .71) and H-10 (AUCs .66 to .70) In multiple regression with frequency of violence as the dependent variable, only PCL:SV was a significant variable (r=.52, p<.001). Those with PCL:SV score >18 were exactly 3x more likely to be violent than those with scores <13. |

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| Gray et al., 2003<br><br>MSU<br><br>(mixed gender) | To explore the predictive validity of Risk Assessment Tools (PCL-R and HCR-20) and measures of clinical symptomology (the Beck Hopelessness Scale and the Brief Psychiatric Rating Scale) in predicting inpatient violence and self-harm. | Case series (pro.) | *Violence (verbal and physical aggression, aggression towards property, and self-harming)*<br><br>Patient-centred variables: Age at first psychiatric admission.<br>PCL-R, HC-15 (of the HCR-20), BHS, BPRS scores. | 3 months per case | Incident report forms and nursing records used to complete the study's new AVS - Aggression Vulnerability Scale | n = 34<br><br>Sample of consecutive admissions. | In 3 months 'over 50%' of sample were involved in verbal aggression, 32.4% in physical, 32.4% in aggression towards property, 52.9% in self-harming.<br><br>Found high predictive validity of the HC-15, and the H-10 and C-5 scales, having AUCs in the range of .73 to .79 for verbal, .77 to .81 for physical and .77 to .83 for aggression towards property.<br><br>Moderate-high predictive validity of the PCL-R total scale and Factor 2 scores, but Factor 1 was a poorer predictor. PCL-R had AUCs of .60 verbal, .70 physical, and .76 property aggression. Factor 2 had AUCs of .68 verbal, .69 physical, and .87 property.<br><br>BPRS also had mod-high predictive validity; AUCs of .81 verbal, .84 physical and .69 aggression to property. Age of first psychiatric admission had moderate results; AUCs of .76 verbal, .64 physical, and .72 property. BHS predicted self-harming, but was otherwise only predictive of aggression to property (AUC .70). |
| Grevatt et al., 2004<br><br>MSU<br><br>(unknown gender unit) | To explore the predictive validity of Risk Assessment Tools (HCR-20 and VRS) in predicting inpatient violence within the first 6 months of admission. | Case series (retro.) | *Violence (towards people and property; actual, attempted or threatened) and Verbal Aggression*<br><br>Patient-centred variables: Age, diagnosis, length of stay, number of previous admissions, source of referral, previous offence type, and number of previous offences.<br>HC-15 (of the HCR-20) and VRS scores. | 6 months | Incident forms | n = 44<br><br>Total male population of unit after exclusions<br><br>Data period for each participant was first 6 months of admission | In 6 months 57% of sample had at least one relevant incident form completed; 30% of sample for physical assault, 39% for verbal threats or abuse, and 21% for property damage.<br>Age, diagnosis, length of stay, number of previous admissions, source of referral, and previous offence type were not significant variables. Number of previous offences was negatively correlated with incidents (r = -0.31, p<0.05).<br><br>The HC-15 composite (of HCR-20) and total VRS scores did not predict violence. The HCR-20's C-5 scale had mod-high predictive validity for 'any incident', property damage and verbal aggression (AUCs .72, .65, .81 respectively).     (CONT/) |

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| | | | | | | | Re-examined in light of number of incidents, the HC-15 composite had predictive validity for 3+ physical assaults (AUC .61), and the C-5 scale for 1-2 and 3+ 'any incidents' (AUCs both .68) and for 3+ physical assaults (AUC .76). The VRS also started to possess moderate predictive validity, with the static factor score predicting 1-2 incidents of physical assault, and the dynamic factor score 3+ incidents (AUCs .64 and .6). In multiple regression, the only significant variable was the HCR-20's C-5 scale, for 'any incidents' and verbal aggression ($r = 0.35$, $p<0.05$ and $r = 0.46$, $p<0.005$ respectively). Individual HC-15 items with predictive validity (high rank scores) were major mental illness, lack of insight, and active signs of MI. |
| Gudjonsson et al., 1999<br><br>RSU<br><br>(mixed gender) | To examine all violent incidents over a 17 year period, modelling the relationships between incidents and patient-centred and situational factors. | Case series (retro.) | *Violence (physical violence to people, threat of violence, verbal assault, property damage and self-injury)*<br><br>Patient-centred variables: Age, gender, ethnicity, diagnosis, length of stay, legal section.<br><br>Other: timing of incident (hour/ day/ month) | 17 years<br><br>(1980 – 1996) | Violent incident report forms | n = 280<br><br>All inpatients during study period. | *All data includes self-harming incidents:*<br>In 17 years, 165/280 (59%) admissions were involved in 2180 violent incidents; 53% involved a threat rather than violence being inflicted on person/property. There was a mean of 360 incidents per year 1983-1986, compared to a mean of 128 p.a. over the 17 year period. Incidents peaked in the month of March and dipped in September. A peak was seen on Tuesdays, and a dip on Sundays. Incidents were lowest at night, increasing in the day and peaking in afternoon and evening. Clear peaks were also seen at meal times, medication times, and at day/night staff transfer at 9pm.<br><br>Two thirds of incidents occurred 1983 – 1986. A new facility opened in 1986 and C&R was introduced in 1987. There were precisely twice as many incidents 1980-1986 as in 1987 and beyond (sig $p<0.001$). Significant difference found in length of stay of a violent vs non-violent patients, 1.0 and 0.51 mean years respectively ($p<0.001$).<br>(CONT/) |

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| | | | | | | | Significant decrease in number of incidents found with age (three bands of <30, 30-45, >45yrs; range p=0.01 to p<0.001). |
| | | | | | | | More patients on a civil section were involved in incidents than those on criminal sections (p<0.001). |
| | | | | | | | Sex, ethnicity and diagnosis were not significant variables. |
| Kennedy et al., 1995  RSU  (mixed gender) | To examine the characteristics of violent incidents and their perpetrators, in order to seek predictors of violence and consider the philosophy of use of seclusion facilities. | Case control | *Violence (attack on property or assault involving physical contact)*  *Severity of violence, severity of intent*  Patient-centred variables: Age, gender, ethnicity, diagnosis, being subject to s.41 restriction order, index offence, source of referral, forensic history  Other: location of incident, timing of incident (hour/ day/ month), resolution techniques used | 4 years | Incident forms | n = 348  All inpatients during study period. | 127 patients (36%) involved in 981 incidents over 72,163 bed days (13.5 per 1000 occupied bed days). Just 27 patients (8%) perpetrated 705 incidents (72%). Of the incidents, 293 (30%) were against property. Of the 688 assaults, 53% were against staff, 42% peers, and 5% against both. Measure of intent; of the assaults, 41% were single blow to non-vital area, 45% multiple blows or single to a vital area, and 14% involved use of a weapon. Measure of severity; 50% of assaults caused no injury, 41% minor and 9% serious injury.  Most incidents (83%) took place in communal residential areas. There was no sig. monthly / seasonal variation. Incidents were significantly more likely to occur during the afternoon shift (p<0.005) and meal times (p<0.001).  Physical restraint was used in 36% of incidents, and medication in 13%. Verbal techniques for the rest; no use of seclusion.  *Highly violent versus others;* The 27 most violent patients were compared to a control group of 54 (comprising sets of two patients admitted after each index patient). The mean age of violent group was 27, the other group 35. 56% vs 17% were admitted from a general psychiatric service, 37% vs 54% from the legal system, and 7% vs 18% from a Special Hospital. These differences were significant (p<0.001), as were the differences in criminal histories, where 4 of the violent |

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| | | | | | | | group had histories of violence or criminal damage, compared to 28 of the other group (p<0.05). Sex, ethnicity, diagnosis, being subject to s.41 restriction order and index offence were not significant variables. |
| Rix & Seymour, 1988  RSU  (mixed gender) | To examine the frequency and severity of violent incidents, their situational circumstances, and characteristics of the victims and their perpetrators. | Case series (retro.) | *Violence (damage or injury threatened or inflicted on property or persons) NB. includes fire setting and self-injury*  Severity of violence  Patient-centred variables: Age, gender  Other: timing of incident (hour of day) | 1 year | Violent incident forms | n = 52  All inpatients and new admissions onto unit during study period | There were 389 incidents, involving 447 threats of violence and 216 assaults (these can co-occur in incidents) NB. These figures include 2 threats of self-harm but no self-harming incidents. Of the 52 patients, 31 were violent. Two patients accounted for 49% of the 389 incidents. There was no significance of age and gender effects on number of incidents. The majority of threats were minor (graded 0 or 1 on 0-3 scale), with nurses the victim in 39% of cases, peers in 30% and property in 21%. The majority of injuries from violence were minor (graded 0-1 on 0-3 scale), with nurses the victim in 31% of cases, peers in 31% and property in 37%. Assaults on each nursing grade (incidents per nurse per year) were; enrolled nurses 2.8, nursing assistants 2.1, staff nurses 1.7, student and charge nurses both 1.1. Incidents increased throughout the day, to 11pm. |
| Rogers et al., 2002  MSU  (mixed gender) | To examine relationships between content of command hallucinations and violence or self-harming, establishing the predictive value of hallucinations on these outcomes. | Retro. cohort | *Violence (assault on another person with physical contact, verbal threats of impending violence needing staff intervention)*  *Self-harm (successful, failed, or threatened self-harm or suicide)*  (CONT/) | 51 months | Untoward incident forms | n = 110  All residents in unit minus those excluded (eg. those who refused to discuss symptoms) | The 110 participants included 56 (51%) non-hallucinators and 54 (49%) command hallucinators (17 of the hallucinators had violent commands, 20 self-harm commands, and 17 both types). There were no significant differences between the groups in relation to demographics or diagnoses. Overall there were 223 incidents in the study period; 62 were violent incidents (100 were self-harming, and the rest other categories). Of the 62 violent incidents, 18 command hallucinators accounted for 46 (74%) and 10 non-hallucinators accounted for 16 (26%). (CONT/) |

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| | | | Patient-centred variables: Gender, age, previous violent convictions, length of stay, history of alcohol or substance abuse, history of paranoid delusions, diagnosis, presence and content of command hallucinations | | | | Inpatient violence and violent command hallucinations were unrelated; after length of stay was controlled, no significant relationships were found between violence and command hallucinations, gender, age, length of stay, previous violent conviction, alcohol and substance abuse, and history of paranoid delusions. (NB. significant relationships were indeed found between self-harm command hallucinations and self-harming incidents). |
| Torpy & Hall, 1993 MSU (mixed gender) | To examine aggressive incidents, the characteristics of aggressive patients and the most serious incidents which cause physical harm. | Pro. cohort in main, some Nested case control | *Aggressive incidents (verbal aggression, physical aggression/ incidents)* *NB. Includes self-injury.* Patient-centred variables: Age, gender, diagnosis, legal status (being subject to s.41 restriction order or not) Other: Incident management and policy | 3 years | Staff observation aggression scale (SOAS) report form | n = 113 All inpatients and new admissions onto unit during study period | In total there were 820 aggressive incidents, with the numbers rising each cohort year (152 in year one, 233 in year two, 435 in year three). The Aggressive Index Score (AIS; a measure of general level of aggression, taking into account frequency and severity) showed that despite the rise in number of incidents, the AIS for each of the 3 years was not statistically different. Proportions of verbally and physically aggressive incidents were fairly constant over the 3 years, with 31% verbal and 69% physical overall. There was no relationship between type of aggression (verbal or physical) and diagnosis. Overall, 62% of aggressive incidents were aimed at staff, 23% at peers, 11% at objects and 1% was self-harming. Similar proportions were seen in each cohort year, except for those aimed at objects as there was a statistically significant decline in these after the first year. Aggressive vs Non-aggressive patients: 84 patients were involved in aggressive incidents and 29 were not. There were no significant differences between the assailants in each of the 3 years, and they were not different to the other patients in terms of age, gender, diagnosis or legal status (CONT/) |

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| | | | | | | | In the 3 years, 37 aggressive incidents led to medical treatment (4.5%). Of these, the 20 with adequate nursing records were further described in depth; highlights of this description are that 5 were aimed at self, 15 at staff and peers, and 7 involved weapons. Of the 20 incidents, 5 patients were responsible for two each, with 10 patients responsible for 1 each. There were 2 incidents were life was endangered (one stabbing, one attempted drowning). |
| | | | | | | | As policy changed, use of seclusion in response to incidents declined over the study duration (used with 35% of incidents in year one, 16% in year two and 7% in year three), a change that was statistically significant (p=0.01). Use of Control & Restraint did not vary significantly. |

*High security mental health care services*

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| Carton & Larkin, 1991 <br><br> Special Hospital <br><br> (mixed gender hospital) | Replicated a prior study *(see Larkin et al., 1988 below)* of violent incidents in one Special Hospital, and explored the impact of policy changes (staffing and management of violence) on hospital violence. | Case series (pro.) | *Violence (an incident which 'could' physically damage self, other or property).* <br><br> *NB. Presumed to include attempts, but not threats.* <br><br> *Severity of violence* <br><br> Patient-centred variables: None. <br><br> Other: Policy changes (mixed gender staffing and Control & Restraint training), timing of incidents (day of week) | 2 months | Incident recording questionnaire | 17 patients as average daily population. <br><br> All residents on the female ICU ward only | In the 2 month study period there were 17 incidents; of which 41% were assaults on staff, 24% assaults on peers and 35% on property. <br> Overall 47% of patients were assaultive, however 1 patient accounted for 40% of all incidents. <br> Severity of incidents; 47% were minor, 47% serious, and 6% (1 incident) life-threatening. <br> Almost half of the incidents resulted in minor injury. <br> More incidents occurred on Mondays and Fridays and less at weekends. <br><br> Concluded that the frequency of incidents had reduced substantially since Larkin et al.'s 1988 study; suggesting that this was a result of policy changes, with the introduction of male staff to the female ward, and the introduction of Control & Restraint training. |

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| Coldwell & Naismith, 1989<br><br>Special Hospital<br><br>(mixed gender) | To examine violent incidents together with their antecedents and associated factors, with a view to reducing future rate of violence. | Case series (retro.) | *Violence (physical strike or attempted strike to self, other or property).*<br><br>*Severity of violence*<br><br>Patient-centred variables: Age, prior behaviour<br><br>Other: location of incident, timing of incident (hour/ day/ month/ season), resolution techniques used | 12 months | Violent incident report forms | n = 51<br><br>From the two high dependency wards only | The participants were different to the rest of the hospital population in several ways; mean age was 34.9 years vs 37.8 years (statistically significant p<0.005), 92% had schizophrenia vs approx 75%, 50% were admitted from within the NHS vs 18%, and over 40% had a restricted legal status vs 15%.<br>In 12 months there were 116 violent incidents, and 31/51 patients (61%) engaged in violence. The 31 engaged in 1-22 incidents each, with 6 violent patients (19%) responsible for 62% of incidents. The patients who were involved in violent incidents were younger than those who were not (t=2.94, *p*<0.05).<br>53 of incidents were directed to peers, 55 to staff, 12 to property, and 4 were self-injury (8 had multiple focus). 7 involved weapons. Severity; 32% were minor, 44% were moderate and 24% were serious incidents.<br>In 87% of cases, seclusion was initiated or continued following the incident. In 35% medication was given, in 9% the patient received counselling (multiple outcomes possible). Staff used physical restraint in 78% of cases.<br>The location of the incidents was largely on the wards (87% or 101 incidents). Of these 101, most occurred in communal areas (58%) and in seclusion rooms (17%). Nurses reported unsettled behaviour in 53% of patients prior to the violence, and settled behaviour in 47%.<br>The number of incidents changed at time points during the day; 34% during the first nursing shift, 60% during the second, 6% during the third (the night shift). The differences were statistically significant (p<0.05). Day of week had no relationship with violence. Seasonal variation in incidents was noted, with peaks in winter and dips in summer (significant to p<0.005). |

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| Daffern et al., 2010<br><br>High security DSPD and PD services<br><br>(mixed gender hospital) | An examination of the relationship between perceptions of coercion at admission, interpersonal style and subsequent aggression and self-harm during hospitalisation, in patients with personality disorder | Case series (pro.) | *Violence and aggression (physical assault, verbal and non-physical assault, self-harm)*<br><br>*NB. Physical assault is defined only as contact resulting in discomfort or injury.*<br><br>*Self-harm definition included attempted self-harm and attempted suicide.*<br><br>Patient-centred variables: Interpersonal style (as measured by CIRCLE), perceptions of coercion on admission (MPCS scale of MAES:SF). | 6 months | Incident form database used to complete Overt Aggression Scale (OAS) | n = 39<br><br>All patients who consented within the two services, with the DSPD and PD services both being males only | In the 6 month period following the MAES:SF interviews, there were 96 incidents of aggression and 31 of self-harm. The majority of the aggression was verbal (73%), whilst 24% were physically aggressive incidents directed at others (23 incidents; with 69% of these directed at staff and 22% at peers). Of the 39 patients, 17 (44%) were aggressive.<br><br>Levels of perceived coercion were high (measured by the MPCS scale of MAES:SF), with 69% of patients feeling like they did not have influence, control (62%), choice (49%) or freedom (64%) regarding their admission. Emotionally, 46% felt anger in response to their admission, 62% felt sadness and 67% were confused. More positively 44% felt pleased and 54% were relieved. Levels of perceived coercion were found to not be significantly related to aggression and/or self-harm.<br><br>Using the CIRCLE measure of interpersonal style, neither hostility nor dominance appeared to associate with aggression or self-harm. Patients with a more coercive interpersonal style however, were significantly more likely to act aggressively and/or self-harm (p=0.002), giving the Coercive scale of the CIRCLE predictive validity for aggression and self-harm. The Coercive scale score accounted for 38% of the variance in a regression model for predicting aggression or self-harm. The MPCS scale only accounted for 2.1% of the variance. |

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| Larkin et al., 1988<br><br>Special Hospital<br><br>(mixed gender) | A study of violent incidents in a Special Hospital, comparing details of recorded incidents (including frequency and severity) with earlier studies in General Psychiatric Hospitals. | Pro. cohort | *Violence (an incident which could physically damage an individual or property)*<br><br>*NB. Includes self-injury.*<br><br>*Severity of violence*<br><br>Patient-centred variables: Gender.<br><br>Other: location of incident, timing of incident (day/ month), antecedent of assault, resolution techniques used | 6 months | Incident recording questionnaire | n = 587<br><br>All wards and all patients in the hospital were included (one ward later excluded from study) | In the 6 month study period there were 1144 incidents; 407 assaults on staff, 367 assaults on peers, 186 self-assaults, and 184 on property.<br>Overall, 37% of patients were involved; 60% of females (83/139) were involved in violence, compared to 30% of males (132/448).<br>The 1144 incidents gave incident-per-patient rates of 0.7 and 6.0 for males and females in the 6months, the latter being so much higher due to females accounting for 73% of the incidents.<br>Overall, 4% of the hospital's patients accounted for 60% of incidents, with 20 female patients accounted for 51% of all incidents, and 1 female accounted for 12% of all incidents.<br>Severity of incidents; 36% were minor, 61% serious, and 3% life-threatening (14/31 of these being self-tied ligatures).  Half of the incidents resulted in no injury (51%), 45% in minor injury, and 3% in serious injury.<br>Referring to the cohorts (ward types), incident-per-patient rates differed substantially.  For males, the range was 0.04 – 3.0, with the least incidents occurring in pre-discharge and rehab wards, and the most in admission wards.  For females, the range was 0 – 32.0, with lower incident numbers in pre-discharge and admission wards, and a large number on assessment and rehab wards, before a huge jump to 32.0 on the ICU ward.<br>The highest number of incidents occurred on the wards. More incidents occurred on Mondays and Fridays and less at weekends (significant to p<0.05).  The study period was May-October, with a peak of incidents in July and a dip in October.  Spontaneity of attack was reported in 85% of cases, with only 15% reported to be in response to provocation. As a result of incidents, 53% of patients were secluded, 19% medicated and 24% given counselling or no further action. |

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| Uppal & McMurran, 2009<br><br>High security<br><br>(mixed gender) | To examine the frequency and nature of incidents across five clinical directorates, divided by gender and mental health categorisation. | Retro. cohort | *Incidents (violence, self-harm and security incidents)*<br><br>*Violence (includes physical assault, sexual assault, threats, aggression/hostility, harassment, verbal abuse, damage to property, play-fighting etc)*<br><br>*Severity of violence*<br><br>Patient-centred variables: Gender, mental health category / diagnosis<br><br>Other: location of incident, timing of incident (hour of day) | 16 months | Incident report forms and Serious Untoward Incident forms (data as stored on central database) | n = 325<br><br>All five directorates and all patients in the hospital were included | In 16 months there were 5658 incidents; violence being 63% of incidents, self-harm 31%. Of the 325 patients, 95% were involved in at least one incident. The 5658 incidents gave an incident-per-patient rate of 0.89 per month (including security incidents). Males; 77 (30%) accounted for 78% of incidents involving males. Females; 33 (65%) accounted for 92% of incidents involving females. Severity of incidents; one incident fell into Category A (an absconder), 1% of incidents in Category B (serious incidents including serious self-harm, assaults with weapons), 60% in Category C (assaults without weapon, sexual assault, moderate self-harm) and 39% in Category D (all other incidents including minor assault and verbal abuse). The number of Category C and D incidents seen in each directorate differed significantly ($p<0.05$), with the Women's service having a disproportionately high number of Category C incidents (54% of the hospital's total).<br><br>Examining the cohorts (clinical directorates); Women's Service – responsible for 47% of the total incidents (of these, 46% were violence to others and 48% self-harm). DSPD – 17% of incidents (70% violence, 21% self-harm). PD Service – 13% of incidents (83% violence, 12% self-harm). LD Service – 13% of incidents (80% violence, 17% self-harm). MI Service – 10% of incidents (84% violence, 11% self-harm).<br><br>Referring to the Women's Service alone; There was found to be a significant difference in incidents according to clinical diagnosis. Violence was most common among women with LD, then MI, then antisocial PD, then PD other. Self-harming was most common among women with MI, then LD, then antisocial PD, then PD other. (CONT/) |

| Authors, year and setting | Aims of study | Study design | *Outcome measures* and study variables | Study duration | Measures of violence/ aggression | Participants | Main relevant findings |
|---|---|---|---|---|---|---|---|
| | | | | | | | In all directorates, the majority of violence to others occurred in the ward day rooms, and majority of self-harming incidents in the bedrooms. Timings of peaks of violence tended to vary between directorates, but dips occurred in all services from approx. midnight to 7am. The peaks were around 9-10am and 4-5pm in the LD service, 10-11am in the DSPD, 4-5pm in the MI and PD services, and 6-7pm in the Women's service. |

\* designates low security services confirmed to have accepted forensic referrals at the time of the study.

\*\* designates low security services where the acceptance of forensic referrals is unconfirmed (study authors not contactable).

NB. For Risk/ Psychometric tools:  See glossary for descriptions of each (Appendix 4).

NB. Abbreviations:  PICU [Psychiatric Intensive Care Unit], ICU [Intensive Care Unit], Retro. [Retrospective], Pro. [Prospective], PD [Personality Disorder], MI [Mental Illness], LD [Learning Disability].

## Quality of Included Studies

The quality of each of the included 19 studies is outlined in Table 3 below. A threshold of a 74% quality score was needed for a study to be included in the review.  The range of scores achieved in the quality assessment was between 74% and 85%, ten studies having scores in the 74-79% range, and nine studies in the 80-85% range.  The number of 'unclear' items ranged between four and 12 per study.

Table 3. *Quality of included studies*

| Authors, year and setting | Inclusion and selection bias | Measurement and detection bias | Attrition and/or performance bias | Analysis and reporting of findings | Confounding variables considered | Quality Assessment Score % (no. items unclear) |
|---|---|---|---|---|---|---|
| Carton & Larkin, 1991<br><br>Special Hospital | Selected female ICU wards only for inclusion, after prior study highlighted that this service had an incident rate 18 times higher than the male ICU.<br>Sample size of 17 was extremely small. | Incident recording questionnaire used (originally piloted in Larkin et al.'s 1988 study). Note that poor incident recording rates were found in the original study (only 60-80% reported); not commented on in this study.<br>Incident questionnaires were cross-checked with hospital incident forms and Ward Day Book. | An 'average' daily population of 17 was used for the 2 month period. No account given of length of stay or attrition. | Statistical analysis not conducted for any of the findings presented; introduces difficulties in conclusive interpretation. It is noted, however that with a sample size of 17, analysis itself is difficult. | Recognised that the number of patients on the ward was slightly higher than in the previous study, making direct comparisons less simple; did not consider using occupied bed days or similar calculation. | 75%<br><br>(6/30) |
| Coldwell & Naismith, 1989<br><br>Special Hospital | Two high dependency wards selected for the study, treating the most difficult and aggressive patients in the hospital.<br>The included participants were also different from the general hospital population with regard to age, diagnosis, source of referral and legal status. | Used violent incident report forms and cross-validated these with the daily ward report and clinical notes. | Number of patients in the unit will have fluctuated over study period (no account given). | Statistical analysis not conducted for all findings presented; introduces difficulties in interpretation. | Identified impact of environmental factors (such as layout/decor of the ward, patient density) and staffing factors (attitudes, morale and generated ward 'culture'). | 85%<br><br>(7/29) |
| Daffern et al., 2010<br><br>High security DSPD and PD services | Low participant uptake rate (39 out of 140 beds in service). Participant cohort verified as representative of the full service on demographic and background details. Patients with more than one admission were asked to focus on the latest one. (CONT/) | MPCS scale (of MAES:SF) and CIRCLE psychometrics described (inc validity). CIRCLE tool completed by two staff members who knew the patient, rather than one (ie. inter-rater validation). Patients were interviewed about their admission (using the MAES:SF) a mean of 1859 days | Two patients who were discharged prior to the 6 month follow-up were excluded from the analysis. | Recognised that a small sample (37 after attrition) increased likelihood of Type II errors. | A recognised confound is that the patients had been resident for some time (mean of 1859 days), meaning that the relationship between perceived coercion at admission was not being compared with aggression | 82%<br><br>5/30 |

| Authors, year and setting | Inclusion and selection bias | Measurement and detection bias | Attrition and/or performance bias | Analysis and reporting of findings | Confounding variables considered | Quality Assessment Score % (no. items unclear) |
|---|---|---|---|---|---|---|
| | There was little variation in the levels of perceived coercion in the sample at the outset, limiting the chances of identifying a relationship between this and later aggression. | (SD = 2611) after admission; a delayed retrospective reflection on how they felt historically. | | | and self-harming immediately after admission. | |
| Dolan & Blackburn, 2006 Cat B Prison | The selection of the 100 participants was not explained, although suitable exclusion of certain types was (eg. substance misusers, LD prisoners). High psychopathy scores (mean 16.34, SD 3.46) in selected participants, when PCL:SV predictive validity being reviewed. | CIRCLE tool psychometric properties not provided. CIRCLE tool completed by each case's personal officer, with no inter-rater validation. Inter-rater reliability found to be good for PCL:SV and disciplinary reports categorisation. | Two prisoner departures accounted for. Reported cases reduced 100 to 98. Use of blinding; the researchers cataloguing incidents were not party to case files (ie. scores on variables). | Actual numbers of violent and aggressive incidents not reported, nor analysed. This will make comparison with other studies / environments difficult. Management of missing file data not discussed. | Recognised co-morbidity (meeting criteria for on average 3.1 axis II diagnoses) as a confound. Prisoners had mean stay of 6.89 yrs; more violence is said to occur first year. Prevention of violence by well-trained staff. Noted that records may not be complete - verbal aggression in particular often goes unrecorded. | 78% (7/29) |
| Doyle et al., 2002 MSU | Included new admissions and first 3 months data; the period when violence tends to be at its height. Continuous sample of admissions identified by medical records department. | Used only file info. available at admission as variables, so that predictability of violence upon admission could be examined. Used continuous nursing and MDT records, stating under-reporting occurs with Incident Forms. No comment regarding possible similar underreporting in running records. Selective inclusion of H-10 items only from HCR-20 tool, as study design retrospective. | Use of blinding; the researchers cataloguing incidents were not party to case files (ie. scores on variables). | Actual numbers of violent and aggressive incidents not reported, nor analysed. This will make comparison with other studies / environments difficult. Management of missing file data not discussed. | Validity of risk assessment tools when recommended interview not taken place (file-based assessment only). Use of tools not designed for short-term prediction over 12 weeks (VRAG). Use of converted PCL:SV score not PCL-R in VRAG. | 77% (10/30) |

| Authors, year and setting | Inclusion and selection bias | Measurement and detection bias | Attrition and/or performance bias | Analysis and reporting of findings | Confounding variables considered | Quality Assessment Score % (no. items unclear) |
|---|---|---|---|---|---|---|
| Eaton et al., 2000<br><br>PICU* in General Psychiatric Hospital | Patients with short admissions (under 28 days) excluded. If multiple admissions, patient's first admission only included. | Incident report data subject to validation against clinical records. Measured patient-centred variables only. | 24 cases left unit in under 28 days, all excluded from sample, leaving 52 remaining. | Actual numbers of violent and aggressive incidents not reported. This will make comparison with other studies / environments difficult. Management of missing file data not discussed. | Reported known confound of level of anxiety at time of admission, and of confounds regarding staffing and environmental factors which were not monitored. | 82%<br><br>(9/28) |
| Gray et al., 2003<br><br>MSU | All new admissions assessed within 2 weeks of arrival (mixed sample), and noted that all admissions were found to be well enough to give informed consent.<br><br>High number of included patients scored above cut-off point on BHS for serious risk of future suicide. | Use of two researchers for all interview / file review work for PCL-R, HC-15 and BPRS. Used new 'AVS' to record incidents from incident forms, nursing records and primary nurse interviews; unclear if this was an information collation device, or if it added value. | Follow-up period was 3 months; 68% stayed this long, whilst 32% had incident rates calculated based on length of stay (range 20-87 days). This was not considered to be a confound (literature reports higher incident rates early in admission). | Actual numbers of violent and aggressive incidents not reported, nor analysed. This will make comparison with other studies / environments difficult. Management of missing file data not discussed.<br><br>Did not use multiple regression as secondary analysis as used in other similar studies. | Reported that PCL-R factor 1 scores were very low in this sample, which may have impacted results.<br>Did not consider confounds such as sex (mixed sample), age, ethnicity.<br>Did not comment on impact of large number of refusals to complete BHS, or large number scoring as high suicide risk. | 77%<br><br>(4/28) |
| Grevatt et al., 2004<br><br>MSU | Selection of entire unit population, only excluding those with stay <6 months at follow-up.<br><br>Sample size of 44 was small, and entirely males. | Did not state why HC-15 composite selected for the study, rather than full HCR-20.<br><br>Incident reports were not cross-validated with any other sources. "Minimal cases" were assessed for inter-rater reliability | Use of blinding; the researchers cataloguing incidents were not party to case files (ie. scores on variables). | Actual numbers of violent and aggressive incidents not reports, nor analysed. This will make comparison with other studies / environments difficult. Management of missing file data not discussed. | Identified that in the sample the H-10 scores of the HCR-20 were fairly high, and thus impacted ability to use the H-10 scale to distinguish the violent and non-violent. | 80%<br><br>(7/28) |

| Authors, year and setting | Inclusion and selection bias | Measurement and detection bias | Attrition and/or performance bias | Analysis and reporting of findings | Confounding variables considered | Quality Assessment Score % (no. items unclear) |
|---|---|---|---|---|---|---|
| Gudjonsson et al., 1999<br><br>RSU | Selection of entire unit population over extensive time period. Large sample. Where patients were admitted more than once, they were counted as only one patient. | After a new incident report form was introduced part-way through the study, all information thereafter was translated onto the old forms prior to analysis. | Length of stay (opportunity to engage in incidents) of different patients was taken into account. | The incident data for self-harming is included in the reporting, and is not extractable. The 'Person-Years-of-Observation' (PYO) measure was used (a division of incidents in a period by sum of length of stay of all patients in the period).<br>As the number of patients in the unit was not constant over the years, where number of incidents were reported the expected number of incidents if the PYO was constant, were also given. | Reported that incidents may not be consistently or accurately reported by staff.<br>Substantial changes seen in the unit over the 17 years eg. 15 bed unit 1980, a 30 bed new unit in 1986, and in 1987 C&R techniques introduced as well as new Safety & Security policies.<br>Considered confound that violent patients tend to stay on the unit longer than non-violent patients. | 74%<br><br>(8/27) |
| Kennedy et al., 1995<br><br>RSU | All patients in the unit were included. This was wards of different type (eg ICU, rehab unit), which were collectively examined rather than separately examined. The control group comprised of the subsequent two admissions following each target (violent patient) admission. | Incident forms cross-validated against accident book; no discrepancies found.<br>As a measure of intent by the aggressor, 'potential for serious injury' was recorded based on number of blows, whether they were to a vital area, and whether a weapon was used. This measure was compared with that of a measure of assault severity. | As inpatient numbers fluctuated, used 'occupied bed days' calculation. | Controlled for age variation, when identifying statistically significant differences between violent and non-violent groups on two variables (source of admission and history of violence/criminal damage). | Considered age to be a difference between groups that confounded other findings, and thus controlled for this.<br>Considered that management strategies and fear of consequences impact violence rates. | 79%<br><br>(10/29) |

| Authors, year and setting | Inclusion and selection bias | Measurement and detection bias | Attrition and/or performance bias | Analysis and reporting of findings | Confounding variables considered | Quality Assessment Score % (no. items unclear) |
|---|---|---|---|---|---|---|
| Larkin et al., 1988<br><br>Special Hospital | All wards and all patients in the hospital were included.<br>One ward of 15 women was withdrawn from the study due to concerns regarding reliability of violence records (ie. forms completed after delays of several days) | New incident recording questionnaire piloted across hospital for 3 months with feedback resulting in changes to form. Incident questionnaires were cross-checked with hospital incident forms and Ward Day Book.<br>When measuring incidents, excluded violence that occurred after staff intervention to address a problematic event.<br>Poor incident recording rates were found (only 60-80% reported, dependent on ward). | An 'average' population / number of participants figure of 587 was used for the 6 month period. No account given of length of stay or attrition. | Statistical analysis not conducted for all findings presented; introduces difficulties in interpretation. | Poor incident recording levels, particularly of self-harm, considered to be a considerable difficulty. Age and diagnosis differences (amongst other variables) were not discussed as confounds in this study. | 82%<br><br>(9/30) |
| Muthukum-araswamy et al., 2008<br><br>Low Security Unit* | Included the entire population. Identified the population as homogeneous. All inpatients in the study population were referred to the unit due to aggressive behaviour. | Included all review variables that had been identified by earlier literature review, except length of admission. Reasoning unclear; stated did not include it as some of the patients in the study period were on-going inpatients. | Unclear; added an extra 6 months critical incident data after end of study to compensate for late admissions.<br><br>Number of patients in the unit will have fluctuated over study period. | File data completeness stated to be 96-100%, unclear how missing data managed. Findings not pro-rated to be presented as annual data, or presented per capita or bed day; making comparison with other studies difficult. | Considered that underreporting of incidents was likely to be a minimal confound. Reported that length of stay was not included as a variable. Whilst chose to add 6 months data for late admissions, did not consider the original issue and this chosen response to both be confounds. | 80%<br><br>(7/27) |

48

| Authors, year and setting | Inclusion and selection bias | Measurement and detection bias | Attrition and/or performance bias | Analysis and reporting of findings | Confounding variables considered | Quality Assessment Score % (no. items unclear) |
|---|---|---|---|---|---|---|
| Rix & Seymour, 1988<br><br>RSU | Reported that the unit caters for patients who in the main have some chronicity in their problems and who may have exhausted other facilities. Demographic information not provided, so case series composition unclear. | Use of standard incident forms; 15 incidents found to have not been reported when unit records were cross-checked.<br>Rating system for severity of all incidents was applied by a single senior nurse.<br>Measurement of staffing levels for the year calculated from month-end staff census data, averaged over the year. | Number of patients in the unit will have fluctuated over study period (no account given). | Limited statistical analysis in reporting; rendering it descriptive rather than conclusive eg. unclear if the finding that victims of incidents are determined by staff grade is a significant finding. | Considered violence prevention to be a confound, as an unknown number of incidents were prevented by staff intervention. | 75%<br><br>(11/30) |
| Rogers et al., 2002<br><br>MSU | All unit residents were initially included; patients were excluded when records unavailable, when records did not specify content of hallucinations and when patients refused to discuss symptoms.<br>The two cohorts were shown to have no significant differences in background demographics. | Used standard incident forms. Presence /absence of lifetime history of hallucinations and delusions, and of alcohol/ substance use were pre-determined in a structured way. The lifetime history of command hallucinations was used as the measure, rather than a measure of experience of command hallucinations at the time of (or prior to) the incidents themselves. | Length of stay of patients was seen as a key confound, and controlled for in a lot of the data analysis. | To prevent confound, length of stay was entered as an exposure factor in regression analysis. Reporting of findings was conducted separately for violence and self-harm. | Recognised the limitations of case-note data as a means to measuring hallucinations. Reported that the variation seen in diagnoses between the cohorts may be a confound.<br>Considered the contained environment of an MSU and provided medications to be potential confounds when exploring the relationship between violent command hallucinations and violence. | 81%<br><br>(9/29) |

| Authors, year and setting | Inclusion and selection bias | Measurement and detection bias | Attrition and/or performance bias | Analysis and reporting of findings | Confounding variables considered | Quality Assessment Score % (no. items unclear) |
|---|---|---|---|---|---|---|
| Sattar, 2004<br><br>Entire prison service | Reviewed all unlawful deaths in the entire prison population. Controlled for prisoners killed on leave/ whilst escaping (excluded). Did not review deaths where homicide was suspected, but recorded as accident/suicide. | Classifications of homicide pre-determined. Same method and tools used across service, and results cross-checked against Home Office databases. | N/A | Descriptive analysis given as a result of low number of homicides. Reporting suitable, denominators provided (eg. prison population), and general population homicide rate also given. | Inter-racial violence ruled out. Motive analysis seen as subjective / unreliable. Homicide rate recognised as poss. underestimated due to investigative / prosecution difficulties. | 85%<br><br>(5/24) |
| Shepherd & Lavender, 1999<br><br>A Low Security** and a Medium Security ward<br><br>In a General Psychiatric Hospital | Entire hospital with 13 wards included. No demographic information provided on participants. | Staff interview < 3 days after incident. Inter-rater reliability of incident severity found to be over 80%. Researchers recognised that staff less likely to report less serious aggression, and were more likely to report external antecedents to incidents which are easier to observe.<br>Reported that the validity of staff member's interpretation of incident antecedents was not assessed, and asking two staff would have improved accuracy. | Number of patients in the hospital and each unit will have fluctuated over study period (no account given). | Whilst ward types were investigated as cohorts, little data is reported by cohort. As such, limited information is extractable for each of the low and medium security wards (security level is not the focus of this study). | Acknowledged that staff error or staff behaviour triggering incidents is less likely to be reported. Suggested that patient-related factors (eg. degree of disturbance and length of stay) and ward-specific factors (eg. practices, MDT involvement and culture) are relevant issues that may be confounds. | 75%<br><br>(9/30) |
| Torpy & Hall, 1993<br><br>MSU | All inpatients and admissions were included in the study. With regard to demographics and background variables, there was no statistical difference between the cohorts of inpatients in the three study years. | The Staff Observation Aggression Scale (SOAS) was used, which is similar to a standard incident form, with additional features. Routine use of the SOAS commenced 20 months before the study, meaning that staff were familiar with the tool. Forms were completed by senior nursing staff on the wards. | Bed occupancy figures were reviewed for impact on incident figures; no significant correlation found Bed occupancy / length of stay not reported, however. | Interchangeable use of the words violence and aggression at times. Categories of incident under examination thus confusing. | Recognised that use of 'being subject to s.41 restriction' as a patient-centred variable may overlook long-term inpatients who have not been to court of late. Discussed a policy change on use of seclusion in the early part of year two, and its impact on findings. | 80%<br><br>(9/30) |

| Authors, year and setting | Inclusion and selection bias | Measurement and detection bias | Attrition and/or performance bias | Analysis and reporting of findings | Confounding variables considered | Quality Assessment Score % (no. items unclear) |
|---|---|---|---|---|---|---|
| Uppal & McMurran, 2009<br><br>High security | All inpatients and admissions were included in the study. Demographic details not provided for the five directorate cohorts included in the study. | Utilised Department of Health 2007 classifications of incident severity.<br><br>Did not determine the sex of the perpetrator for the 1870 (or 33%) of incidents where this was not known. | An 'average' population / number of participants figure of 325 was used for the 16 month period. No account given of length of stay or attrition. | Statistical analysis not conducted for all findings presented; introduces difficulties in interpretation.<br><br>Reported an incident-per-patient figure for the hospital overall, but not for each of the 5 cohorts. | Suggested that environmental variables impact violence (noise, crowding etc). | 74%<br><br>(12/31) |
| Walker & Seifert, 1994<br><br>PICU*<br>in a General Hospital | Demographics of the participants said to have been obtained, but were not reported, bar those relevant to the results; thus population confounds unclear. Readmissions were not double-counted; unclear which admission was selected for reporting (eg. earliest / latest). | Measured physical assaults to other persons only. Used pre-defined severity scale used by other researchers. Chose a prospective study to improve accuracy of incident recording. Record-keeping handled by lead researcher, with records cross-validated with incident forms, clinical notes and interviews within days of each incident. | 6 month study did not account for length of stay / attrition | Reporting based on number of admissions and assaults. Unknown population in the unit at any one time. Noted to be a 6-bedded unit - number of patients in the unit will have fluctuated over study period. | None considered.<br><br>Length of stay may have impacted violence (eg. are drug users more violent during detoxification on arrival, and are they discharged quickly?). | 75%<br><br>(10/30) |

\* designates low security services confirmed to have accepted forensic referrals at the time of the study.
\*\* designates low security services where the acceptance of forensic referrals is unconfirmed (study authors not contactable).
Risk/Psychometric tools:  See glossary for descriptions of each (Appendix 4).
Abbreviations:  PICU [Psychiatric Intensive Care Unit], ICU [Intensive Care Unit], Retro. [Retrospective], Pro. [Prospective], PD [Personality Disorder], MI [Mental Illness], LD [Learning Disability].

**Descriptive Data Synthesis**

The 19 studies examined institutional violence and aggression in forensic establishments within the prison and health care systems. Each of the studies focussed on an individual institution (except one Prison Service study), necessitating that the data synthesis herein not only reviews individual studies, but is conducted in such a way that comparisons can be made between findings from groups of studies from different security-level settings. In order to ease this process, three summary boxes (boxes 3, 4 and 5) collate the key findings from the research conducted in low security, medium security and high security settings within health care environments. The key findings are presented in this manner, rather than being tabulated, as caution must be used when directly comparing the study outcomes due to extensive differences in study data collection and presentation method.

At this data synthesis stage of exploration it has already been identified that a large portion of the 19 sets of study variables and findings (as presented in Table 2) are not directly relevant to the stated aims and objectives of this literature review, as they pertain to investigations of the impact of person-centred or situational factors on the manifestation of violence and aggression, or to the predictive validity of violence risk assessment and psychometric tools. Where this is the case, such findings will not be synthesised herein, but remain perusable in Table 2 above for the reader. Only findings concerning the volume and severity of violence shall now be synthesised in detail, with the study question and the research objectives addressed in the discussion.

**Prison-based studies.** Two of the 19 studies, that of Sattar (2004) and Dolan and Blackburn (2006) concerned the prison setting. Sattar's study provided a longitudinal retrospective review of homicides in the Prison Service as a whole. Unfortunately, no such review was identified pertaining to health care environments

to enable comparisons to be made (study objective two), meaning that study findings such as homicide methods, motives and so on need not be further synthesised herein (please refer to Table 2 for such information).

Sattar (2004) reported 26 homicides in the prison service during the 1990-2001 review period, an average of 2.2 per annum; this was in the context of an average prison population of 56,900 (during the period of study). By way of interest (this was not calculated in the study report), this equates to roughly 38 homicides per 1 million population, which can be compared with Sattar's provided figures for homicide in the general population in 2001; 15.7 homicides per 1 million.

In the context of objective one of this review, Sattar's most interesting finding was that a disproportionately high number of homicides were identified in High Security Prisons (9 homicides, or 35% of total homicides, when housing 10.6% of the total prison population) and in Open Young Offender Institutes (3 homicides, or 12% when housing 0.8%). Due to the small sample, no statistical analysis was completed on any of the findings in this study, meaning that statistical significance of these results cannot be reported. Whilst no comment was made on the incident rate in YOIs, Sattar explained that most of the homicides in high security prisons took place between 1990 and 1995, with a reduction in homicides in the second half of the 1990s.

Dolan and Blackburn's (2006) study was set in a Category B prison and the participants were prisoners with antisocial personality disorder. This study examined personality characteristics of prisoners using the PCL:SV and CIRCLE psychometric tools (see Glossary in Appendix 4), and assessed the predictive validity that they hold for subsequent institutional aggression (see Table 2). There were no other prison-based studies to which to compare this study, however the study method held similarities to research undertaken in a high security hospital (with security level

53

equivalency to a Category B prison).  Daffern et al.'s (2010) hospital population also had personality disorder, and use was made of the CIRCLE and the MAES:SF psychometric tools to examine the associations between coercive interpersonal style and perception of coercion at time of admission on later institutional aggression and self-harm.

Dolan and Blackburn (2006) retained 98 prisoner participants at the end of 12 months, and found that 29% of cases were involved in physical violence or aggression, and 26% in verbal aggression (42% in either).  In contrast, Daffern et al. (2010) were able to recruit 39 high security patients to their 6 month study, wherein 44% of cases were involved in aggression or self-harming, with the majority of the incidents involving verbal aggression (73%) and 24% being physically aggressive acts directed at others.  Unfortunately, no direct comparison can be made between the two studies with regards to incident rates or incident severity, as the Dolan and Blackburn study report did not include a breakdown of incident data.

**Low security services.**  Consideration needs to be given as to the suitability of grouping Low Security Units and psychiatric intensive care units (PICUs) into one category for review. Pereira, Dawson and Sarsam (2006b) conducted a UK-wide review of 307 low security health care establishments before concluding that the numerous names and terminology in use could efficiently be condensed and re-defined using just two terms; Low Security Units and PICUs.  Pereira et al. summarised that PICUs offered time limited largely medically-oriented treatment, whilst Low Security Units were able to offer long-term care, therapeutic treatments and rehabilitation.  The admission criteria for these two types of services tended to be similar, with most being able to accept forensic patients, due to the security restrictions in place (locked doors etc).  As such, it seems reasonable to group these

studies together herein. In terms of this review, as general psychiatric facilities were excluded from the research, acceptance of forensic admissions into the facilities (at the time of the study) was checked with the authors where this was unclear in the publication. It was not possible to verify this in the case of the Shepherd and Lavender (1999) study, however the other three studies were verified as accepting forensic clientele. The four studies shall each now be considered.

Eaton, Ghannam and Hunt (2000) and Walker and Seifert (1994) studied populations in PICUs. Eaton et al. utilised a consecutive sample of 52 new admissions, retrospectively examining the patient-centred demographic, historical and clinical factors relating to violent and aggressive incidents in hospital (as recorded on incident forms and in clinical records). Whilst the overall study period was 16 months, each participant was under review for only the first month after their admission. The study reported 56 violent incidents and identified that 33% of participants were violent. A further 58% were verbally abusive, 44% made physical threats, and 13% made physical threats with weapons. When comparing the 33% of cases who were violent with the controls (the 67% who were not violent), no variable was identified that significantly predicted group membership. This being said, Eaton et al. did observe that the majority of incidents were accounted for by the minority of patients, with two of the 17 violent patients accounting for 34% of violent incidents. These two patients were under 35, with a recent history of violence and of causing injury, and previous admissions.

Walker and Seifert's (1994) study was somewhat comparable with Eaton et al.'s in that it included 48 participants; all patients admitted during a period of six months. Unfortunately, this is one of many studies included in this research (but the first one reported herein) that failed to control or account for participants' length of

stay, or the rate of attrition of participants (rates of admissions and discharges to the unit) in a typically non-static hospital population. Clearly a high turn-over of admissions rather than a static population may impact the frequency of violent incidents observed.

Walker and Seifert focussed on violent incidents and their severity, only examining physical assaults to others (data compiled prospectively on questionnaires completed at the time of the assaults). There were 37 assaults (34 against staff and three against peers) during the timeframe. They reported that there were six first degree assaults (with no injury), 28 second degree (minor injury), and three third degree (major injury). When comparing the 33% of cases who were violent with the controls (the 67% who were not violent; note that these match Eaton et al.'s percentages), it was again observed that the majority of incidents were accounted for by the minority of patients, with four of the 16 violent patients accounting for 57% of assaults.

Muthukumaraswamy, Beer and Ratnajothy (2008) conducted a retrospective study in a Low Security Unit examining 6.5 years of data, utilising all 78 inpatients during that period. They confirmed that the participant population was relatively homogeneous, and that all inpatients were originally referred to the facility due to displaying aggressive behaviour (largely in the community or unlocked facilities, one presumes). Length of stay and attrition rates were not controlled or accounted for. Reports of aggression were extracted from the critical incident database and of the 425 incidents reported, 54% were aggression towards staff, 15% aggression towards peers, 16% aggression towards property, 4% were sexually inappropriate behaviours, and 8% were disturbed behaviours (directed to no one in particular). When examining the 44% of cases who were aggressive with the controls (the 56% who were not

aggressive), Muthukumaraswamy et al. observed that the majority of aggressive incidents were carried out by the minority of patients, with five patients accounting for 64% of incidents (the features of these five subjects were not described).

Shepherd and Lavender (1999) stand on the fringes of this and the next sections, having studied aggressive incidents and their severity in a low security ward, and a medium security ward; both wards being housed in a general psychiatric hospital. The study did not examine patient-centred variables, instead focussing on incident antecedents and incident response strategies (see Table 2). The prospective study was conducted over a five month period, using incident report forms and structured staff interviews to record aggressive incidents pertaining to the 72 patients. Whilst 130 incidents were reported, the majority of the findings are of little usefulness to this research study specifically, as incident types and severity are provided only for the entire psychiatric hospital as a whole (ie. including eleven non-forensic wards). The results that are of importance are the incident-per-patient per month (IPP/pm) calculations that were reported separately for the low security ward and the medium security ward. The IPPs were 2.4 and 0.27 respectively over the course of the five month study period (for a one month period, 0.48 and 0.05 IPP/pm), with the higher rate of aggressive incidents on the low security ward identified as a significant result ($\chi^2 = 21.45$, $p<0.001$). Perhaps a confound to this findings, Shepherd and Lavender explained that not only did the degree of patient disturbance differ between these wards, but the average length of admission was different. Details were not provided, and the statistical analysis does not control for this familiar problem.

The key findings of the low security service studies are summarised and presented below in Box 3.

**Percentage of participants who were violent or aggressive (PP):**
- 33% of patient participants were physically violent in their first month of admission to a PICU (Eaton, Ghannam & Hunt, 2000).
- 33% of patients were physically violent in a six month study in a PICU (Walker & Seifert, 1994).
- 44% of patients were violent/aggressive in a 6.5 year study in a Low Security Unit (Muthukumaraswamy, Beer & Ratnajothy, 2008).
- Data not extractable for Shepherd and Lavender, 1999.

Studies reported that a small number of patients were responsible for a large number of incidents; two patients responsible for 34% of violent incidents (Eaton et al., 2000), four patients for 57% of assaults (Walker & Seifert, 1994) and five patients responsible for 64% of aggressive incidents (Muthukumaraswamy et al., 2008).

**Volume of Incidents (Incidents per patient per month, IPP/pm):**
Taking the lead from the Shepherd and Lavender (1999) study, in order to provide some comparable incident figures, IPPs *per month* have been roughly calculated for each study. These figures are not directly comparable due to the differences in definitions of violence and aggression, and the differences in study methods and outcome recordings. However they have been calculated to assist in the comparison of the volumes of violence and aggression in facilities of differing security levels.
- Eaton et al. (2000), PICU           – IPP/pm 1.08 (violence/aggression*)
- Shepherd and Lavender (1999), LS ward   – IPP/pm 0.48 (violence/aggression*)
                        MS ward   – IPP/pm 0.05 (violence/aggression*)
- Muthukumaraswamy et al. (2008), Walker and Seifert (1994) – not calculable

*For the purposes of comparability, the studies have been loosely re-categorised into either measuring physical violence alone (which may include threats of physical violence, and self-harm), or a more comprehensive list of violent and aggressive facets.

**Severity of Violence**
With regards to severity of assaults (measured by injury), Walker and Seifert (1994) reported that 16% were first degree (no injury), 76% second degree, and 8% third degree (major injury).

**Medium security services.** Three of the eight studies based in MSUs had very distinct methods centred on the use of risk assessments and psychometrics, rendering the majority of the findings excluded from this data synthesis (see Table 2). Of intrinsic value however, Doyle, Dolan and McGovern (2002) found that in the 12 weeks following admission, 52% of patients were violent (28% at Level 1, 'actual assault'), with 58% of incidents occurring in the first 14 days. Similarly, Gray et al. (2003) reported that 'over 50%' of their sample was involved in verbal aggression, 32.4% in physical aggression and 32.4% in aggression to property, in the first 3

months of admission. Grevatt, Thomas-Peter and Hughes' (2004) longer study of 6 months post-admission resulted in 57% of the sample having at least one incident; 30% being physical assaults, 39% verbal threats or abuse, and 21% property damage.

The remaining five studies were set in mixed gender RSUs and MSUs (these terms tending to be used interchangeably). Gudjonsson, Rabe-Hesketh and Wilson (1999) conducted the longest investigation included in this literature review; covering a 17 year period (1980-1996). They retrospectively examined violent incident reports related to their 280 participants, examining frequency of violence alongside patient-centred and situational variables. All reported data included self-harming incidents. The study reported 2180 violent incidents (53% involved a threat of violence rather than actual violence) and identified that 59% of participants were violent. There were a mean 360 incidents per year in the first of two assessed periods (1983-6) and a mean 128 incidents per year over the entire 17 year period; with twice the incident rate before the opening of a new building and the introduction of new Control & Restraint procedures for the physical management of violent, aggressive or disruptive patients.

Kennedy, Harrison, Hillis and Bluglass (1995) reported a retrospective study examining 4 years of incident reports on violence, severity of violence and severity of intent of assault. These were evaluated alongside patient-centred and situational variables related to 348 participants. The study reported 981 incidents (688 assaults and 293 incidents of property damage), with 36% (n=127) of participants involved in violence, and an incidence rate of 13.5 per 1000 occupied bed days (this figure is supplied due to the confound of a change in bed numbers during the study). Kennedy et al. used injuries sustained as a measure of severity, placing 50% of assaults as 'no injury', 41% as 'minor injury' and 9% as 'serious injury'. They compared these to a measure of severity of intent of assault, which placed 41% in the lower category of

intent (single blow, non-vital area), 45% in the middle category (multiple blows or one to vital area) and 14% in the serious category of intent (assault with weapon). It was concluded that a measure of intent uncovers a significantly greater amount of potentially life-threatening violence than the measure of severity of injury ($\chi^2 = 5.17$, $p<0.05$), as severe injury is often averted by prompt staff intervention. Descriptively, Kennedy et al. also reported that the highly violent patients (27 or 8%) were responsible for the largest number of incidents (705, or 72%).

Rix and Seymour (1988) reported a retrospective study of one year of violent incident reports and records of severity of violence in an RSU. A small number of variables were examined (age, gender and time of day of incidents), as related to the reported 389 incidents and 52 participants, with no significant results found. The incidents included 447 threats of violence, 216 assaults and 2 threats of self-harm (more than one of these could be recorded per incident). Of the 52 study participants, 60% were violent, however a small number of patients (two) accounted for 49% of the incidents. Descriptively, Rix and Seymour reported that the majority of threats were minor, and the majority of injuries received were also minor, with nurses the victim of assault in 31% of cases, peers in 31% and property in 37%.

Rogers, Watt, Gray, MacCulloch and Gournay's (2002) study is somewhat unique compared to all others included in this review. It is a retrospective cohort study examining participants defined as 'command hallucinators' (n=54) or 'non-command hallucinators' (n=56); the former being those with a lifetime history of violent or self-harming command hallucinations (or both). Rogers et al. conducted a 51 month study, involving all residents in the MSU, except those whose clinical records were incomplete, or those who refused to discuss their hallucinations. Incident forms were used to identify incidents of violence and self-harm, pertaining to the 110 participants.

The study reported 223 incidents (62 violent, 100 self-harming and the rest other categories). Overall, 40% of participants contributed to these incidents, and detailed analysis was conducted relating to the differences between the command hallucinator and non-hallucinator groups (see Table 2). Rogers et al. highlighted that MSU environments are designed to assess, treat and assertively manage mental illness and difficult behaviour, concluding that the impact of this specialist approach may be that overall violence levels are reduced amongst patients as their behaviour is contained by environmental and observation regimes, and altered by medication and therapeutic regimes.

In the final of the medium security health care studies, Torpy and Hall (1993) prospectively examined aggressive incidents in an MSU, using the Staff Observation Aggression Scale (SOAS; Palmstierna & Wistedt, 1987) to collect details of incidents relating to the 113 participants. The SOAS score for an incident is the sum of ratings for means, aim and outcome. This was a cohort study (with some nested case control elements) examining three sequential years of data collection. In addition to examining the hard number of incidents per annum, Torpy and Hall also utilised an 'aggressive index score' (AIS) to examine the general level of aggression, taking into account its frequency and its severity. All reported data included self-harming incidents.

Torpy and Hall reported 820 aggressive incidents, with numbers rising each year (152 in year one, 233 in year two, 435 in year three). Despite this, the AIS for each year did not significantly change, with the ratio of verbally to physically aggressive incidents fairly constant. Of the 113 participants, 73% engaged in aggressive incidents, with no significant differences in the assailants in each cohort

year. It was reported that 37 incidents led to medical treatment (4.5%); twenty of these more serious incidents were described in depth (see Table 2).

Box 4: *Summary of findings from studies in medium security services*

---

**Percentage of participants who were violent or aggressive (PP):**
- 59% of patients violent/aggressive in a 17 year study in an RSU (Gudjonsson et al., 1999).
- 36% of patients physically violent in a 4 year study in an RSU (Kennedy et al., 1995).
- 60% of patients physically violent in a 1 year study in an RSU (Rix & Seymour).
- 31% of patients physically violent in a 4.25 year study in an MSU (Rogers et al.).
- 73% of patients violent/aggressive in a 3 year study in an MSU (Torpy & Hall).
- 28% of patient participants physically assaultive in a 12 week period in an MSU (Doyle et al.)
- 32% of patient participants physically violent/aggressive in a 3 month period in an MSU (Gray et al.)
- 30% of patients physically assaultive in a 6 month study in an MSU (Grevatt et al.)

Two studies reported that a small number of patients were responsible for a large number of incidents; 8% of patients responsible for 72% of incidents (Kennedy et al.), and two patients for 49% of incidents (Rix & Seymour).

**Volume of Incidents (Incidents per patient per month, IPP/pm):**
- Doyle et al. (2002), MSU                          – IPP/pm 0.17 (physical violence*)
- Gray et al. (2003), MSU                          – IPP/pm 0.46 (phys. violence/aggression*)
- Gudjonsson et al. (1999), RSU females – IPP/pm 1.03 (violence/aggression*)
                                        males – IPP/pm 0.49 (violence/aggression*)
- Kennedy et al. (1995), RSU                     – IPP/pm 0.41 (physical violence*)
- Grevatt et al. (2004), Rix and Seymour (1988), Rogers et al. (2002), Torpy and Hall (1993) – IPP/pm not calculable.
 *for explanation of these categories and data, see Box 3.

**Severity of Violence**
With regards to severity of assaults (measured by injury and by level of intent), Kennedy et al. concluded that level of intent was a more useful measure, and reported that 41% fell into the lower category, 45% in the middle, and 14% in the serious category of intent. When measured by injury, the figures were 50%, 41% and 9% (no injury-serious injury). Rix and Seymour similarly graded severity of violent incidents, and placed 95% in the none/minor bottom categories (this was a four-point scale), 5% in the middle category, and 0.5% in the serious category.

---

**High security services.** Four of the five included studies set in high security hospitals originated from the same facility, Rampton Hospital. The first, that of Daffern et al. (2010), studied participants' perceptions of coercion at admission, their interpersonal style, and subsequent aggression and self-harming behaviours. Most of the findings are thus not relevant to the objectives of this study, but remain perusable

in Table 2.  Daffern et al. (2010) were able to recruit 39 high security patients to their 6 month study; 44% were involved in aggression or self-harming, with the majority of the 127 incidents involving verbal aggression (73%) and 24% being physically aggressive acts directed at others.

Coldwell and Naismith (1989) conducted a 12 month retrospective study using violent incident report forms to examine rates and severity of violence in the populations of two high dependency wards.  These wards were known to be treating the most behaviourally difficult and aggressive patients in the hospital, and the patients were also significantly different from the general population of the hospital, with the 51 participants being younger, more likely to have a diagnosis of schizophrenia, and more likely to have been admitted from within the NHS and under a restricted legal status.  A range of patient-centred and situational variables were examined, with incident antecedents and staff responses also recorded.

There were 116 violent incidents, with 61% of participants involved (it was noted that length of stay and attrition rates were not controlled for).  A small number of patients were responsible for a large number of incidents; six patients (or 12%) for 62% of incidents.  The victims of violence were most likely to be others (91%), with 10% of incidents directed at property and 3% self-injury (NB. a few incidents had multiple targets). Violence tended to be moderate, with 32% categorised as minor, 44% as moderate, and 24% as serious incidents.

Larkin, Murtagh and Jones (1988) reported a study that was later followed up by Carton and Larkin (1991, below). The two studies were conducted prospectively using the same incident questionnaire, which was introduced across the site during a three month pilot. The questionnaires collected information on violent incidents (including self-harming) and severity of incidents; the latter rated on the nature of the

assaults rather than injury, as it was explained that staff intervention can prevent injury and thus this would mask the severity of attack. In both studies, they made use of an 'average' population to define the number of participants in order to account for changing populations, however length of stay was not controlled for in either analysis.

The original six month study divided the wards into five cohorts (admission, assessment, intensive care, rehabilitation and pre-discharge wards) for examination, and additionally reviewed gender differences, incident antecedents and situational variables. There were 587 participants and 1144 incidents; 407 assaults on staff, 367 assaults on peers, 186 self-assaults, and 184 on property. Overall, 37% of patients were involved in violence; 60% of females (83/139) compared to 30% of males (132/448), with females accounting for 73% of the incidents. Once again it was concluded that a small number of patients accounted for the majority of incidents, in this case 24 (4%) accounting for 60%. The authors provided incident-per-patient (IPP) rates for the six month period, which when converted to IPP/pm were 0.12 for males and 1.00 for females. For males, the range was 0.01 – 0.5 IPP/pm, with the most incidents on admission wards and the least occurring on rehabilitation and pre-discharge wards, demonstrating a reduction in violence as the males progressed on their treatment journeys. For females, the general span was 0 – 0.77 IPP/pm with lower incident numbers on admission and pre-discharge wards, and larger numbers on assessment and rehabilitation wards. There was then a huge jump to an IPP/pm of 5.33 on the female intensive care ward. This ward became the sole focus of Carton and Larkin's (1991) follow-up study. Larkin et al. also reported the severity of incidents; 36% were minor, 61% serious and 3% life-threatening (half being self-tied ligatures). In contrast, 51% of incidents resulted in no injury, 45% in minor and 3%

in serious injury, demonstrating the usefulness of a severity measure that is not based on injury outcomes.

Carton and Larkin (1991) studied violence on the female intensive care ward, following the introduction of significant management changes; male staff onto female wards, and the introduction of Control and Restraint training for the management of disruptive, aggressive and violent behaviour. In the two month study period there were 17 incidents. Of the participants, 47% were assaultive, and one patient accounted for 40% of incidents. The incidents were targeted against others in 65% of cases, and property in 35%. Review of the severity of incidents indicated that 47% were minor, 47% serious, and 6% life-threatening. The authors concluded that the frequency and severity of incidents had reduced substantially since the original study period, although statistical analysis of the results was not conducted for this small sample. It was concluded that the policy changes had been effective, and that the Control and Restraint training had given staff confidence as well as technique, and that they had learnt how to defuse situations before they escalate.

The final study reviewed is that of Uppal and McMurran (2009), which mirrored the earlier work of Larkin et al. (1988) in many ways, and was set in the same hospital. Uppal and McMurran's five cohorts were the clinical directorates; the DSPD unit, and Women's, Personality Disorder (PD), Learning Disability (LD) and Mental Illness (MI) services, with a total of 396 participants. Standard incident report forms and serious untoward incident forms were reviewed retrospectively for information regarding violence over a 16 month study period. It was noted that the definition of violence used by Uppal and McMurran was much more extensive than used by Larkin et al., with aggressive, hostile and verbally abusive incidents (amongst other categories) being included alongside security incidents. This difference in

definition was highlighted when Uppal and McMurran found a higher IPP/pm rate of 0.89 for their 5658 incidents, compared to Larkin et al.'s overall IPP/pm rate of 0.32. Indeed, Uppal and McMurran commented that the majority of documented incidents were for threatening behaviour and verbal abuse, neither of which were included in Larkin et al.'s study.

Of the 396 participants, 95% were reported to be involved in incidents. Severity of incidents were determined using the Department of Health 2007 guidelines; one incident fell into Category A (an absconder), 1% of incidents were Category B (serious incidents including serious self-harm and assaults with weapons), 60% were Category C (assaults without weapons, sexual assault, moderate self-harm) and 39% were Category D (all other incidents including minor assault and verbal abuse). The number of Category C and D incidents seen in each directorate differed significantly ($\chi^2$ = 182.57, $p<0.05$), with the Women's Service having a disproportionately high number of the higher severity Category C incidents (54% of the hospital's total).

Further examining the data pertaining to each directorate, Uppal and McMurran presented the numbers of incidents and percentages thereof of violent and self-harming incidents (ie. excluding security incidents). Once apportioned herein according to the average occupation-rate of beds in each service, the services can be ranked from lowest-highest number of incidents as follows; MI (0.26 IPP/pm), PD (0.72 IPP/pm), DSPD (1.02 IPP/pm), LD (1.09 IPP/pm), and finally the Women's Service where the 3.53 IPP/pm was more than three times greater than the next ranked service. The overall figure is calculated as 1.02 IPP/pm for violence and self-harming, which is higher than the 0.89 IPP/pm declared by the authors for violence,

self-harming and security incidents, since average bed occupancy figures had to be used in calculations.

Once again, a disproportionately small number of participants were found to be responsible for a large number of incidents. With regard to male participants, 77 (30% of males) accounted for 78% of incidents involving males, and with females, 33 (65% of females) accounted for 92% of incidents involving females.

Box 5: *Summary of findings from studies in high security services*

---

**Percentage of participants who were violent or aggressive (PP):**
- 61% of patients were physically violent in a 1 year study of high dependency wards (Coldwell & Naismith, 1989).
- 37% of patients were physically violent in a 6 month study in a Special Hospital (Larkin et al., 1995).
- 47% of patients were physically violent in a 2 month study on a female ICU (Carton & Larkin, 1991).
- 95% of patients were violent/aggressive in a 16 month study in a High Security Hospital (Uppal & McMurran, 2009).
- 44% of patient participants were violent/aggressive in a 6 month period in DSPD/PD services (Daffern et al., 2010).

Four studies reported that a small number of patients were responsible for a large number of incidents; 12% of patients for 62% of violent incidents (Coldwell & Naismith), 4% of patients for 60% of assaults (Larkin et al.), 1 patient for 40% of incidents (Carton & Larkin). Uppal and McMurran echoed these findings for male and female patients.

**Volume of Incidents (Incidents per patient per month, IPP/pm):**
- Carton and Larkin (1991)      – IPP/pm 0.50 (physical violence in females*)
- Daffern et al. (2010), DSPD/PD   – IPP/pm 0.41 (violence/aggression in males*)
- Larkin et al. (1995)      – IPP/pm 0.12 (physical violence in males*)
    – IPP/pm 1.00 (physical violence in females*)
    – IPP/pm 0.32 (physical violence overall*)
- Uppal and McMurran (2009)      – IPP/pm 3.53 (violence/aggression in females*)
    – IPP/pm 0.63 (violence/aggression in males*)
    – IPP/pm 1.02 (violence/aggression*)
- Coldwell and Naismith (1989)   – not calculable
  *for explanation of these categories and data, see Box 3.

**Severity of Violence**
Coldwell and Naismith found that 32% of violence was minor, 44% moderate and 24% serious. Larkin et al. assessed incident severity by both type of assault (36% were minor, 61% serious and 3% life-threatening), and by resultant injury (51% no injury, 45% minor, and 3% serious injury). Carton and Larkin assessed severity of incidents by type of assault; 47% were minor, 47% serious, 6% life threatening. Uppal and McMurran reported that 39% of incidents were Cat D (minor), 60% Cat C (eg assault), 1% Cat B (serious incidents) and <1% Cat A (an absconder).

---

# DISCUSSION

The aim of this review was to explore whether the reported levels of institutional violence and aggression differ according to the security setting in which offenders reside. The objectives were:

i. To determine if higher security facilities experience the greatest volume or severity of violent and aggressive behaviour (are these facilities housing the 'difficult cases'?)

ii. With regard to the experience of violent and aggressive behaviour in different security settings, the second objective was to determine if there are any differences in findings between the prison and forensic hospital systems.

The main findings of this literature review are summarised below, with the results applied to each of these two objectives.

## Main Findings

**Prison-based studies.** Only two out of the nineteen studies concerned the prison setting; that of Sattar (2004) who published a Prison Service-wide review of homicide rates, and that of Dolan and Blackburn (2006) whom examined institutional violence and aggression in a Category B prison.

Overall, Sattar reported 26 homicides in the Prison Service during the eleven year review; an average of 2.2 per annum. There were no similar reviews from the health care service to provide a comparator to address objective two of the study. In the context of objective one, Sattar's most interesting finding was that during the 1990-2001 period in the Prison Service, a disproportionately high number of homicides were identified in high security prisons (35% of total homicides, when housing 10.6% of the total prison population), compared to Category B prisons (3.8%

of homicides, in 10.4% of the population) and Category C prisons (19.2% of homicides, in 32.3% of the prison population). As homicides are generally rare, this finding is based on a very small sample, precluding an in depth analysis. However, Sattar explained that most of the homicides in high security prisons took place between 1990 and 1995, with a later reduction in frequency that mirrored a downward trend in the number of adjudications for violence in high security prisons in the same period. Sattar suggested that following high profile escapes from Parkhurst prison and thereafter the publication of the Learmont Report in 1995, security procedures were improved, meaning that the general safety of high security prisons may have increased during the latter half of the research period and beyond. As such, whilst it is tempting to conclude that higher security prisons are *more dangerous* than lower security prisons, not only would this be based on a single publication, it would be based on a study that would appear to be somewhat out of date.

Dolan and Blackburn's (2006) study was undertaken in a Category B prison. Category B prisoners are considered to be high-risk, as are the patients in high security hospitals. The similarities in study participants (personality disordered individuals, with mean stays of 6.9 years and 5.1 years respectively) and similarities in methods used by Dolan and Blackburn (2006) and Daffern et al. (2010) allowed the single venture into direct comparison of high security prison and forensic hospital systems, with regard to the rates of violence experienced. It must be noted, however that the study periods and outcomes measured introduce a substantial problem with regard to study comparison; with the prison study evaluating physical violence and aggression over 12 months, and the hospital study examining aggression and self-harming over 6 months. With this confound in mind, it is interesting that 42% and 44% of study participants were involved in negative incidents in the prison and

hospital studies respectively. Despite the variation in outcomes measured, or perhaps because of them, these high-security establishments have reported a similar finding. As the Dolan and Blackburn study did not provide any incident frequency or severity data, unfortunately no other direct comparison is possible. Thus concludes the commentary on objective two.

**Health care settings.** Seventeen studies were set in health care establishments. The key findings from the four low security service studies were summarised in Box 3, the findings from the eight medium security service studies in Box 4, and the key findings from the five high security hospital studies were presented in Box 5. The findings have been compared in order to address objective one of this literature view, regarding the frequency and severity of violence and aggression in different security level settings.

*Incident frequency.* Following data extraction from all 17 studies, it was concluded that differences in frequency of violent and aggressive behaviour in different security levels could be compared in two ways. The first was using the figure of '*percentage of participants who were violent or aggressive' (PP)*, which was a figure that was reported in the vast majority of the studies. The second method available was to use the figure of '*incidents-per-patient per month'* (IPP/pm), which was independently calculated by only a small number of the study authors, but was calculable herein for a further six studies.

*PP:* The low security service studies reported three fairly moderate percentages (33%, 33%, 44%, one non-calculable). The medium security service studies reported a considerable range of percentages (28%, 30%, 31%, 32%, 36%, 59%, 60%, 73%), as did the high security services (37%, 44%, 47%, 61%, 95%).

When comparing these figures, it would be somewhat spurious to draw any firm conclusions due to the overlap in the ranges of scores. Veering away from conservatism however, there is some face validity in stating that it would appear that less individuals *may* be involved in violence and aggression in the low security services.

*IPP/pm:* The low security service studies reported a considerable range of figures (0.48, 1.08, two non-calculable), as did the medium security services (0.05, 0.17, 0.41, 0.46, 0.49 males/1.03 females, four non-calculable), and the high security services (0.32, 0.41, 0.50, 1.02, one non-calculable). Again, there are no clear divides in ranges of scores, meaning that firm conclusions cannot be drawn regarding possible differences in the frequency of violent and aggressive incidents in hospitals of different security levels.

When considering the above PP and IPP/pm figures, it is important to note that the data from each study is not directly comparable due to differences in study methods. The only study that allows direct comparison of low and medium security wards is that of Shepherd and Lavender (1999) as a single uniform approach was used for data collection and measurement across different types of wards in the same hospital. The researchers identified IPP/pms of 0.48 and 0.05 for low and medium security wards and found that this difference was significant ($\chi^2 = 21.45$, *p*<0.001). This being said, a confound to this finding was that the average length of admission on each ward was different (see below for further discussion on the confound of length of stay).

With the study method and length of stay confounds in mind, the null hypothesis that there is no clear and measureable difference in frequency of violence

and aggression between facilities of different security levels has to be accepted, and applied to objective one of this literature review.

*Incident severity.* This was considered in two studies in low security environments (data were not extractable from one of these), two studies in medium security settings, and four in high security settings. Two approaches to measurement of incident severity were reported, the first making use of the traditional outcome measure of observed injuries to victims (or damage to property). The second approach used a measurement of intent to classify the severity of an assault. The reasoning for using this latter approach was explained by Kennedy et al. (1995), amongst others. In the context of the management of disruptive, aggressive and violent behaviours in health care settings, modern Control & Restraint training and procedures prevent a great deal of serious incidents, with assaults of lethal intent (eg. strangulation) resulting in intervention by watchful staff. Such attacks may result in little or no physical injury to the victim, if response is swift. In this way, recording injuries as a measure of severity of violence may lead to underreporting of incidents at the higher end of the scale, with for example a slap to the face and an attempted strangulation both being recorded as resulting in minor injury (Kennedy et al., 1995). These styles of measurement must thus be considered separately herein.

*Severity measured by injury (S/Inj):* The majority of studies reporting severity through injury used a three-point scale. The two that used a four-point scale confound this comparison, and will therefore not be considered. In a low security setting, Walker and Seifert (1994) reported that 16% of incidents were first degree (no injury), 76% second degree (minor injury), and 8% third degree (major injury). In a medium security setting, Kennedy et al.'s (1995) corresponding figures were 50%, 41% and 9% (no injury-to-serious injury). In high security, Larkin et al.'s (1988) figures were

72

51%, 45% and 3%. Coldwell and Naismith's (1989) data is again not comparable as is based on a 'miss', 'contact made' and 'injury' scale.

It is deemed moderately acceptable to compare these sets of figures, as all three studies examine physical violence rather than wider attributes of violence and aggression. It would appear that the severity of violence is similar in medium and high security settings, whilst in lower security settings, a larger proportion of incidents fall into the moderate injury category.

*Severity measured by intent (S/Int):* Unfortunately no low security studies used this measure. Kennedy et al.'s (1995) medium security study reported that 41% of attacks had low level intent, 45% mid-level, and 14% had serious intent. In high security settings, Larkin et al. (1988) and Carton and Larkin (1991) reported figures of 36%, 61% and 3% and later 47%, 47% and 6% respectively. There are no remarkable differences between the settings, particularly when Kennedy et al.'s lower number of overall recorded incidents (compared to the numbers in Larkin et al.'s study) are taken into account.

Evaluating the findings using the S/Inj and S/Int measures, the measure of intent did not identify clear differences between security level settings, however the measure of injury indicated that in the reported low security setting, larger numbers of incidents escalated to cause moderate injury. Thus concludes the commentary on objective one.

**Interpretation of Findings**

The seemingly simple two objectives of this study were found to be difficult to address for the following key reasons; the paucity of included reviews based in the prison service, the absence of any studies comparing multiple institutions, the lack of

73

commentary regarding security level as a factor, and the heterogeneity of study designs.

It was not possible to compare and contrast the Prison Service and health care systems as intended, due to only two prison-based studies meeting the quality criteria for inclusion in this study. As such, the second objective of this literature review could not be adequately answered, although some commentary was provided comparing one prison and one hospital site.

An extensive number of studies were available for consideration in relation to objective one, at least pertaining to the health care system. However lack of uniformity in study design prevented clear conclusions being drawn with regard to the frequency and severity of violence and aggression in different security level settings. Two of the key confounds will now be discussed.

Firstly, some studies measured 'violence', some 'aggression' and some 'self-harm', as well as every combination thereof. Underlying each of these terms were different non-uniform definitions as to what lies within each category, for example, is self-harm violence-to-self, and is a threat of violence considered to be violence, or an example of aggression? There is no single definition as to what constitutes 'violence' or 'aggression' in use at present. At an even deeper level lies a problematic subjective decision-making process as to when an *event* crosses a threshold to become an *incident*. For example, does use of a swear word constitute verbal abuse, or must it be contained within a directed-insult to become abusive, or must it feel that it was abusive to a receiving individual? At the bottom of this pyramid of concerns lies a final problem; the question as to which incidents get reported and recorded and which do not? Will every member of a ward nursing team laboriously complete incident forms to report swear words that are perhaps part of everyday life in a forensic

environment? Larkin et al. (1988) commented on the impact of desensitization in certain health care settings, where the thresholds for both recognition of and reporting of incidents may change over time. It is for this reason that many of the included studies chose to concentrate on physical assault alone, deeming these to be less-subjective and more clear-cut incidents, and as such more likely to be consistently reported and recorded in full; particularly when management or even legal investigations may follow the events. There are of course problems with making such assumptions regarding the recording of physical violence, for example unit staff may consider the reporting of physical assaults to demonstrate a failure in their ability to manage a situation, and fearing criticism they may down-play the severity of an incident or ignore it entirely (Larkin et al., 1988).

Varying definitions of violence and aggression are thus an insurmountable confound, as it is these definitions that determine the number of incidents that are collated and reported. The incident-per-patient per month (IPP/pm) calculations utilised above to explore the frequency of incidents in each setting are thus based on a numerator (incident number) that is not of a comparable nature.

Secondly, we turn to the measure of PP, which is the percentage of patients in the study who are involved in violent or aggressive incidents. In addition to the difficulty of using varying definitions of violence and aggression, there is another problem in that few of the studies examined or controlled for 'length of stay' as a variable. Logically, a longitudinal study set in an organisation with a fairly static population (such as a high security hospital) may have a greater percentage of participants involved in incidents, as quite simply, longer stay patients have a greater opportunity (time-wise) to 'offend'. It is not to say that this would be the case of course, as a short-stay unit with a high turnover of patients (such as a PICU) may find

that a greater percentage of participants are involved in incidents due to the unsettled nature of a unit with frequent admissions and discharges, and also the larger throughput of patients in the service. Without jumping to conclusions as to the projected direction in which this confound may lie, this explanation merely illustrates the need to account for and control for length of patient stays, and patient attrition (admission/discharge rates) when making use of PP statistics.

The number of incidents determined under the banner of 'frequency' is thus confounded with regard to both the PP and IPP/pm calculations. Similarly, the above presentation of data relating to 'severity' of violence is subject to problems. Some studies used one of a small number of established Severity Scales to determine their severity ratings, however there were differences between the scales, including whether they were three- or four-point measures, as well as there being more subtle differences regarding the classification of incidents. In addition, several of the research teams used their own severity scales, created at their own hospital site, which were therefore perhaps likely to be a little idiosyncratic. This being said, it was less objectionable to compare data on the severity of violence between levels of security setting than to compare data on the frequency of violence and aggression, as it was at least possible to narrow the review and exclude severity scales that consisted of more than three-points. As such, the single conclusion that is drawn in relation to objective one is that in the case of the small number of studies considered (n=3), it would appear that the severity of violence (as demonstrated through injury report) is similar in medium and high security settings, and that in lower security settings, a larger proportion of incidents escalate to cause injury. If generalised, this finding has practical implications, which shall be considered below.

**Strengths and Weaknesses of the Review**

This literature review commenced with the development of a comprehensive search strategy that incorporating major meta-databases to maximise identification of primary research studies. Additionally, a criminal justice reference database was included to increase the likelihood of identifying literature relevant to the Prison Service, and several grey-literature resources were incorporated for the same reason. These resources were complemented by additional hand-searching, and advice was also sought from experts in the field of institutional violence and aggression. Had time allowed, the review would have been strengthened by extending the searches to include further suitable meta-databases.

Search terms were tailored to meet the search capabilities of each engine, with a comprehensive list of terms identified through comparison to other known literature reviews. There were some restrictions in word utilisation in the search strategy (for example the word 'hospital' on its own was omitted, replaced with 'forensic hospital', 'mental health hospital', 'psychiatric hospital' etc) due to an excessive amount of irrelevant 'hits' that some generic terms produced in the testing-phase. Such omissions of course increase the possibility that some relevant literature may have failed to have been identified herein.

The search terms and strategy used is comparable to that in previous reviews. Gadon, Johnstone and Cooke (2006) reported searching several additional resources that were not included presently, however they identified only 9,800 papers. This perhaps demonstrates that there have been significant improvements in technology and access to literature since 2006, as more than 33,000 'hits' were identified in this study utilising less resources. To compare, Gadon et al. reported 0.54% of 'hits' being

included in their study, whilst only 0.05% were included in this study (19 out of 33540 initial 'hits').

In this study, the PICO (PECO) criteria were appropriate to the research objectives. There were clear inclusion and exclusion criteria, which were pre-set and proved to be non-problematic. With hindsight, this review may have been suited to a more narrow focus, perhaps including 'physical violence' and excluding 'aggression' as factors under review. Whilst this would have altered the tone of the review (and rather limited the volume of included literature), perhaps a more detailed comparison of findings may have been possible.

The quality assessment process had a 'false start'. It was found that the validity screening questions were insufficiently comprehensive, as several studies entered the quality assessment phase when they contained insufficient data to enable their inclusion in the review. For example, studies were identified that reported '100 incidents in a year', but failed to identify a denominator for this figure, such as the number of participants in the research study. This flaw was corrected, and the quality assessment process began once again. There was excellent inter-rater reliability between the first and second raters (ICC of 0.95), with agreement as to which were poor and high quality studies, although some disagreement was seen at the original cut-off margin (75%). When comparing this study to previous systematic reviews, this study appears to be superior in that it included a clearly defined quality assessment process. It is not evident that any quality assessment process was included in either the Bowers et al. (2011) or Gadon et al. (2006) literature reviews.

# CONCLUSION AND RECOMMENDATIONS

With regard to the first study objective, it was concluded that lack of uniformity in study design and outcome measures prevented clear conclusions being drawn with regard to the frequency of violence and aggression in different security level settings. Two key confounds were highlighted, that of the irregularity in definitions of 'violence' and 'aggression', and the absence of control or accounting for 'length of stay' as a variable. It was suggested that these difficulties rendered the key measures of frequency of violence and aggression (the IPP/pm and PP) non-comparable between studies. Whilst these underlying difficulties also applied to measures of severity of violence, a comparison between health care environments of different security levels was considered possible where a standard severity of injury measure had been used. As such, the single conclusion that was drawn in relation to objective one was that it appeared that the severity of violence was similar in the medium and high security settings reviewed, and that in the lower security unit presented, a larger proportion of incidents escalated to cause injury.

It was concluded that it was not possible to address the second objective of the literature review which was to compare and contrast the Prison Service and health care systems. This was due to only two prison-based studies meeting the quality criteria for inclusion in this study.

## Practical Implications and Recommendations for Future Research

With largely inconclusive findings presented herein, few practical implications can be defined. The apparent higher severity of incidents reported in the low security setting would however raise concerns, if this finding were to be generalised to low security services as a whole (a somewhat arbitrary generalisation based on the

findings of three heterogeneous studies). As the finding was not matched by a comparable increase in frequency of incidents in the low security setting, this implies that it is *the management of incidents* in low security services that is perhaps not as efficient as in higher security environments. High security hospitals and medium security units have ward staff who are trained in modern Control and Restraint techniques, and these staff will respond to incidents and raised alarms on their own wards, as well as in neighbouring areas (Torpy & Hall, 1993). In this way, there are protocols in place to ensure that a swift response is made to prevent situation escalation, thus limiting the likelihood of physical injury. In a low security setting, ward staff may be equally well trained, but the secure ward may lie within a district general hospital or a general psychiatric hospital. As such, staff from the neighbouring areas may be unable to assist with Control and Restraint measures, and the secure ward staff may therefore be unable to gain control of an incident as swiftly as is needed to prevent injury. The practical implication herein is that it may be useful to train staff from neighbouring areas in the hospital so that adequate support can be offered, or alternately, it may be necessary to raise the staffing levels in the low security wards to ensure that they can be self-sufficient.

Looking to the future of research in this field, it will be important for the paucity of published studies relating to the Prison Service to be addressed. As detailed in the introduction to this literature review, the Ministry of Justice's current *Safety in Custody Statistics* publications report assaults in the Prison Service in England and Wales, presenting some useful data separated by individual prisons. It is noted, however, that in past incarnations of the report, such as the 1990s version '*Statistics of offences against prison discipline and punishment in England and Wales*' and the early 2000s version '*Prison statistics in England and Wales*', information on

violence and aggression was actually presented in cohorts according to security levels of institutions. It was disappointing to find that this did not continue beyond 2003 when the '*Offender Management Case Load Statistics*' reports started to be produced (these being the immediate predecessor to the present *Safety in Custody Statistics* reports).

The on-going centralised reporting of Prison Service institutional violence and aggression throughout the 1990s, 2000s and until the present is useful, however there appears to a void in the literature that cannot be filled with mere statistical summary reports from the Ministry of Justice. It would therefore be useful if researchers (either from within the service, or independent researchers accessing data using the Freedom of Information Act, 2000) were to publish more detailed studies regarding violence and aggression within the service.

When considering recommendations for future research in healthcare environments, consideration has been given as to how the current research difficulties can be overcome. Some suggestions are presented in Box 6 below, and these guidelines should perhaps be considered by researchers in the field. It is acknowledged that whilst such guidelines would assist in the introduction of a certain level of conformity of reporting of data, they do not resolve all the problems relating to differences in research methods between studies. As such, the final recommendation provided is that future research design should start to branch out from single-centre studies and that pioneers in different units should form partnerships to initiate prospective research studies jointly, using standardised methods, measures, and outcome recording processes. Multi-site studies would, in this way, significantly enrich the literature base that has been created to date.

Box 6. *Practical suggestions for future research studies*

---

**Suggested definitions of 'violence' and 'aggression'**

- Utilise the current NHS Protect 2012 definition of physical assault in data collection:
  *"The intentional application of force against the person of another without lawful justification, resulting in physical injury or personal discomfort"*

- In the absence of standardised definitions of violence, aggression and self-harming, it is suggested that each should be defined in the research study method and each reported separately, giving three separate data categories:

  o Physical violence (against other person or object, contact or missed contact)
  o Other violence and aggression (actual or threatened)
  o Self-harming

**Suggested minimum data set for standardisation of reporting**

In addition to the study-specific data that reflects the focus of the research undertaken, the following minimum data set is recommended for inclusion in all report publications:

- State the actual number of participants involved in study
- Control or account for participant 'length of stay' as a variable
- Present the actual numbers of incidents of different subtypes, reporting physical violence, other violence and aggression and self-harming separately.
- Present incident frequency figures as 'Incidents-per-patient per month' (IPP/pm).
- Compare number and percentages of those who use physical violence, and those who do not (PP – 'participant percentage'). Similar figures can be presented for the other two categories.

**Suggested 'severity of assault' scales**

- Consider use of Frottrell's (1980) severity of injury scale:

  o No injury
  o Minor injury
  o Serious injury, requiring investigation or hospital treatment

- Consider use of Kennedy et al.'s (1995) severity of intent scale:

  o A – single blow to non-vital area
  o B – multiple blows or single blow to vital area
  o C – Use of a weapon

# IMPACT OF THE SYSTEMATIC LITERATURE REVIEW ON THE EMPIRICAL RESEARCH STUDY

Over 33,000 literature 'hits' were identified and processed during the systematic literature review (SLR). Of this number, just one good quality study was found that incorporated a direct comparison between security level settings within healthcare; that of Shepherd and Lavender (1999) who reported data pertaining to low and medium security wards within a general psychiatric hospital. The SLR also concluded that the lack of uniformity in study designs and outcome measures prevented clear conclusions being drawn with regard to the frequency of violence and aggression in different security level settings.

These findings altered the course of this thesis considerably. Firstly, the original intent had been to use the thesis discussion (Chapter five) to directly compare the findings from the SLR (Chapter one; identifying the placement of 'difficult cases'), with the findings from the empirical study (Chapter two; identifying the placement of 'complex cases' of PD within high and medium security settings). In the absence of conclusive findings from the SLR, the empirical study was redesigned to ensure that sufficient data were captured to examine both concepts ('difficult' and 'complex' cases) to thus enable the intended final thesis discussion.

The practical recommendations made at the conclusion of the SLR regarding the administration of future studies of violence and aggression (see Box 6 above), also influenced the design of the incident data collection process, and the data presentation within the empirical study. The recommendations were followed to ensure that the collated data would not only be robust and have utility within this thesis, but that the findings herein could also bolster the current literature base on the topic of institutional violence and aggression in health care settings of different security levels.

# CHAPTER TWO

## In a comparison of personality disordered patients in high security and medium security hospital settings; are high security patients more 'Complex Cases' who require specialist treatment?

# ABSTRACT

**Aim:** The primary study aim was to define and evaluate differences in 'clinical complexity' between personality disordered (PD) patients living in high and medium security hospitals in England. The use of the Personality Assessment Inventory (PAI) psychometric tool was also to be explored, with a view to establishing whether a higher mean score profile would be found in the high security group, reflecting greater difficulties in a range of psychological areas contributing to clinical complexity.

**Method:** Fifty-nine adult male participants (33 in high and 26 in medium security) were recruited and completed the PAI self-report questionnaire. Additionally, clinical data were collated from patient files and incident reports, which allowed a multitude of variables to be examined for relevance to the notion of case complexity.

**Results:** Several statistically significant differences were found between high and medium security populations; the high security group had a greater number of PD diagnoses (clinical comorbidity), elevated clinical and behavioural difficulties (identified by the PAI), a younger mean age at first conviction, and increased frequency of violent behaviours. Composite PAI group score profiles were not able to differentiate between members of the high and medium security participant groups. Regression analysis identified that in the studied PD population, the variables important to case complexity were elevated difficulties with affective instability, paranoia and depression, and a younger age at first conviction (reflecting lifespan difficulties in social and occupational functioning).

**Conclusions:** The results led to the development of a Model of a Complex Case of PD that can be applied in forensic hospital services. When assessed against the model, 27% of the study population were found to be 'Complex Cases', and 73% 'standard' or non-complex cases of PD. A greater number of complex cases were found in the high security group (36% of the group), compared to the medium security group (15% of the group). Whilst the proposed model of case complexity shows initial promise, it would be prudent to examine its generalizability to other PD hospital populations.

# INTRODUCTION

## Personality and personality disorder

The manifestation of personality was studied extensively throughout the twentieth century, with pioneers including Fiske, Eysenck and Tellegen investigating the presentation of personality traits, and identifying dimensions of personality that held universal application. Digman (1990) reviewed this work and proposed the Five Factor Model of Personality, the factors being Extraversion (E), Agreeableness (A), Conscientiousness (C), Neuroticism (N) and Openness to Experience (O). Digman stated that in combination the five domains could provide a description of personality structure that could be measured with high reliability and validity. More than 20 years later, it continues to be the prevailing model in use in the personality psychology field.

Personality development is impacted by a range of biological, social and psychological factors (Alwin et al., 2006) with interactions between these and personal experiences ensuring that each child matures into a unique individual. Personality begins to be determined pre-birth, with genetic, neuroanatomical and bio-chemical factors providing a platform from which personality develops. These also impact the temperament of a baby, which in turn affects responses from carers, thus shaping the quality of the environment in which they are raised (Alwin et al., 2006).

As a child ages, social and psychological factors have significant impact on the developing personality. The former include the environment, culture, socioeconomic issues, and the influence of other people. The latter include the quality of parent-child relationships, and the influence of external events from less significant experiences of success and failure to high impact traumatic events (Alwin et al., 2006).

Whilst an individual's personality develops through childhood and into adulthood, maturation of personality has also been observed to occur within adulthood

in some studies.  In a large sample of 132,000 participants aged 18 to 60, characteristics of agreeableness and conscientiousness were seen to increase in higher age groups, whilst in the female participant group, neuroticism decreased in increased age groups (Srivastava, John, Gosling, & Potter, 2003).

This is an interesting contrast to a key principle of personality disorder (PD), whereby abnormal personality traits are said to be relatively stable over time and situation.  PD is diagnosed when significant impairments in self (identity or self-direction) and interpersonal (empathy or intimacy) functioning are present, in the presence of pathological personality traits.  The personality difficulties that manifest must also differ to those expected within the individual's culture and are not better explained by other medical or psychiatric conditions.  There are ten types of PD, each of which are described in terms of pathological traits that cause difficulties for the individual and/or those around them.  In order to receive a diagnosis, typically 3-5 such traits need to be present, out of lists of 7-9 that typify the disorders.  The PDs are; Antisocial, Avoidant, Borderline, Dependent, Histrionic, Narcissistic, Paranoid, Obsessive-Compulsive, Schizoid and Schizotypal (DSM-5, APA, 2013).

As with the development of normal personality, PD cannot be linked to just one cause.  Genetic, neuroanatomical, biochemical and temperament factors will again be relevant, as will the attachment that is established between a child and caregiver. In line with Attachment Theory (Bowlby, 1988), disrupted attachment formation in the early years significantly impacts personality development and the quality of adult relationships, with the insecurely attached often preoccupied with relationships, fearful of intimacy and socially avoidant, or dismissive of intimacy and highly independent (Bartholomew & Horowitz, 1991).  Other social and psychological factors that are significant contributors to personality disruption and disorder are

childhood maltreatment (neglect and abuse), and the experience of traumatic events or other enduring negative influences (Alwin et al., 2006).

The Five Factor Model (Digman, 1990) has been examined in relation to PD by numerous studies. In 2004 Saulsman and Page conducted a meta-analytic review of the research outcomes, presenting sample-size-weighted mean effect sizes for 12 studies, pertaining to the relationships between each of the PDs and the personality dimensions of the Five Factor Model. Table 4 (below) summarises the relationships that were identified with effect sizes of at least .2 (a small effect size). The meta-analysis thus confirmed Costa and McCrae's (1985) report that the Five Factor Model is not only a comprehensive trait model reflecting personality theory, but that it encompasses dimensions of both abnormal and normal personality successfully (Costa & McCrae, 1985).

Table 4. *Relationships between PD and the Five Factor Model (Saulsman & Page)*

| Personality Disorder | Extraversion | Agreeable-ness | Conscientious-ness | Neuroticism | Openness to Experience |
|---|---|---|---|---|---|
| Antisocial | - | low | low | - | - |
| Avoidant | - | - | - | high | low |
| Borderline | - | low | low | high | - |
| Dependent | - | - | - | high | - |
| Histrionic | high | - | - | - | - |
| Narcissistic | high | low | - | - | - |
| Obsess-Com | - | - | high | - | - |
| Paranoid | - | low | - | high | - |
| Schizoid | low | - | - | - | - |
| Schizotypal | high | low | - | high | - |

In 1997 Mulder and Joyce endeavoured to construct a new system for the classification of PDs, describing traits they identified in a psychiatric population in terms of the extremes found in normally distributed personality characteristics. Having evaluated 148 participants against PD traits detailed in the DSM-III-R (APA, 1987), the outcomes were then subjected to factor analysis, and the researchers found

that all PD traits could be divided into just four factors; 'antisocial', 'asocial', 'asthenic' and 'anankastic' ('The Four As'). The traits of antisocial, borderline, narcissistic, histrionic and paranoid PDs were heavily loaded on the first factor, 'antisocial'. Schizoid PD was associated with the 'asocial' factor, whilst schizotypal, avoidant and dependent PDs were associated with the 'asthenic' factor. Lastly, obsessive-compulsive PD was heavily loaded on the fourth factor, 'anankastic'.

Whilst this 'Four A' factor system was proposed to have potential utility in clinical practice, with fewer and less overlapping factors than the DSM classification system of the time, more than 15 years later the publication of the fifth version of the DSM (DSM-5; APA, 2013) maintained the status quo with regard to the categorical diagnosis of the ten PDs detailed above.

The same is not likely to true in the case of version 11 of the International Classification of Diseases (ICD), expected to be published by the World Health Organization (WHO) in 2017. The ICD-11 diagnostic guidance for PD is instead anticipated to incorporate descriptions of personality trait domains similar to those described by Mulder and Joyce.

In 2007 a review of the ICD began, with experts appointed as chairpersons of ICD-11 working groups. Professor Peter Tyrer (Imperial College, London) became chair of the Work Group for Revision of Classification of Personality Disorders in 2010 (Bucci, 2013). Early published work reflected ideas regarding the introduction of a measure of severity of PD, and on a revision of the PD categories, decreasing the number and overlap between them (Tyrer et al., 2010).

By late 2014, Tyrer et al. settled on a four level severity system as the proposed future primary classification system in PD diagnosis; 'personality difficulty', 'mild PD', 'moderate PD' and 'severe PD'. The original eight PD

categories in ICD-10 were removed, with a secondary classification system proposed which spans four personality trait domains; 'negative affective', 'dissocial' (antagonistic), 'detached', and 'anankastic'. The proposed dimension of severity of PD would incorporate the extent of interpersonal functioning and relationship problems, risk of harm to others and self, impact on social and work functioning, and the extent to which different personality trait domains were involved in the disorder (Tyrer et al., 2014).

As a result, it is entirely possible that in 2017 the way in which PD is diagnosed will radically change. In the interim, this study examines the differences in 'clinical complexity' of PD patients living in high and medium security settings. Differences identified in the present study would remain true if the new ICD-11 were to be released in 2017 or even immediately. As such, the study findings contained herein will remain useful to clinicians working in secure settings, even if PD terminology and diagnostic categories change in the future.

## 'Case complexity' in the literature

When examining literature rooted in PD services, frequent reference is made to 'complex cases' of PD. Upon closer inspection, use of this phrase is rarely followed by an explanation of this categorisation. The decision as to whether a PD patient is 'complex' appears to largely be at the subjective discretion of the writer.

This oddity of informal diagnosis is not limited to the PD field, applying to many areas of mental health. In an academic text titled *'Treating Complex Cases: The Cognitive Behavioural Therapy Approach'*, Tarrier, Wells and Haddock (1998) suggest that patients in treatment are either 'pure' or 'complex', whereby the complex have extensive co-morbidity and chronic presentation, as well as de-stabilising social problems and difficulties with social relationships. Ruscio and Holohan (2006)

comment that a complex case will have additional presenting problems that make the patient more difficult to treat, with the problems contraindicating use of the standard treatment, necessitating an adaption of the treatment or lessening its likely efficacy.

Focussing on PD patients specifically, Livesley (2008) stated that *most cases* of PD are complex, in that a typical patient will meet the diagnostic criteria for several PDs, will have multiple problems, and psychopathology that spans most aspects of their personality functioning. Any further reference to the limited literature on PD complexity must be made with caution, as closer inspection of the studies typically uncovers descriptions of categorisation of PD severity, rather than complexity, which as discussed in the thesis introduction, are not considered to be identical concepts.

This being said, Yang, Coid and Tyrer's (2010) classification system for PD severity (derived from Tyrer & Ferguson, 2000, in turn derived from earlier work by Tyrer & Johnson, 1996) used mixed complexity/severity terminology, yet proved useful in the construction of the model of complexity herein when considering a possible requirement for patients to have multiple PD diagnoses. With a sample of 8391 participants in a national home survey, Yang et al. explored the use of a five level severity classification system for PD; 0 - 'no personality disturbance', 1 - 'personality difficulty' (one criterion less than the threshold diagnosis for PD), 2 - 'simple personality disorder' (diagnoses within one PD cluster only), 3 - 'complex personality disorder' (two or more PDs in two or more PD clusters), and 4 - 'severe personality disorder' (two or more PDs in two or more PD clusters, including antisocial PD). The team reported that 22.5% and 48.3% of the participant group were categorised under groups 0 and 1 respectively, with a further 21.4% identified as 'simple PD', 6% as 'complex PD' and 1.3% as 'severe PD'. These categorisations are

to be re-examined later, in a discussion of the uses of the two terms, 'complexity' and 'severity' (see Chapter five).

## High security patients; 'Complex' or 'Difficult'?

Chapter one of this thesis presented a systematic literature review on violence and aggression perpetrated by prisoners and patients in secure forensic settings, across different institutional security levels. This explored the hypothesis that 'difficult cases' (patients who are management problems due to violent and aggressive behaviour) are housed in high security facilities, whilst less difficult patients (those who pose less frequent or severe management problems) are housed in lower security settings. The reported conclusion was that there were no clear differences in the frequency of violent and aggressive incidents in different security settings within health care, and limited confidence was expressed in the generalisability of the finding that incident severity may be highest in lower security settings.

As high security hospitals were not confirmed to house more 'difficult cases' than lower security settings, an alternative explanation is that they instead provide treatment for the 'complex cases', whilst lower security settings treat 'pure' or 'standard' cases. This hypothesis requires investigation, and was the original idea that supported the development of this research study.

An alternative (or null) hypothesis would consider that there are no measureable differences between patient groups in high and medium security settings, with high security patients being neither more 'complex' nor more 'difficult' than residents in other settings. This would be incongruous, however, with the observed differences between the types of security setting. For example, the built environments differ, the procedures and rules within the settings differ, and each provides a different portfolio of treatments. Additionally, a bed will cost in the region of £300,000 per

annum in a high security hospital, but £165,000 per annum in medium security (Centre for Mental Health, 2014). This alone necessitates that there be clear and valid differences between the patient groups.

## The present study

### Defining a 'Complex Case' construct

This study will investigate the complexity of male PD patients in high and medium security environments in England. It would be too large a project remit to include other diagnostic groups and/or to examine male and female populations simultaneously.

The development of a suitable 'complex case' construct required further literature review. These efforts led to the selection of a number of variables as potential contributors to the notion of case complexity, as presented below. The construct would need to be sufficiently sensitive to identify patients with more wide-ranging clinical difficulties and treatment needs than their peers. Whilst this was the case, a core issue herein is that all variables contributing to the complex case construct must be readily available for analysis without the need for further subjective clinical interpretation, if the construct is to have between-hospital utility.

In this way, one key variable suggested by literature review was excluded from incorporation into the construct; that of 'experience of invasive trauma' (particularly that of childhood abuse). Briere, Kaltman and Green (2008) identified a linear relationship between increased childhood trauma exposure and increased adult symptom complexity (in this case meaning an increased number of different types of symptoms). This suggested that childhood trauma may be relevant to mental health difficulties observed in 'complex cases', with regard to the addition of adult trauma

symptoms (Briere et al., 2008) and difficulties such as anxiety and depression (Follette, Polusny, Bechtle, & Naugle, 1996).

However, any attempt at quantifying the presence/absence of trauma to enable its inclusion as a variable, would have necessitated review of personal patient information, as well as clinical interpretation of said information. As stated, this was not achievable in a consistent manner between hospital groups with different clinicians, meaning that the variable would be excluded. Each of the variables that are to be included shall now be discussed in turn.

### A. Multiple (comorbid) mental health diagnoses

The justification for inclusion of this variable was discussed in Section 1.2 above. In summary, Tyrer and Ferguson's (2000) description of a complex case of PD was those with two or more PDs in two or more PD clusters, whilst the presence of multiple diagnoses as a reflection of complexity was also supported by Livesley (2008). Clinical comorbidity with mental illness has also been suggested to be an important aspect of PD case complexity due to the interactive nature of mental health difficulties; for example Tyrer et al. (2010) explained that patients in a depressive episode are approximately half as likely to recover when also diagnosed with PD.

### B. Difficult clinical traits and problematic behaviours

It is acknowledged that not all clinical difficulties and emotional distress result in a clinical diagnosis. According to a threshold model of diagnosis (Pauker & Kassirer, 1980), where symptomology exists, a threshold can be reached where medical testing of a diagnosis can be supported. At a much higher threshold, where the probability of presence of an illness becomes greater, crossing the higher threshold supports diagnosis and administration of treatment. Applying such threshold models to mental health, studies have investigated the importance of subthreshold

symptomology in the treatment of patients. Sherbourne et al. (1994) conducted a study with outpatients in the mental health sector, and identified that those with subthreshold levels of depressive symptoms were just as likely as those diagnosed with depression to have discussed their emotional difficulties with a doctor in the preceding 6 months, and to have been prescribed an antidepressant or minor tranquiliser. In was thus concluded that 'subthreshold depression' was a variant of depression that was considered appropriate for treatment in the mental health sector.

In this way, focussing on formal diagnostic co-morbidity alone within this study may underestimate the clinical complexity of the PD group, whilst use of a psychometric assessment tool could add value in identifying subthreshold clinical difficulties. Whilst several tools may be useful in this regard, the Personality Assessment Inventory (PAI; Morey, 1991) could be used to identify both mental health difficulties and problematic behaviours that may warrant targeted treatment, with scores from the assessment contributing to the clinical complexity construct. The PAI questionnaire is completed by all new patient admissions to the PD service at Rampton Hospital, and thereafter every 1-3 years, meaning that scored assessment reports are available on file for analysis. Thus the benefit of using the PAI over similar self-report personality measures is that less patient effort is needed to participate in the research (ie. all study data can be collected remotely, following provision of consent by participants). This would likely increase the consenting participant pool size at the high security site.

The PAI is discussed in more detail below (see section 2.2 Materials), and the reader is referred to a separate comprehensive critique of the assessment (see Chapter four of this thesis), wherein positive support for the PAI's use can be found. It is also of note that a particularly useful facet of the PAI is that one of the clinical subscales

(see Appendix 5) measures traumatic stress. This will provide added information in the absence of availability of a variable relating to history of trauma (see earlier discussion).

### C. High assessed risk

Scores on the Psychopathy Checklist–Revised (PCL-R; Hare, 2003) will be included as a risk (and clinical) variable. Since 2001 the UK's DSPD programme (which utilised admission criteria of a PCL-R score of 25+) substantially impacted the placement of patients in different security settings. Duggan, Mason, Banerjee and Milton (2007) examined admissions to an MSU which at the time had exclusion criteria including a PCL-R score of 25+. Of 89 referees who met the inclusion criteria, those offered beds had a mean PCL-R score of 18.7, whilst the rejected referees had a mean score of 21.9. This difference was significant ($p = 0.03$), suggesting that PCL-R score may have impacted patient acceptance.

Duggan et al. (2007) similarly found that referees with higher Historical, Clinical, Risk Management-20 (HCR-20; Webster, Douglas, Eaves & Hart, 1997) violence risk assessment scores were less likely to be offered admission (26.4 mean score for accepted, 29 mean score for rejected referrals; $p = 0.07$). As such, HCR-20 score is the second risk (and clinical) variable included in the study.

### D. Early / extensive offending

Howard, Khalifa, Duggan and Lumsden (2012) compared PD patients admitted to an MSU and high security DSPD wards. The 'severe' PD group in the DSPD had significantly more convictions prior to age 18, possibly reflecting earlier involvement in crime, and thus difficulties in social and occupational functioning over the greater proportion of the lifespan. To examine this possibility in more detail

herein, variables to be included in this category are 'age at first conviction', 'custodial placement prior to age 18' and 'total number of convictions'.

### E. Potential confounding variables

There are a number of confounds that may potentially impact the security setting in which patients reside, that cannot necessarily be explained by clinical issues. The most pertinent of these was studied in Chapter one of this thesis; that of patients engaging in institutional violence and aggression, where risk to self or others necessitates careful risk management. This may be extended to behaviours which could be considered challenging and sufficiently severe that when enacted in a high security setting may delay a patient's progression to an MSU, irrespective of treatment success. These include engaging in 'red-flag behaviours' (absconding, key-making etc) and in subversive or disruptive behaviour (for example secreting contraband materials). These variables will need to be considered in detail in this study.

Smith (2009) identified that patients with comorbid physical and psychiatric health needs may be considered 'complex'. This study will therefore also assess whether any participants have healthcare difficulties (for example wheelchair use) that may restrict their placement in certain hospital environments.

Additional potential confounds to the placement of hospital patients in different levels of security (that were not identified in the literature) were suggested by clinical colleagues working at the high security hospital site. These were linked to court processes and Ministry of Justice (MoJ) directions. Occasionally, index offences of murder or arson result in direct transfer to a high security setting, meaning that there may be a disproportionate number of such offenders in the high security environment, just as there may be a higher number of patients on MoJ restricted

sections 41 or 49 of the Mental Health Act (1983). These suggested confounds will all be examined during study administration.

All the hitherto discussed variables which are potential contributors to the notion of a complex case of PD, are summarised and presented pictorially below in Figure 2. These are the variables that will be examined by this research study, before the development of a 'Model of a Complex Case of PD' can be considered.
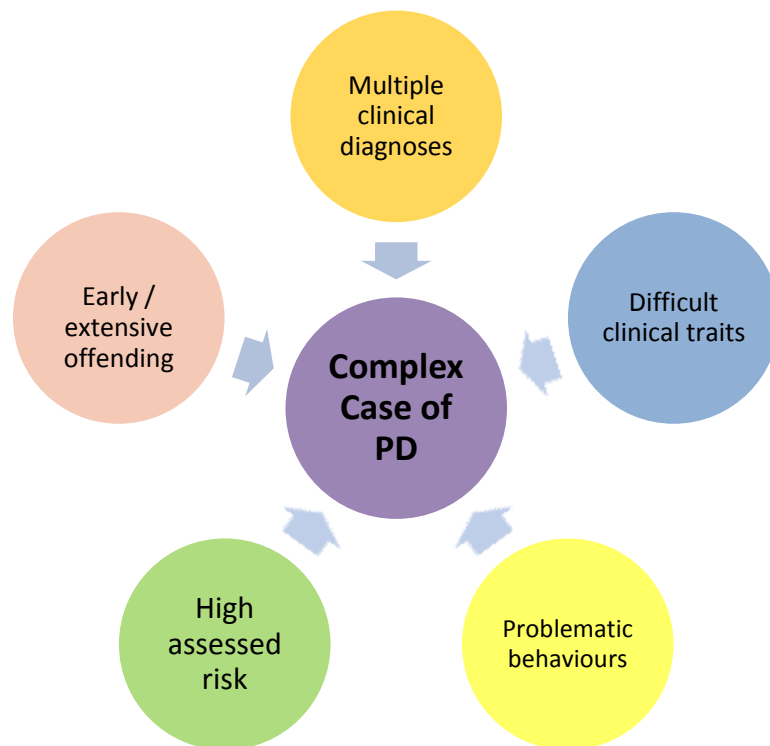


*Figure 2.* Factors that potentially contribute to a 'Complex Case' of PD.

**Objectives of this Study**

The primary objective of this study is to determine whether there are differences in clinical complexity between PD patients who are resident in high and medium security hospitals. If differences are found, this would suggest that the groups have different treatment needs, and that the issue of complexity is at least in part deciding the residence of the patient. Attaining such an understanding of the

hospital populations may therefore be of future use in treatment planning, and also in reviewing and refining the local hospital admission criteria.

The secondary objective of this study is to establish the 'typical' Personality Assessment Inventory (PAI) score profile of PD men in high and medium security environments. If the mean score profiles differ, this will contribute to an understanding of the clinical needs of each population, and provide a simple psychometric assessment method for monitoring clinical readiness for transfer to step-down services.

The study aims generate the following hypotheses:

It is hypothesised that the group of PD patients in the high security hospital will be identified as more 'complex cases' than their counterparts resident in MSUs.

It is also hypothesised that the 'typical' PAI score profile will be elevated in PD patients residing in the high security setting; reflecting greater difficulties in a number of areas (eg. clinical symptomology, emotional distress and behavioural difficulties).

# METHOD

## Participants

Participants had to be male, over 18 years of age, with a diagnosis of PD, and residing on an inpatient ward in either a high security or medium security hospital.

Participants were recruited from one high security hospital (Rampton Hospital, site A; the study host site) and three medium security hospitals (Arnold Lodge, The Humber Centre, and Ridgeway Roseberry Park, sites B, C and D). As it was anticipated that up to 52 patients would be eligible to participate at the high security site (this being the number of beds on the three PD wards), three medium security

hospitals were invited to take part in the study in order to provide a similar-sized pool of potential participants from medium security environments. Site B, with 24 beds across two wards, site C with 15 beds on one ward, and site D with 10 beds dispersed amongst four wards, would collectively provide up to 49 potential participants resident in medium security environments.

At each of the study sites, all potentially eligible patients were approached regarding participation in the study, rather than enrolment being limited based on a priori power analysis. All patients housed on designated male PD wards were considered to be potentially eligible for recruitment. This applied at sites A, B and C. However site D had mixed-diagnosis wards only, meaning that potential participants were identified as only those patients with a recorded primary diagnosis of PD, as identified by the hospital's Professional Lead for Forensic Psychology.

At all sites with designated PD wards, the research study was explained to the patients as groups at the Ward Community Meeting. Thereafter patients interested in participating discussed the study individually with the researcher before providing their names and entering the consenting process. At site D, as potential participants had to be pre-identified by the Professional Lead, the patients (remaining anonymous to the research team) were individually approached by a member of their local care team regarding the study. Those interested in participating again discussed the study individually with the researcher before providing their names and entering the consenting process.

Data collection began in July 2014 and ended in November 2014. At the high security hospital (site A), 33 of 48 male PD ward residents consented to participate in the study. The remaining residents either declined to participate (n=13), or were excluded from recruitment by the Responsible Clinician for clinical reasons (due to

either not having a diagnosis of PD or due to being nursed in seclusion care). At site B, 12 of 23 potentially eligible residents consented to participate, whilst the remaining patients declined. At site C, 10 of 14 ward residents consented to participate, with the remaining declining. At site D, 4 of the 10 potential participants consented to take part in the study, with the larger number declining, and one excluded from the study by the Professional Lead for clinical reasons. All of the recruited 59 participants (n = 33 from the high security hospital and n = 26 from medium security hospitals) completed the research study in full.

## Materials

### The Personality Assessment Inventory (PAI)

The PAI (Morey, 2007) is a 344 item questionnaire that identifies an individual's current mental health difficulties in the clinical domains of personality disorder, paranoia, psychosis, anxiety and symptoms of trauma, mood difficulties, somatic complaints, and drug and alcohol problems. It also measures clinical difficulties that may impact treatability and treatment acceptance; aggression, suicidal ideation, stress, perception of availability of support, and treatment rejection. The PAI assesses two additional clinical factors associated with interpersonal functioning; interpersonal dominance and personal warmth, and contains validity scales to assess confounds such as impression management and inconsistent responding. In total, the PAI has 53 scales; 4 validity scales, 11 clinical scales, 5 treatment scales, 2 interpersonal scales, and 31 clinical subscales. For full details and descriptions of each of the PAI scales, refer to Appendix 5.

The PAI tool utilised in this study was a booklet of 344 statements (see Appendix 6), wherein participants marked each statement as 'False, not at all true', 'Slightly true', 'Mainly true', or 'Very true'. A critique of the validity and reliability

of the PAI (see Chapter four) supported its selection as a suitable tool to be used in this study.

**Data collection proforma**

In addition to the PAI test scores, a further 21 factors contributed to this research study's concept of 'Clinical Complexity'. As presented in Table 5 below, these were grouped into 'diagnostic factors' (16 factors), 'other clinical and risk factors' (2 factors) and 'offence factors' (3 factors). A data collection proforma was created to record the data corresponding to each factor and each confound variable, once extracted from the hospital psychology file of the participant. The data collection proforma recorded the majority of factors as being 'present or absent', and in a minority of cases recorded a number as the data point (such as with 'number of convictions').

**Incident data code list**

A list of incident data codes was provided by each hospital Trust's Information Department. These contained up to 600 codes which are used to categorise reported incidents. Shortlists were made of data codes corresponding to violence, aggression, abuse, threats, hostility, harassment, self-harming and suicidal incidents, subversion, disruption, inappropriate behaviours, and 'red-flag behaviours' (such as hostage-taking, barricading, key-making, absconding). Examining the full list of codes overcame the problem of the participating hospital Trusts having different data management systems, and idiosyncratic methods of recording certain incident types (for example 'hostage-taking' may be sub-coded under 'violence' or 'security incident'). The shortlisted codes (typically 50 to 100) would later be used to request incident data for each of the study participants, from each hospital Trust. The Information Departments would collate the raw data and provide it for analysis.

Use of different severity scales by the contributing hospital Trusts prevented a retrospective comparison of incident severity between the study groups. As discussed in Chapter one, severity is best explored in a prospective study design, when the severity 'intent' can be recorded alongside severity outcome measures. As such, information on the severity of incidents was not requested from the Information Departments.

Table 5. *Case complexity factors recorded on data collection proforma*

| Factor | Method of Measurement |
| --- | --- |
| *Diagnoses* | |
| Personality Disorder (each of the ten types plus PD-NOS recorded as eleven separate factors) | Present / Absent |
| Total number of Personality Disorders | Number |
| Any Schizophrenia and other Psychotic Disorders (SAOPD) | Present / Absent |
| Mood Disorders | Present / Absent |
| Anxiety Disorders | Present / Absent |
| Disorders usually first diagnosed in Infancy, Childhood or Adolescence (DUFDIICOA) | Present / Absent |
| *Other clinical and risk factors* | |
| PCL-R score | Number |
| HCR-20 score | Number |
| [1] Medical condition impacting hospital residence | Present / Absent |
| *Offence factors* | |
| Age at First Conviction | Number |
| Custodial placement prior to age 18 | Present / Absent |
| Total number of convictions | Number |
| [1] Conviction for murder | Present / Absent |
| [1] Conviction for arson | Present / Absent |
| [1] MoJ restriction (MHA Sections 41 or 49) | Present / Absent |

Note. [1]Indicates potential confound variables that are to be investigated.

## Procedure

Hospital inpatients consented to participate in the study by signing a consent form (see Appendix 7) after undertaking a thorough briefing procedure (see 'Ethical Considerations' below).

### Completion of the PAI questionnaire

The PAI is routinely completed by all new patient admissions to the PD service at the host High Security Hospital (site A), and thereafter every 1-3 years. Consequently, historical PAI data reports are held on file at site A, and those pertaining to consenting participants were made available for analysis. As such, at site A only participants found not to have reports on file were asked to complete the questionnaire (n=1). As the PAI was not in prior use at sites B, C, and D, all medium security participants completed the questionnaire for the purpose of this study.

Participants chose between completing the questionnaire independently in a quiet room, or having the questions read aloud to them by a researcher and giving their responses orally (in a private room). This approach endeavoured to overcome any difficulties with literacy or understanding that may have impacted the PAI results. Participants were also able to choose whether to complete the questionnaire in one sitting, or to divide it between two or more sessions. In the latter case, the questionnaire was retained by the researcher between sessions.

Completion of the questionnaire ended the participants' direct involvement in the study. Subsequent entry of a participant's responses into a computer software programme generated a PAI *T* score report for each individual participant.

### File data collation

The data collection proforma (see Table 5 above) was used by the researchers to record data held in the participants' hospital psychology files. Typically this exercise was assisted by a member of the local psychology team who would identify the required information, which was then recorded by the researcher. Scores in all HCR-20 risk assessment reports held on file (of present / partial / absent) were converted into numerical scores (of 2 / 1 / 0 respectively), in order to provide an overall HCR-20 score out of 40, which is permissible for research purposes although not for clinical use. When PCL-R score data were extracted from participant files, it was found that the majority of reports did not provide the raw scores (overall, factor 1 and factor 2 scores), instead only summarising the score as being under or over 25 (a value used within the UK's DSPD admission criteria). Unfortunately, the original PCL-R scores sheets could not be located in the majority of incidences, meaning that it was not possible to record PCL-R scores as a continuous variable as planned. Instead, the data point could only be recorded with categorical values of 'Under 25' or '25+'.

### Incident data collation

The hospital information departments supplied the requested raw incident data for each participant, for the period 01st January 2011 to 30th June 2014, alongside admission dates so that length of stay could be factored into the data analysis. A review of the data resulted in the creation of nine category headings, under which all incidents from all Trusts could be collated (as seen in Table 6 below). Due to low absolute numbers of incidents (and thus difficulties with analysis), it was not suitable to further subdivide incident data, for example, self-harming and suicidal incidents were aggregated. As an exception to this rule, serious 'red flag' incidents (hostage

taking, absconding etc) were addressed separately as 'planned' and 'actual' events, as speaking of them is very different to enacting them; the latter of which may have the immediate impact of transfer of a patient to a higher security environment.

Once the incident data were separated into the nine category headings, all the research data (PAI test scores, file data and incident data) were manually entered onto the study database, ready for analysis.

Table 6. *Group categorisation of incident data*

| Incident Category Name | Category Description |
| --- | --- |
| Physical violence | All physical violence towards others and property (making contact or attempting to make contact and missing). |
| Non-physical violence | All verbal abuse (including but not limited to offensive, racist and homophobic comments), threats to others, aggressive and hostile behaviour (verbal and non-contact physical), harassment of others, psychological abuse. |
| Sexual incidents | Sexually inappropriate behaviours towards others, including physical, verbal and sexual harassment behaviours. (NB. very low occurrence rates prevent separate analysis of physical and non-physical incidents). |
| Self-harming / suicidal incidents | Actual, planned or threatened self-harming and suicidal behaviours. (NB. very low occurrence rates of actual suicidal behaviours, and of threatened/planned self-harming and suicidal behaviours prevent separate analysis of these). |
| Disruptive / subversive incidents | Inappropriate behaviour (including but not limited to play-fighting, verbal or physical disruption), and subversive behaviour (including but not limited to patient trading, drugs/alcohol-related, possession of prohibited items, and theft). |
| Hostage-taking | Planned and actual incidents considered separately. |
| Absconding | Planned and actual incidents considered separately |

## Ethical Considerations

This research study was approved by the East Midlands NRES Committee on 09th July 2014 (ref 14/EM/1012), and subsequently by the R&D Departments at the three participating NHS Trusts; Nottinghamshire Healthcare NHS Trust, The Humber NHS Foundation Trust, and Tees, Esk & Wear Valleys NHS Foundation Trust. Rampton Hospital (Nottinghamshire Healthcare NHS Trust) is the research host and study coordinating centre, where all study materials are being stored securely for seven years before confidential disposal. A copy of the anonymised study database is additionally being retained by the University of Nottingham (the study sponsor), in association with this thesis submission.

The research team worked with local health care teams to identify and recruit participants to this study, none of whom were paid to take part. As the research team had no prior access to patient-identifiable information such as names, where it was necessary to identify and approach a particular individual rather than an anonymous group of residents (such as in all cases at site D), the initial approach had to be carried out by a local care team member alone. Residents who were interested in participating in the study volunteered their names to the researchers, and at all sites a member of the ward nursing team ensured that all potential participants had been given the opportunity to accept or decline participation; keeping track of the decliners and any residents who had not yet spoken to the research team, to ensure that no individuals were erroneously excluded from the study.

No strategies were employed to conceal the purpose of this research study. All potential participants engaged in a thorough briefing regarding the study purpose and research method before deciding whether to provide their informed consent to participate. Participant information sheets were provided (see Appendix 8), and all

persons discussed the nature of the PAI questionnaire and the file data that would be collected from their records during the data collection period. Subsequently, all potential participants were given a further 24 hour consideration period before meeting with the researcher again in order to further discuss the study and complete the consenting process.

All participants were informed verbally and in writing of their rights to withdraw from the study, and contact details were provided for the research team and the local staff collaborators in the hospital Psychology Departments. All participants were assured that their names and dates of birth would not be recorded on PAI questionnaires, on data collection sheets, or on study databases, as unique anonymous identifiers would instead be used. Participant names would only be recorded separately on the formal Trial Log, to be filed securely with the signed consent forms (see Appendix 7).

Participants each chose to have their completed questionnaires stored confidentially in the research files alone, or to have a photocopy given to their psychologist for storage in their hospital psychology file so that it may potentially be used in their future treatment or care. The majority of participants opted for the latter.

## Treatment of Data

All data were analysed using IBM's Statistical Package for Social Sciences (SPSS), version 22. Initial examination of the distribution of data within each variable (using the Shapiro-Wilk test of properties of normality) identified that a portion of variables were normally distributed, and a portion were not. This resulted in the use of t-tests and the Mann Whitney U test respectively when analysing individual variables employing continuous data within the 'PAI data', 'file data' and 'incident

data' categories. Additionally, Chi-square analysis was used to explore the categorical data variables within the 'file data' category.

With regard to the PAI data, approximately a third of the scales did not meet the properties of normality. It was nonetheless considered appropriate to continue to explore the scales as a composite, using a multivariate analysis of variance (MANOVA). Lindman (1974) stated that the $F$ test is robust to deviations from normality, and as only 31% of scales were non-normally distributed, this small number should not detract from the overall result of the multivariate analysis of variance for the 'PAI Composite'.

As multiple t-tests were employed, use of Bonferroni adjustments were considered. These allow an overarching study-wide error rate of $\alpha = 0.05$ to be maintained, rather than increasing the chance of Type I errors (incorrectly identifying a significant difference) with increasing numbers of variables and between-group t-tests (Perneger, 1998). This was important when considering the 'PAI Composite' where a collective analysis of scale means may have led to the identification of significant differences between groups in error. As such, a significant group difference on the 'PAI Composite' would have indicated that further post-hoc analysis was required (such as with the Bonferroni adjustment and the review of standard errors) in order to further investigate the meaningfulness of the identified group difference. With the exception of the 'PAI Composite', Bonferroni adjustments were not used in post hoc analysis of the 74 study variables, which were a mixture of continuous and categorical data, with parametric and non-parametric results. Such post hoc analyses are too conservative when applied to such an extensive investigation; the Bonferroni adjustment for example would demand that each individual variable reach an alpha value of .0007, an over-correction that would have

substantially increasing the likelihood of Type II errors (Perneger, 1998). In lieu of this risky approach, all variables identified as having between-group statistical significance were reported with effect sizes, and were re-examined using logistic regression. In this way, variables that were and were not associated with the case complexity outcome could be clearly identified.

Effect sizes for each of the variables were calculated using the G*Power statistical software package (Faul, Erfelder, Lang, & Buchner, 2007), whereby as suggested by Cohen (1988), Cohen's $d$ values of .20, .50 and .80 would be considered 'small', 'medium' and 'large' effect sizes respectively. With regard to Cohen's $f^2$ values, the 'small', 'medium' and 'large' effect sizes are .10, .25 and .40. The alpha value ($\alpha$) was set at 0.05 and power (1 - $\beta$) at 0.95. G*Power was also utilised to calculate the statistical power pertaining to insignificant results.

## RESULTS

### Participant characteristics

As presented in Table 7 below, in the 'high security sample' (site A) the mean age of participants and the mean length of admission were not significantly different from that of the population from which the sample were drawn (t = 0.56, $p = 0.57$ and t = 1.04, $p = 0.30$ respectively).

As no statistical differences were found with regards to ages of participants or participant lengths of stay between sites B, C and D ($F = 0.14$, $p = 0.87$ and $F = 3.38$, $p = 0.052$ respectively), these demographic factors are more usefully summarised for the 'medium security sample' as a whole. In this group, neither the mean age of participants nor the mean length of admission differed significantly from the patient

population from which the sample were drawn (t = 1.05, $p$ = 0.30 and U = 621, $p$ = 0.49 respectively).

Table 7. *Population Demographic Information*

| Demographic Factor | High Security Group | | Medium Security Group | |
| --- | --- | --- | --- | --- |
| | Population mean (SD) (N=48) | Sample mean (SD) (n=33) | Population mean (SD) (N=47) | Sample mean (SD) (n=26) |
| Age (years) | 43.7 (10.39) | 42.33 (10.99) | 41.46 (9.91) | 38.67 (12.47) |
| Length of hospital admission (years) | 7.26 (6.01) | 6.04 (3.69) | 3.17 (3.90) | 2.06 (1.48) |

Note. Statistically significant population/sample differences at $p < .05*$, and at $p < .01**$

These findings demonstrate that in both the high security and medium security samples, the self-selecting participant volunteers were representative of the ages and length of admissions of the local male PD populations from which they were drawn.

With regard to age and length of stay, the lack of statistical significance of differences between participants at site B, C and D adds support to the decision to consider participants from each of these sites as one group – the 'medium security group'. As such, all presented data analysis will compare the high security and medium security groups, rather than individual hospital sites.

The ethnic composition of the populations and participant samples are presented in Table 8 below. As shown, the populations were predominantly white British, and the participant samples appeared similar to the populations from which they were drawn. This was confirmed with multiple Chi-square analyses, which did not find any statistically significant differences between the ethnic backgrounds of the

high security participant sample and source population, or the medium security participant sample and population.

Table 8. *Population Ethnicity Information*

| Ethnicity | High Security Group | | Medium Security Group | |
|---|---|---|---|---|
| | Number in Population (N=48) | Number in Sample (n=33) | Number in Population (N=47) | Number in Sample (n=26) |
| Chinese | 0 | 0 | 1 | 1 |
| Mixed, White & Black African | 1 | 1 | 0 | 0 |
| Mixed, White & Black Caribbean | 1 | 0 | 1 | 1 |
| White, British | 46 | 32 | 42 | 21 |
| White, Irish | 0 | 0 | 1 | 1 |
| White, other | 0 | 0 | 1 | 1 |
| Not stated | 0 | 0 | 1 | 1 |

Note. Statistically significant population/sample differences at $p < .05^*$, and at $p < .01^{**}$

## Personality Assessment Inventory (PAI) Data

Most participants in the high security group (32 of 33) had historical PAI reports on file and thus did not complete a PAI questionnaire purely for the purposes of this study.  It was found that the vast majority of such participants had more than one PAI score report on file, meaning that a decision had to made as to which should be used for the purposes of the study.  Two options were available; using each participants' first PAI on record, or their last.  Theoretically, PAI test scores would reduce with increased length of stay in hospital, and successful completion of often lengthy treatment programmes (1–2 years for DBT, Schema Therapy, SOTP, and VRP).  With no method available with which to control for completion of treatment, the decision was made to utilise the first PAI on record for each participant, as this would represent a pre-treatment evaluation.  This was not considered to be a confound to the experimental design, given that patients in the medium security group who

completed just one administration of the PAI, had a much shorter mean length of stay (24.7 months compared to 72.5 months in high security), and did not have access to any treatment groups longer than 3-6 months in duration.

The 'PAI Clinical Composites' were examined for differences between the high security and medium security participant groups. It was unsuitable to produce a single composite incorporating all main scales and subscales, as this would essentially double-count the effects of the clinical subscales, likely overemphasising some of the clinical differences between the groups. With regard to the main scales (clinical, treatment and interpersonal), a multivariate analysis of variance found that the 'PAI Main-scales Composite' was not significantly different between the high and medium security groups, with Pillai's Trace producing a non-significant value ($F = 1.372$; $p = 0.199$, $f^2 = .62$, power .92). A second multivariate analysis of variance found that the 'PAI Sub-scales Composite' was also not significantly different between participant groups, with Pillai's Trace producing a non-significant value ($F = 1.132$; $p = 0.374$, $f^2 = 1.30$, power .98).

Whilst differences were not found between groups for the 'PAI Clinical Composites', t-tests (used with the normally distributed variables) and Mann-Whitney tests (used with those not normally distributed) identified that several individual PAI scales demonstrated significant differences between the high and medium security groups. The mean group $T$ values for all 53 scales are tabulated in Table 9 below, and further commentary will be provided for those scales where intergroup differences reached the level of statistical significance.

In relation to the main scales, significant differences between groups were found for the Depression (DEP) scale ($t = 2.804$; $p < 0.01$, $d = .74$, power .79), the Schizophrenia (SCZ) scale ($t = 2.569$; $p < 0.05$, $d = .68$, power .72), the Paranoia

113

(PAR) scale (U = 287.5 $p$ <0.05, $d$ = .61, power .62) the Aggression (AGG) scale (U = 299; $p$ <0.05, $d$ = .50, power .46), the Suicidal Ideation (SUI) scale (U = 291; $p$ <0.05, $d$ = .57) and the Non-support (NON) scale (U = 262; p <0.01, $d$ = .76, power .81).

In terms of the clinical subscales, again there were a number of significant differences found between the high and medium security participant groups. These included the Paranoid Hypervigilance (PAR-H) subscale (t = 2.423; $p$ < 0.05, $d$ = .64, power .67), the Paranoid Persecution (PAR-P) subscale (t = 2.527; $p$ < 0.05, $d$ = .67, power .71), the Mania Grandiosity (MAN-G) subscale (U = 276; $p$ <0.01, $d$ = .52, power .50), the Schizophrenia Social Detachment (SCZ-S) subscale (U = 269.5; $p$ <0.01, $d$ = .66, power .70) and the Borderline Affective Instability (BOR-A) subscale (U = 279; $p$ <0.05, $d$ = .60, power .61). Additionally, the Aggressive Attitude and Physical Aggression subscales also differed significantly between groups; Attitude (AGG-A) (U= 298.5; $p$ <0.05, $d$ = .54, power .53) and Physical (AGG-P) (U = 283; $p$ <0.05, $d$ = .59, power .60). Lastly, all three of the Depression subscales, Cognitive, Physiological and Affective were all found to differ significantly between the two groups; Cognitive (DEP-C) subscale (t = 2.805; $p$ > 0.01, $d$ = .74, power .79), Physiological (DEP-P) subscale (t = 2.184; $p$ < 0.05, $d$ = .57, power .57), and Affective (DEP-A) subscale (U = 275.5; $p$ <0.01, $d$ = .66, power .70).

Table 9 below presents all data pertaining to the above results. Thereafter the data is also presented in graphical form as Figures 3 and 4. These graphs are provided to demonstrate that whilst the 'PAI Clinical Composites' did not prove to be statistically different between high and medium security groups, it is apparent that the *general profiles* of the PAI scores are higher in the high security group (red lines) and lower in the medium security group (blue lines). The group differences are visually clear, and should not be overlooked.

Table 9. *PAI scales - group mean T scores*

| Scale | Group Mean *T* Score | | Scale | Group Mean *T* Score | |
|---|---|---|---|---|---|
| | High Security (N=33) | Medium Security (N=26) | | High Security (N=33) | Medium Security (N=26) |
| *Validity Scales* | | | *Main clinical scales, with subscales* | | |
| Inconsistency (INC) | 58.36 | 54.19 | Mania (MAN) | 49.36 | 49.85 |
| Infrequency (INF) | 60.00 | 66.04 | - Activity level (MAN-A) | 53.55 | 52.27 |
| Negative impression management (NIM) | 74.76 | 67.50 | - Grandiosity (MAN-G) | 41.58 | 47.42** |
| Positive impression management (PIM) | 45.45 | 44.54 | - Irritability (MAN-I) | 54.94 | 50.65 |
| *Main clinical scales, with subscales* | | | Paranoia (PAR) | 73.12 | 63.85* |
| Somatic complaints (SOM) | 60.18 | 58.04 | - Hypervigilance (PAR-H) | 70.09 | 60.27* |
| - Conversion (SOM-C) | 58.70 | 56.69 | - Persecution (PAR-P) | 74.03 | 63.85* |
| - Somatization (SOM-S) | 58.27 | 54.62 | - Resentment (PAR-R) | 64.30 | 60.92 |
| - Health concerns (SOM-H) | 59.39 | 59.27 | Schizophrenia (SCZ) | 73.55 | 61.62* |
| Anxiety (ANX) | 66.85 | 61.19 | - Psychotic experiences (SCZ-P) | 63.15 | 53.65 |
| - Physiological (ANX-P) | 66.00 | 58.42 | - Social detachment (SCZ-S) | 70.70 | 60.50** |
| - Affective (ANX-A) | 64.97 | 61.04 | - Thought disorder (SCZ-T) | 68.09 | 61.08 |
| - Cognitive (ANX-C) | 64.64 | 60.38 | Borderline features (BOR) | 73.52 | 67.81 |
| Anxiety-related disorders (ARD) | 67.94 | 64.77 | - Affective instability (BOR-A) | 71.33 | 62.54* |
| - Obsessive-compulsive (ARD-O) | 52.70 | 53.35 | - Identity problems (BOR-I) | 65.42 | 63.15 |
| - Phobias (ARD-P) | 59.48 | 60.04 | - Negative relationships (BOR-N) | 69.03 | 66.92 |
| - Traumatic stress (ARD-T) | 75.42 | 67.62 | - Self-harm (BOR-S) | 70.24 | 64.77 |
| Depression (DEP) | 74.21 | 62.88** | Antisocial features (ANT) | 71.94 | 67.62 |
| - Cognitive (DEP-C) | 77.48 | 65.85** | - Antisocial behaviours (ANT-A) | 75.06 | 74.77 |
| - Affective (DEP-A) | 72.88 | 62.15** | - Egocentricity (ANT-E) | 61.67 | 56.50 |
| -Physiological (DEP-P) | 62.09 | 55.54* | - Stimulus-seeking (ANT-S) | 64.76 | 58.42 |
| Drug problems (DRG) | 70.55 | 70.77 | Alcohol probs. (ALC) | 64.70 | 63.81 |

Notes. Statistically significant group difference at *p* < .05*, and at *p* < .01**

Table 9 (continued).  *PAI scales - group mean T scores*

| Scale | Group Mean *T* Score | | Scale | Group Mean *T* Score | |
| --- | --- | --- | --- | --- | --- |
| | High Security (N=33) | Medium Security (N=26) | | High Security (N=33) | Medium Security (N=26) |
| *Treatment Scales* | | | *Interpersonal Scales* | | |
| Aggression (AGG)* | 69.09 | 62.27* | Dominance (DOM) | 42.55 | 43.12 |
|  - Aggressive attitude (AGG-A) | 67.21 | 60.81* | Warmth (WRM) | 35.91 | 41.12 |
|  - Verbal aggression (AGG-V) | 54.76 | 53.15 | | | |
|  - Physical aggression (AGG-P) | 77.91 | 68.31* | | | |
| Suicidal ideation (SUI) | 82.61 | 69.42* | | | |
| Stress (STR) | 60.73 | 56.96 | | | |
| Non-support (NON) | 69.94 | 58.88** | | | |
| Treatment rejection (RXR) | 35.94 | 38.88 | | | |

Notes. Statistically significant group difference at $p < .05$*, and at $p < .01$**

As explained by Morey (2007), approximately 96% of the population completing the PAI will have *T* scores below 70 (two standard deviations above the mean of a normal population).  A *T* score of 70+ is considered "*unusual in the general population and most likely indicates a problem of clinical significance*" (Morey, 2007, p.25).  Whilst 16 of the PAI scales showed significant differences in group mean *T* scores between the high security and medium security groups, it is only 11 of these scales that also had *T* scores of 70+.  It is these 11 scales with clinically elevated *T* scores that are of importance when constructing the notion of a complex case of personality disorder.  Intergroup-differences that are not clinically significant are not considered relevant in this regard, as the PAI has been included within this study with the direct aim of identifying clinical, treatment and interpersonal difficulties that will

have significant clinical implications for clients.  The 11 scales are presented below in

Table 10.

Table 10.  *PAI scales with inter-group differences and clinically significant scores*
        *(T 70+)*

| Scale | Group Mean $T$ Score | |
|---|---|---|
| | High Security (N=33) | Medium Security (N=26) |
| *Main clinical scales and subscales* | | |
| Depression (DEP) | 74.21 | 62.88** |
| - Cognitive (DEP-C) | 77.48 | 65.85** |
| - Affective (DEP-A) | 72.88 | 62.15** |
| Paranoia (PAR) | 73.12 | 63.85* |
| - Hypervigilance (PAR-H) | 70.09 | 60.27* |
| - Persecution (PAR-P) | 74.03 | 63.85* |
| Schizophrenia (SCZ) | 73.55 | 61.62* |
| - Social detachment (SCZ-S) | 70.70 | 60.50** |
| Affective instability (BOR-A) | 71.33 | 62.54* |
| | | |
| *Treatment Scales* | | |
| Physical aggression (AGG-P) | 77.91 | 68.31* |
| Suicidal ideation (SUI) | 82.61 | 69.42* |

Notes. Statistically significant group difference at $p < .05$*, and at $p < .01$**
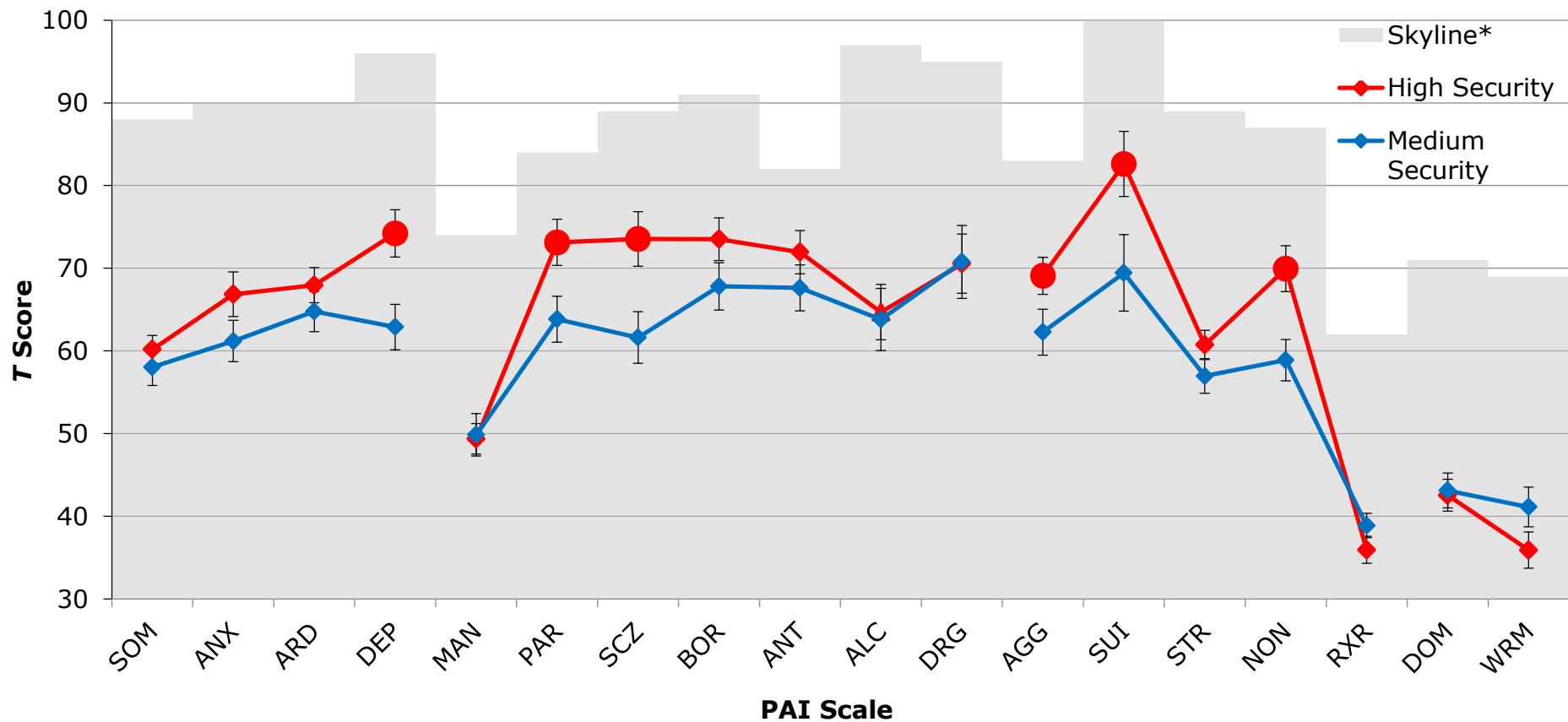
*Figure 3.* PAI main scales: a comparison of group means for the High and Medium Security participant groups.

Notes. [1]Standard Error bars are displayed for each data point.

[2]Scales with significant differences between the high and medium security groups have been emphasised with large circular markers.

[3]Skyline*; A *T* Score of 70 is two st. devs above that of a *normal population,* likely indicating problems of clinical significance. The PAI 'skyline' represents *T* Scores two st. devs above that of a *clinical population* rather than the normal population.
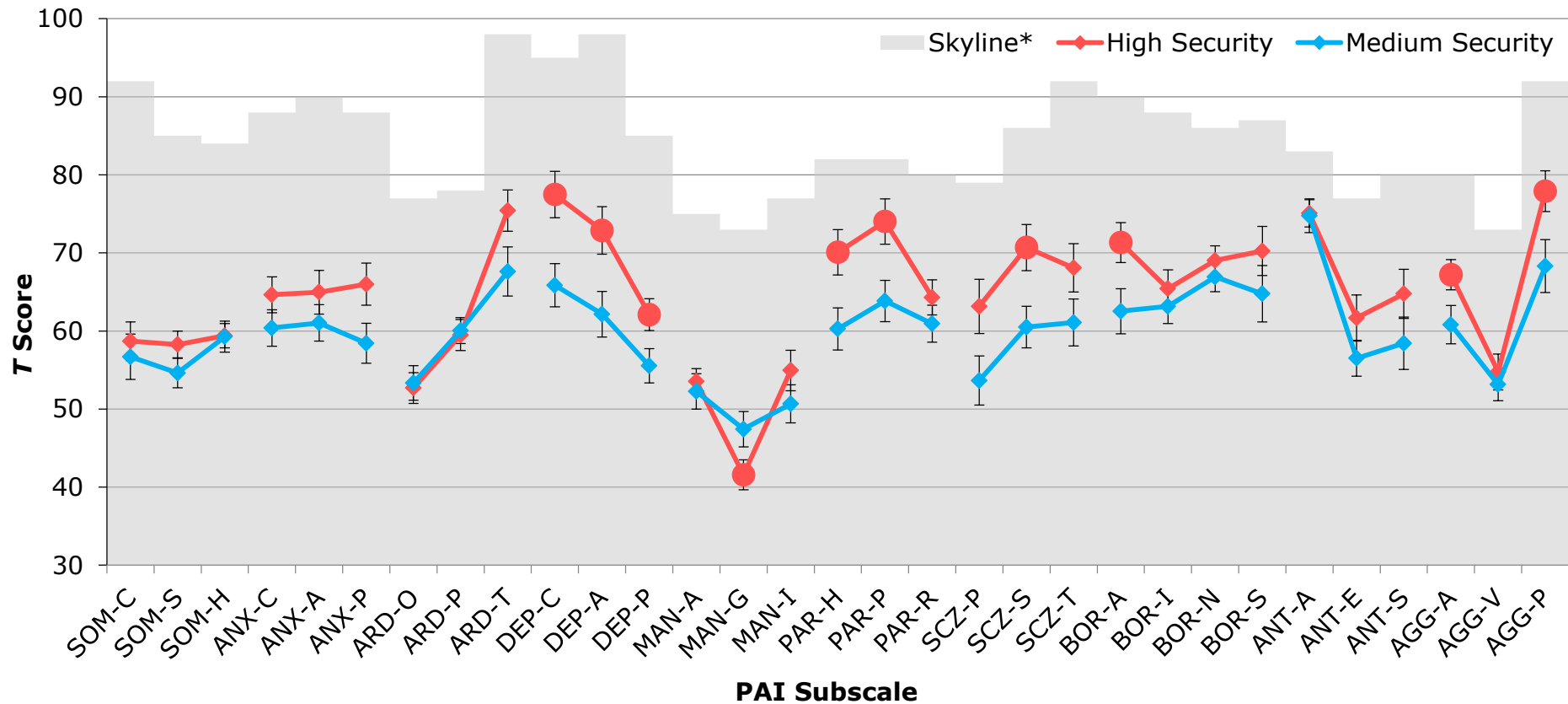
*Figure 4.* PAI sub-scales: a comparison of group means for the High and Medium Security participant groups.

Notes. [1]Standard Error bars are displayed for each data point.

[2]Scales with significant differences between the high and medium security groups have been emphasised with large circular markers.

[3]Skyline*; A *T* Score of 70 is two st. devs above that of a *normal population,* likely indicating problems of clinical significance. The PAI 'skyline' represents *T* Scores two st. devs above that of a *clinical population* rather than the normal population.

**File Data**

The file data variables contributing to the clinical complexity construct were examined in order to compare the high security and medium security populations, with the findings summarised in Table 11 below. The Shapiro-Wilk test of normality established that the HCR-20 scores were normally distributed, whilst the remainder of the file data variables employing continuous data were not normally distributed. A t-test examined the differences in HCR-20 scores, with no significant differences found between hospital settings (the group means were scores of 24.27 and 23.92 for high and medium groups respectively). Mann–Whitney tests were utilised to examine the remaining variables that used continuous data.

There were no significant differences between high security and medium security groups with regard to 'total number of convictions' (the group means were 20.55 and 15.73 respectively). The groups did differ significantly, however, with regard to 'age at first conviction' (U=256; $p<0.01$, $d = .54$, power .53), with those in high security settings being first convicted earlier in life (mean age 16.48 years, compared to 20.54 years in medium security settings).

There was also a significant difference in the 'total number of PDs' that participants in high security settings were diagnosed with, compared to those in medium security (U=299; $p<0.05$, $d = .49$, power .45). Those in high security were diagnosed with a mean of 2.73 PDs, compared to 2.04 in the medium security group.

Chi-square analysis was used to explore the nominal data variables, and review potential differences between the high and medium security groups. Diagnostic categories were first examined, with no significant differences found with regard to presence/absence of any of the 10 PDs or PD-NOS, 'schizophrenia and other psychotic disorders' (SAOPD), 'mood disorders', or 'anxiety disorders' (see Table 11

below for group counts, converted into percentages to permit easy intergroup comparison). One diagnostic category, that of 'Disorders usually first diagnosed in infancy, childhood, or adolescence' (DUFDIICOA), did result in a significant difference being identified between the groups ($\chi2 = 4.012$; $p <0.05$, $\varphi = 0.26$, power .51), with higher numbers in the medium security group.

Chi-square analysis was also employed to re-examine the PD diagnostic data in light of Yang et al.'s (2010) suggested measure of complexity and severity of personality disorder, which was discussed earlier. Summary results are included in Table 11 below. The medium security group was identified as having more 'simple' cases of PD (62% of that sample) than the high security group (18% of that sample), and this finding was statistically significant ($\chi2 = 11.69$; $p <0.01$, $\varphi = .45$, power .93). Conversely, the high security group had more 'severe' cases of PD (67% of that group) compared to the medium security group (31%), which was again statistically significant ($\chi2 = 7.50$; $p <0.01$, $\varphi = .36$, power .79). With such high percentages of participants classified as either 'simple' or 'severe', few remained to fall into the 'complex' group, meaning that significant effects could not be found.

As a result, in order to adapt the data categories to examine this study's central concept of case complexity, it was logical to reassess the data with Chi-square using the two categories of 'simple' and 'complex or severe' (a proxy for '≥complex'). The result was significant, with a much greater number of the high security group being 'complex or severe' (82%) than the medium security group (38%) ($\chi2 = 11.69$; $p <0.01$, $\varphi = .45$, power .93).

Table 11. *File data variables; Group Means and Group Counts*

| Factor | Group Means (continuous variables) | | Number (%) of Group (categorical variables) | |
|---|---|---|---|---|
| | High Security (N=33) | Medium Security (N-26) | High Security (N=33) | Medium Security (N-26) |
| *Diagnoses* | | | | |
| Antisocial PD | | | 26 (79%) | 18 (69%) |
| Avoidant PD | | | 13 (39%) | 5 (19%) |
| Borderline PD | | | 20 (61%) | 12 (46%) |
| Dependent PD | | | 2 (6%) | 3 (12%) |
| Histrionic PD | | | 0 (0%) | 1 (4%) |
| Narcissistic PD | | | 2 (6%) | 1 (4%) |
| Obsessive-Compulsive PD | | | 2 (6%) | 2 (8%) |
| Paranoid PD | | | 15 (45%) | 6 (23%) |
| Schizoid PD | | | 4 (12%) | 2 (8%) |
| Schizotypal PD | | | 4 (12%) | 1 (4%) |
| PD-NOS | | | 1 (3%) | 2 (8%) |
| Total number of PDs | 2.73 | 2.04* | | |
| Evaluation against Yang et al.'s (2010) PD severity measure: | | | | |
| Type 2, simple personality disorder | | | 6 (18%) | 16 (62%)** |
| Type 3, complex personality disorder | | | 5 (15%) | 2 (8%) |
| Type 4, severe personality disorder | | | 22 (67%) | 8 (31%)** |
| 'Complex and Severe' (types 3 and | | | 27 (82%) | 10 (38%)** |
| Any Comorbid Clinical Disorders | | | 10 (33%) | 10 (38%) |
| Schizophrenia and other Psychotic Disorders (SAOPD) | | | 5 (15%) | 5 (19%) |
| Mood Disorders | | | 5 (15%) | 2 (8%) |
| Anxiety Disorders | | | 1 (3%) | 2 (8%) |
| Disorders usually first diagnosed in Infancy, Childhood or Adolescence (DUFDIICOA) | | | 0 (0%) | 3 (12%)* |
| *Offence factors* | | | | |
| Age at First Conviction | 16.48 | 20.54** | | |
| Custodial placement prior to age 18 | | | 14 (42%) | 6 (23%) |
| Total number of convictions | 20.55 | 15.73 | | |
| [1]Conviction for murder | | | 6 (18%) | 2 (8%) |
| [1]Conviction for arson | | | 7 (21%) | 5 (19%) |
| [1]MoJ restriction (MHA Sec 41 and 49) | | | 29 (88%) | 24 (92%) |
| *Other clinical and risk factors* | | | | |
| [2]PCL-R score of over 25 | | | 9 (28%) (N=29) | 13 (50%) (N=16) |
| [2]HCR-20 score (out of 40) | 24.27 (N=33) | 23.92 (N=24) | | |
| [1]Medical condition impacting hospital of residence | | | 0 (0%) | 0 (0%) |

Notes. [1]Designates potential confound variables included in the investigation.
[2]As PCL-R and HCR-20 scores were not available for every participant, the number of participants with these scores is indicated in parentheses.
[3]Statistically significant group difference at $p < .05$*, and at $p < .01$**

The remaining clinical, risk, offence and possible confound variables of the File Data were examined with regard to differences between high and medium security groups; 'PCL-R psychopathy score of over 25', 'custodial placement prior to age 18', 'medical condition impacting hospital of residence', 'conviction for murder', 'conviction for arson', and 'MoJ restriction (MHA Sec 41 or 49)'. In all instances there were no significant differences between the two patient populations. Again, Table 11 above permits review of the percentages of each participant group who had these studied factors 'present'.

## Incident Data

The number of recorded incidents pertaining to each participant during the January 2011 to June 2014 period was reviewed. To control for length of stay of participants, admission dates were noted, and incident rates calculated as Incidents Per Patient per month (IPP/pm) of each participants' stay (to ensure accuracy, a daily rate was calculated, before being converted to a monthly rate). Use of the mean IPP/pm measure was recommended in Chapter one of this thesis, to promote comparability with research studies from other facilities. Average IPP/pms for each group are presented in Table 12 below. Table 12 also presents the Percentage of Participants (PP) involved in incidents at each site. Routine presentation of these figures was again recommended in Chapter one, to aid the development of the literature base concerning violence and aggression in forensic hospitals.

All the data within this set were found to be not normally distributed. As such, non-parametric statistics were employed. Mann Whitney U-tests found significant differences between the high security and medium security groups with regard to 'Total number of incidents' ($U = 257.5$; $p<0.01$, $d = .28$, power .18), and with regard

to the combined 'All violent and aggressive incidents' (U = 261; $p<0.01$, $d = .08$, power .09). Within the dataset, significant differences were only found for 'Physical violence' (U = 319.5; $p<0.05$, $d = .19$, power .11), 'Non-physical violence' (U = 248.5; $p<0.01$, $d = .05$, power .07), and 'Disruptive/subversive behaviours' (U = 244; $p<0.01$, $d = .51$, power .48). In all cases, the rates of incidents were higher in the high security group. The effect sizes of some of these findings will be discussed later.

Table 12. *Incident data analysis*

| Incident Type | Number of recorded incidents 01/01/11–30/06/14 | | Mean IPP/pm | | % Participants (PP) | |
|---|---|---|---|---|---|---|
| | High Security (N=33) | Medium Security (N=25) | High Security (N=33) | Medium Security (N=25) | High Security (N=33) | Medium Security (N=25) |
| *All incidents combined* | *779* | *268* | *0.909* | *0.580**  | *94%* | *72%* |
| *All violence / aggression* | *401* | *131* | *0.420* | *0.367**  | *88%* | *60%* |
| Physical violence | 43 | 24 | 0.041 | 0.028* | 48% | 24% |
| Non-physical violence | 346 | 101 | 0.362 | 0.328** | 88% | 56% |
| Sexual incidents | 11 | 05 | 0.016 | 0.010 | 21% | 8% |
| Hostage-taking /actual | 1 | 0 | 0.001 | 0.000 | 3% | 0% |
| /planned | 0 | 1 | 0.000 | 0.001 | 0% | 4% |
| Self-harming / suicidal | 275 | 99 | 0.379 | 0.162 | 58% | 32% |
| Disruption / subversion | 103 | 36 | 0.111 | 0.049** | 85% | 44% |
| Absconding /actual | 0 | 1 | 0.000 | 0.002 | 0% | 4% |
| /planned | 0 | 1 | 0.000 | 0.001 | 0% | 4% |

Notes. [1]Statistically significant group difference at $p < .05$*, and at $p < .01$**
[2]The medium security group is reduced by one participant with regard to incident data, due to his admission to the unit being after the incident data collection period.

## Logistic Regression Analysis

The study results identified 13 variables with statistically significant group differences between the high and medium security groups. These were group mean

scores on 11 PAI scales (with *T* of 70+) and two variables from 'file data', as summarised in Table 13 below.

Table 13. *Variables with statistically significant group differences*

| Scale | Group Mean | |
| --- | --- | --- |
| | High Security (N=33) | Medium Security (N=26) |
| *PAI scales and subscales (T 70+)* | | |
| Depression (DEP) | 74.21 | 62.88** |
| - Cognitive (DEP-C) | 77.48 | 65.85** |
| - Affective (DEP-A) | 72.88 | 62.15** |
| Paranoia (PAR) | 73.12 | 63.85* |
| - Hypervigilance (PAR-H) | 70.09 | 60.27* |
| - Persecution (PAR-P) | 74.03 | 63.85* |
| Schizophrenia (SCZ) | 73.55 | 61.62* |
| - Social detachment (SCZ-S) | 70.70 | 60.50** |
| Affective instability (BOR-A) | 71.33 | 62.54* |
| Physical aggression (AGG-P) | 77.91 | 68.31* |
| Suicidal ideation (SUI) | 82.61 | 69.42* |
| *File data* | | |
| Total number of PDs | 2.73 | 2.04* |
| Age at First Conviction | 16.48 | 20.54** |

Notes. Statistically significant group difference at $p < .05$*, and at $p < .01$**

In the high security group, there were 10 participants (30% of the group) that were a good fit to all 13 variables (ie. *T* scores of 70+ on the relevant PAI scales, multiple PD diagnoses, and a younger age at first conviction). In the medium security group, 3 participants (12% of the group) were a good fit to this profile. As these 13 participants (22% of the entire study sample) matched all the variables under consideration for contribution to the notion of case complexity, these 13 participants were termed the 'complex group', and the remaining 46 the 'non-complex group' for the purpose of logistic regression analysis. This analysis was used to test which of the

13 variables best predicted participants' membership of the 'complex' and 'non-complex' groups.

An initial analysis identified that 'Affective Instability' (BOR-A) was a significant predictor of a complex case, explaining 55% of the variance (Nagelkerke's $R^2_N = .55$), and that the addition of 'Age at First Conviction' explained a further 6% of the variance in the model (Nagelkerke's $R^2_N = .61$). Together, a model composed of these two variables could correctly classify 88.1% of the participants (N=59) as complex and non-complex. The addition of further variables to the model did not produce individually significant results.

A casewise diagnostics review identified that two participants produced data that may be problematic to the regression model, as shown in Table 14 below. There was limited justification for removal of these cases merely to improve the model fit, as they violated only 1-2 principles within the review. As such the regression was not recalculated.

Table 14. *Logistic regression casewise diagnostics review*

| Case Number | Mahalanobis Distance | Cook's Dist. | Centered Leverage Value | COV-RATIO (CVR) | Standardized Residual | Standardized DFBETA (various) |
|---|---|---|---|---|---|---|
| 7 | 0.25 | 0.04 | 0.00 | **0.93** | 1.90 | -0.07 |
| 14 | 0.09 | 0.04 | 0.00 | **0.90** | **2.04** | -0.02 |
| *Problem Value* | *>15* | *>1* | *> 0.36* | *Outside 0.94-1.37* | *> -/+2* | *>1* |

Notes. Outcomes showing problematic values are in bold typeface.

A clear difficulty with this regression model is multicollinearity, whereby the predictive value of other variables is masked by that of 'Affective Instability'. The

majority of the excluded variables correlated with the complex case classification at .5, and all correlated significantly with 'Affective Instability' in the range of .4 to .8 (Pearson's correlations). Variables correlating with 'Affective Instability' at or above .7 (strong correlation) were 'Depression' (including cognitive and affective), 'Paranoia' (including hypervigilance), 'Schizophrenia', 'Suicidal ideation' and 'Physical aggression'.

Upon review of the regression collinearity diagnostics (the variance inflation factor, VIF, and the tolerance statistic), the PAI scales of 'Depression' (including cognitive and affective depression) and 'Paranoia' (including persecution) have VIF values over 10, and tolerance values of 0.1 or less (assessment values recommended by Myers, 1990). As such, the multicollinearity between these variables suggests that their exclusion from the model may have been in error. Reinstated into the model, these variables result in another 9% of the variance being explained (Nagelkerke's $R^2_N$ = .70), and the model can now correctly classify 93.2% of the participants (N=59) as complex and non-complex. A logistic regression summary is provided in Table A1, located in Appendix 9 (as with 13 variables, the table is two pages in length).

## DISCUSSION

## Current study and previous research

This study found that PD patients resident in the high security hospital are not the same as their counterparts in MSUs. The two groups were significantly different on a range of variables investigated as contributors to the notion of clinical complexity. The high security group had a greater number of diagnosed PDs,

significantly elevated clinical traits of schizophrenic social detachment, cognitive and affective depression, persecution paranoia and hypervigilance, affective instability, suicidal ideation and physical aggressiveness. They were also a younger mean age at their first conviction, possibly reflecting increased difficulties in social and occupational functioning over the course of the lifespan.

The described statistically significant variables were reviewed using logistic regression, to assess their fit to a Model of a Complex Case of PD. The final construct of a complex case would match a range of statistically increased difficulties seen in a minority rather than the majority of the study group (N=59). The Model was found to be best represented by increased difficulties with affective instability, depression and paranoia, and a younger age of first conviction, as pictorially represented in Figure 5 below. When comparing the individual participants in the study against this final model, 27% of the participants match the Model of a Complex Case of PD, whilst 73% do not and would thus be considered non-complex or perhaps 'standard' cases of PD. A match to the final model is again demonstrated by the individual participant having clinically significant $T$ scores of 70+ on the relevant PAI scales (affective instability, depression and paranoia), and a younger age at first conviction (< 20 years).

In the high security participant group, 36% match the Model of a Complex Case of PD, meaning that the remaining 64% would be considered non-complex. In the MSU group, 15% match the Model of a Complex Case of PD, with the majority (85%) being considered non-complex. As a result, this finding supports the hypothesis that the group of PD patients resident in the high security hospital are more 'Complex Cases' than their counterparts resident in MSUs. Whilst this statement is true overall, the majority of patients are 'standard cases', and some 'complex cases'

are resident in each setting, demonstrating that factors other than clinical case complexity also impact hospital security level placement.
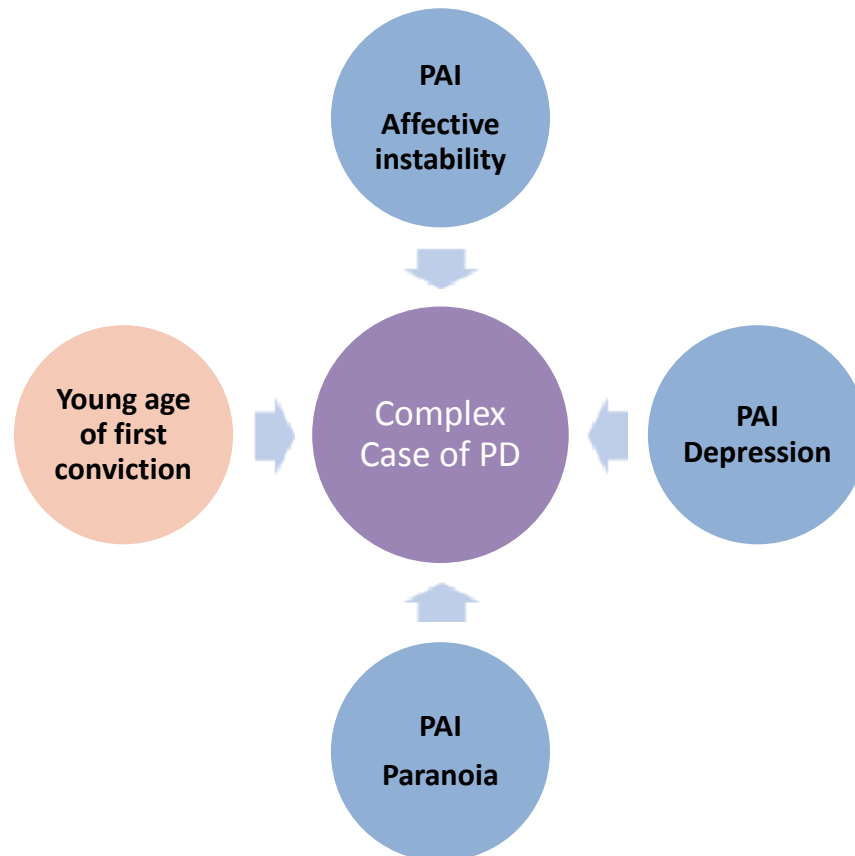


*Figure 5.* The final Model of a Complex Case of PD

The secondary objective of this study was to review the 'typical' Personality Assessment Inventory (PAI) score profile of PD men in each setting, with the hypothesis that the mean profile would be elevated in the high security setting, reflecting greater difficulties across a number of areas (eg. clinical symptomology, emotional distress and behavioural difficulties). Whilst significant individual scale differences were identified for 28% of the scales, as a composite the mean PAI score profiles were not significantly different between the high and medium security groups, meaning that the second hypothesis is rejected. Additionally, in practical terms, this

finding means that an individual's PAI score profile could not be usefully compared against the group means to predict security level group membership, or to determine suitability of placement in one of the hospital security levels as part of the structured admission process.

The individual findings of this study shall now be discussed, with reference to previous research. The findings are again organised by category of variable, as in the introduction.

### A. Multiple (comorbid) mental health diagnoses

The high security group had a statistically significant higher mean number of PD diagnoses, 2.73 per participant, compared to 2.04 in the MSU group (with a medium effect size). Comorbidity of PD diagnoses was not, however, retained in the model as a key predictor of case complexity following regression analysis. Given that the high and medium security groups both had group means of between 2 and 3 PD diagnoses, it is logical that the number of PDs a participant has is not a good predictor of complex or non-complex group membership.

For interest, this study's findings regarding PD comorbidity can be directly compared with Yang, Coid and Tyrer's (2010) previously presented study, which practically applied a derivation of Tyrer and Ferguson's (2000) classification of severity of PD (a classification system in turn derived from Tyrer & Johnson, 1996). In a general population sample, Yang et al. identified 21% of the participants as having 'simple PD' (diagnosis in only one cluster), 6% as having 'complex PD' (two or more PDs in two or more PD clusters), and 1.3% as having 'severe PD' (as with 'complex', but including antisocial PD). These figures can be contrasted with equivalent findings in this study, which were; high security - 18% simple, and 82% complex or severe, medium security – 62% simple, 38% complex or severe. The differences between the high and medium security groups in this study were

statistically significant, with more simple cases in the medium security group ($\varphi =$ .45), and more complex or severe cases in the high security group ($\varphi = .45$).

Of interest are the differences between these percentages and the current study finding that 36% of participants in high security are complex and 64% non-complex cases of PD. This is substantially lower than the 82% 'complex and severe' and 18% 'simple' when making use of Yang et al.'s (2010) classification system. It is again highlighted that the classifications measure different concepts, with Yang et al.'s system examining severity of PD rather than complexity, despite the terminology used. As such, it would be reasonable to conclude that with both classifications in use, the high security group in this study could be described as including more complex cases of PD (36% of the sample) *as well as* more severe cases of PD (82% of the sample, according to Yang et al.'s model); whilst maintaining the distinction of terms as discussed in the thesis introduction.

As previously addressed, Tyrer et al. (2014) have since updated their severity classification system, with patients proposed to be categorised as mild, moderate and severe PD in the new ICD-11 diagnostic system. With the updated system based on the same principles of examination of the range and impact of personality difficulties in a patient, it is reasonable to assume that under the new system, the vast majority of high security PD patients are likely to fall within the moderate and severe PD categories of the ICD-11, whilst this may not be the case in the MSU group.

With regard to clinical comorbidity, no other significant differences were found between the high and medium security groups with regard to presence/absence of any of the individual 10 PDs or PD-NOS diagnoses, 'schizophrenia and other psychotic disorders' (SAOPD), 'mood disorders', or 'anxiety disorders'. The significant finding of a greater number of 'Disorders usually first diagnosed in infancy, childhood, or adolescence' (DUFDIICOA) in the MSU group ($\varphi = 0.26$) is

considered lacking in any empirical value, as enquiries suggested that clinicians at the high security site do not record *previous* DUFDIICOA diagnoses (such as Attention Deficit Disorder) under 'diagnosis', unless ongoing adult difficulties are apparent.

At first glance, this was a surprising finding, as a higher level of SAOPD comorbid diagnoses may have been expected in a group of more clinically complex PD patients. However this particular diagnosis is static (unlike depression or anxiety which can resolve), and it is only its symptomology that is dynamic and can ease following treatment. As such, it has face validity that no significant differences would be found between participant groups with regard to comorbid SAOPD diagnoses (15% and 19% with SAOPD in the high and medium security groups respectively), whilst some increases in active psychosis symptomology may be identified in the high security group using the PAI tool.

### B. Difficult clinical traits and problematic behaviours

The mean PAI score profiles were not significantly different between the high and medium security groups, with regard to either the 'PAI Main-scale Composite' or the 'PAI Sub-scales Composite'. Extremely high power calculations (of .92 and .98 respectively) also suggest that the lack of significance in the differences cannot be attributed to other confounds.

Whilst this is the case, the graphical representations of the mean PAI score profiles for the groups (see Figures 3 and 4 above) are interesting as they demonstrate that the *general profiles* of the PAI scores are higher in the high security group (red lines) and lower in the MSU group (blue lines). It would therefore appear that the PAI assessment tool is sufficiently sensitive to identify differences in clinical distress between the two participant groups, but that these differences are not sufficiently large

and not sufficiently evenly distributed across the scales as to produce a between-group score difference with regard to the PAI composites.

Several statistically significant group differences were identified for individual scales of the PAI, however. Initial analysis identified 16 such scales out of 53 (see Table 9 above), with the statistical findings reported earlier in the Results Section, 3.2. Upon closer scrutiny, the *T* scores on just 11 of these scales were seen to surpass 70, which Morey (2007) described as likely indicating a problem of clinical significance. These 11 scales all had good (medium) effect sizes, ranging from .57 to .74, and all demonstrated higher mean scale scores in the higher security group. Following logistic regression only six of these scales remained in the Model of a Complex Case of PD, and these shall now be discussed.

The mean score on the Depression scale was significantly elevated in the high security group, underpinned by significant group differences on the Cognitive Depression ($d = .74$) and Affective Depression subscales ($d = .66$). These scales suggest sub-diagnostic-threshold difficulties with low mood, but are appropriately thought of as an expression of clinical comorbidity, increasing the case complexity of the personality disordered participants experiencing these difficulties. As discussed previously, Tyrer et al. (2010) explained that patients in a depressive episode are half as likely to recover when also diagnosed with PD. It is the interactive nature of the mood disorder and PD that increases case complexity; perhaps compounded by personality dysfunction potentially predisposing patients to have difficulties with depression (Tyrer et al., 2010).

Significant group differences were also identified with the Paranoia scale and Paranoid Persecution subscale ($d = .67$), and with the Borderline Affective Instability subscale ($d = .60$). The significant group differences suggest that patients with

personality disorder residing in the high security hospital as a whole have greater clinical difficulty with paranoia and affect than patients living in MSUs. This is harmonious with the finding that Borderline PD and Paranoid PD are common in the group, at 61% and 45% of group members respectively. Tetley, Hogue and Evershed (2010) have also previously reported that scores on the PAI Paranoia and Antisocial scales are significant inverse predictors of progression to medium security, which provides a useful explanation as to why the number of patients diagnosed with these PDs are somewhat raised in the high security group herein (although not to a statistically significant level; see Table 11).

### C. High assessed risk

This study did not find any statistically significant differences in HCR-20 scores or PCL-R ratings ('under 25' or '25+') between the groups. The group mean HCR-20 scores were 24.27 and 23.92 for the high and medium security groups respectively, and the PCL-R ratings were 28% and 50% in the '25+' category respectively.

Whilst Duggan, Mason, Banerjee and Milton (2007) reported that patients with higher HCR-20 scores were more likely to be rejected from admission to an MSU, it is apparent that the mean scores of their accepted and rejected groups (26.4 and 29 respectively) were both higher than the mean scores in this study. Seemingly, the HCR-20 scores in our entire sample (N=59), were quite low in comparison.

Duggan et al. also identified that patients accepted to their MSU had a mean PCL-R score of 18.7, whilst the rejected patients had a mean score of 21.9. As both these scores fall below 25, direct comparisons cannot be made with the present study, as it was found that the participants' records tended to exclude the detail of actual

PCL-R scores in favour of more general commentary regarding scores being 'under 25' or '25+'.

### D. Early / extensive offending

The high and medium security groups did not demonstrate statistically significant group mean differences with regard to 'total number of convictions' (group means of 20.55 and 15.73 respectively), nor 'custodial placement prior to age 18' (group affirmative percentages being 42% and 23% respectively). The groups did differ significantly, however, with regard to 'age at first conviction' ($d = .54$, power .53), with those in the high security group being first convicted earlier in life (mean age 16.48 years, compared to 20.54 years in the MSU group). This is in keeping with the findings of Howard et al. (2012) wherein 'severe PD' patients in a DSPD Unit had significantly more convictions prior to age 18 (as discussed earlier).

Following regression analysis, the forensic-variable 'age at first conviction' is a contributor to the Model of a Complex Case of PD, where it is representative of greater difficulties in social and occupational functioning across the lifespan.

### E. Potential confounding variables

No statistically significant differences were found between the high and medium security groups with regard to 'medical condition impacting hospital of residence', 'conviction for murder', 'conviction for arson', and 'MoJ restriction (MHA Sec 41 or 49)'.

A difference was found, however, with regard to 'Disruptive and subversive behaviours' ($d = .51$, power .48), with IPP/pms of 0.111 and 0.049 in the high and medium groups respectively. With this perhaps only equating to one disruptive/subversive behaviour per patient per year (and most often of low impact

incidents such as patient-trading of chocolate bars), it seems unlikely that this variable had an important impact on maintenance of high security hospital residence.

There were significantly more incidents of 'Physical violence', 'Non-physical violence', and the combined 'All violence and aggression' in the high security hospital than in the MSUs ($d = .19$, power .11, $d = .05$, power .07, and $d = .08$, power .09 respectively).  However, one can see that the effect size for 'Physical violence' was small, and the effect sizes for 'Non-physical violence' and 'All violence and aggression' were miniscule.  As such, the latter two variables are not considered particularly important.

There are two main reasons for the low power of these findings. Firstly, the actual number of incidents recorded was very small.  The number of physically violent incidents per patient per month (IPP/pm) were 0.041 (SD .07) and 0.028 (SD .07) in high and medium security respectively.  With an average ward size of 15 patients, incidents of physical violence are thus being recorded at a rate of less than once a month.  Similarly, the number of non-physical violence IPP/pm were low, at just 0.362 (SD .39) and 0.328 (SD .82). The second reason for the small effect size and power of these differences has also just been demonstrated − the means have incredibly large standard deviations.

Consideration thus has to be given to whether a higher incidence of physical violence in the high security hospital is a confound to the finding that more complex cases of PD are resident at the site than in the MSUs.  A cross-over can be identified between the group of participants identified as 'Complex Cases' of PD at the high security site (36% of the sample), and those who engaged in physical violence; 15% of the sample were both complex, and physically violent.  This being said, the total number of physically violent participants was 48% of the high security sample,

meaning that case complexity and physical violence do not typically go hand-in-hand. In this way, the presence of a large number of physically violent patients will not be accepted as a confound to the Model of a Complex Case of PD; it is instead suggested that the high security hospital is providing care for a greater number of complex cases of PD (36% of the sample) and a greater number of difficult cases of PD (48% of the sample being physically violent) than its MSU counterparts.

## Practical implications of the findings

This study recommends that in future mental health practice or research, an evaluation of case complexity in a PD forensic population (or individual) should consider lifespan difficulties in social and occupational functioning (referring to the 'age at first conviction' variable).   Evaluations of case complexity must also make reference to the presence of additional difficult clinical traits.   These are best described in terms of surpassing a psychometrically-measured threshold of clinical significance (using a tool such as the PAI), rather than as a reflection of subjective opinion.   Evaluations made in this manner will allow the careful separation of descriptions of 'complex cases' from those of 'simple cases', and also separation from 'severe cases' of PD and 'difficult cases' of inpatients.

This research study found differences across a range of variables that permitted the high and medium security groups to be distinguished from each other.  It was considered justifiable to use these variables to develop a Model of a Complex Case of PD that could apply to a minority subset of the study group.   Following regression analysis, the identified clinical traits that contributed to the Model of a Complex Case of PD were significant affective instability, paranoia and low mood. With regard to the latter, in practical terms the presence of a comorbid diagnosis of a depressive illness would of course be interchangeable with a PAI measurement of

difficulties with low mood. The allowance of such an interchange within this study does not alter the number of participants considered to be 'complex' and 'non-complex' cases. Further discussion on the practical application of the model, and further potential interchanges of other mental illness diagnoses / PAI clinical scales within the Model of a Complex Case of PD takes place in the thesis discussion, Chapter five.

This study has practical implications for each participating high and medium security hospital, as the study findings may increase the local care teams' knowledge of the patient populations whom they currently serve. Where this is the case, the information may then impact treatment design and/or the prioritisation of psychological treatment delivery. The findings could also be used to help shape the service admission and discharge criteria, ensuring that PD patients are placed in the service that best matches their level of clinical complexity at that time. This includes a prompt transition through the care pathway to step-down services once a patient's clinical needs (and physical violence) have reduced, reflecting change in the dynamic factors within the case complexity model.

## Study limitations and further research

This study endeavoured to recruit the largest participant population possible, but was greatly restricted by the bed numbers (and number of consenting patients) in the included hospital sites. As a result, the study sample is small (N=59). This is a limitation to the study, as it impacts the generalizability of the study findings. It is therefore recommended that this research be extended, with the addition of another high security hospital site (Broadmoor or Ashworth Hospitals) along with their local MSU partners.

Data availability pertaining to PCL-R scores was extremely limited. As such, it was unclear whether this historically important clinical and risk factor had a significant bearing on the study outcome. It is considered plausible that higher quality data would have resulted in significant differences being identified in PCL-R scores, potentially resulting in psychopathy being included as a variable in the Model of a Complex Case of PD. As such, it is recommended that future research employ special methods to manage this data quality difficulty. This could be achieved through liaison with a nominated clinician at each hospital site, who is willing to review and re-score each participant's filed PCL-R reports.

The Personality Assessment Inventory (PAI) proved to be a useful psychometric tool within this study, as it identified a number of elevated clinical traits that fed into the Model of a Complex Case of PD. However, the PAI Composite as a whole did not usefully differentiate members of the high security group from those of the medium security group. In future replications of this research it is therefore recommended that in addition to using the PAI questionnaire, an additional personality measure (such as the MCMI-III or MMPI-2) be employed and reviewed, to ascertain if an alternative measure would be better placed to meet this purpose.

## Conclusion

In summary, the interpretation of the obtained collection of results led to the development of a Model of a Complex Case of PD that can potentially be applied within forensic hospital services, and to which individual patients can be compared. The model incorporates difficult clinical traits and lifespan difficulties in social and occupational functioning. It was identified that 36% of the high security group (but only 15% of the MSU group) matched the prototypical model of a complex case,

leading to acceptance of the hypothesis that the studied high security PD participant group was more clinically complex than their medium security group counterparts.

The second study hypothesis was, however, rejected. A review of the 'typical' Personality Assessment Inventory (PAI) results did not identify significant differences between the score profiles of PD men in each setting. Whilst significant individual scale differences were identified for 28% of the scales, as a composite the mean PAI score profiles could not differentiate between members of the high and medium security participant groups.

Whilst the proposed case complexity model shows initial promise, it would be prudent to examine its generalizability to other PD populations by extending the research study to not only additional high and medium security hospitals, but also to low security and community outpatient groups.

# CHAPTER THREE

## Assessment and treatment of a violent offender with personality disorder:  A forensic case study

# CHAPTER FOUR

# A critique and review of a psychometric assessment tool:

# The Personality Assessment Inventory (PAI; Morey 1991)

# ABSTRACT

The Personality Assessment Inventory (PAI; Morey, 1991) was described in terms of the clinical, interpersonal and treatment-related difficulties that it evaluates. The thoroughness of the tool development process and the provision of three normative comparison samples were praised. The clinical sample was found to be composed of some mental health inpatients (25%) and offenders (10%), however no comparative sample was provided specifically for forensic hospital populations.

The Cronbach's alpha coefficients were reported to be .66 to .93 by Morey, indicating moderate to high internal reliability in the 18 main scales. High values were also found in other studies, which may suggest some scale item redundancy. Scale test–retest reliability coefficients were reported to be between .71 and .94 (Morey, 2007). All reviewed independent studies had *mean* correlations over .70, but with some scales between .53 and .70, these were below the recommended threshold.

The face and content validity of the PAI were supported, and several forensic studies reported predictive validity of 'antisocial' or 'aggression' scales for recidivism. A full range of low to high concurrent validity was found when scales were reviewed against the MMPI-2, the MCMI-II, the NEO-PI and the Becks Depression Inventory.

The clinical scales of the PAI were selected for inclusion due to their importance in modern clinical diagnosis, reflecting good construct validity. Factor analysis of the PAI yielded four factors, interpreted as reflecting 'distress and affective disruption', 'behavioural acting-out and impulsivity', 'interpersonal egocentricity, exploitativeness and hostility', and 'carelessness' in the clinical sample (Morey, 2007). Although this four-factor solution has not been universally supported, the first two factors have frequently been identified in other studies, and these reflect alignment to a range of psychopathologies in the DSM-5 (APA, 2013).

The PAI was found suitable for use in this thesis due to its ability to identify sub-diagnostic threshold psychopathologies in clinical, interpersonal and treatment-related domains, all of which affect the presentation and treatment of a complex client.

# INTRODUCTION

Theories of personality have continued to develop during the last 100 years. From the early psychoanalytical work of Freud with the id, ego and superego, to the trait-based notions of personality from Allport (1937) and Eysenck and Eysenck (1969), to the more widely accepted 'Big Five' model of personality that remains in popular use today (Digman, 1990; Costa & McCrae, 1992).

As personality theories have advanced however, methods of measuring the underlying constructs have been updated and refined at a slower pace, often resulting in incompatible terminology and references to psychopathologies that are not reflective of current disorder classification systems. For example, the scales for the initial Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1940) were developed from the presentation characteristics of patients with particular traits, but the tool was not grounded in specific theories of psychopathology at the time. It would take nearly 50 years for the MMPI to be revised, using larger normative samples but again failing to align properly to the diagnosis manuals of the time.

With continued research into the multifactorial role that personality traits and psychopathologies can play in offending behaviours, an increased need emerged to identify a broad psychological measure that could be utilised with both general population and forensic clinical samples, to help inform clinical formulation and consequently guide treatment planning. One such tool that achieves this goal is the Personality Assessment Inventory (PAI), which has been described as having the ability to provide useful information to aid offender classification, treatment planning and risk assessment (Morey & Quigley, 2002).

# PSYCHOMETRIC OVERVIEW

The PAI (Morey, 1991) is a self-report questionnaire designed to *"provide information on critical client variables in professional settings"* (Morey, 2007, p.1). The PAI comprises 22 main scales; four validity scales, 11 clinical scales, five treatment-related scales, and two interpersonal scales. Ten of these scales include between three and four subscales. Overall this results in a total of 53 scales and sub-scales, descriptions of which are provided in Appendix 5. The PAI questionnaire has 344 items, which can be viewed in Appendix 6.

The PAI does not serve to identify evidence for the presence/absence of all of the 10 personality disorders as described in the DSM-5 (APA, 2013), and is therefore not designed to be deployed as a pre-diagnosis self-assessment tool in PD services. This is a key distinction between the PAI and the Millon Clinical Multiaxial Inventory-III (MCMI-III, Millon, 1994, see glossary in Appendix 4). The PAI's scales instead assess a broad range of clinical difficulties associated with personality and other mental health facets, as they pertain to (or interact with) personality functioning. In this way, the PAI examines clinical difficulties such as psychosis, substance misuse, depression, anxiety and trauma, alongside difficulties with affective instability, paranoia, antisocial and aggressive behaviour. Whilst this is a similarity to the MCMI-III, where the PAI differs is that it also includes interpersonal and treatment-related scales associated with personality functioning. These measure features such as interpersonal warmth, treatment acceptance, and beliefs regarding availability of support. These features also set the PAI apart from the MMPI-2.

The PAI is accompanied by a comprehensive manual which can be used to score the psychometric measure utilising the raw score to *T*-score conversion tables within the manual. Alternately, it can be scored using computer software following

inputting of the client's responses. The advantage of the software, in addition to making the scoring of the questionnaire easier and reducing the likelihood of human scoring error, is that it generates a clinical interpretative report based on the results obtained.

The PAI was developed to take advantage of increasingly sophisticated statistical methods related to data reduction, applying them to the field of personality testing whilst creating a tool that was reflective of existing classifications of psychopathologies in the DSM-III-R (APA, 1987). In this way, it was similar to the MCMI-II (Millon, 1987).

**Normative Samples**

In order to accurately interpret the scores obtained on a psychometric measure, normative information is required. The PAI (Morey, 1991) was standardized on three participant samples, each having a minimum of 1000 participants; a U.S census-matched sample of community dwelling adults (N=1000), a sample of adult patients collated from a variety of clinical settings (N=1246), and a sample of college students from several American universities (N=1051). The community sample was matched to the projected census for 1995 in terms of age, gender and ethnic background, but was found to underrepresent those with lower education levels and over-represent those with higher educational attainment. Morey explained that those at the lowest levels of educational attainment may not have had sufficient ability to complete the PAI, and that the sample remained an appropriate representation of the population who could be practicably assessed with the tool. During the development of the PAI, however, it was stated that one of its goals was to be applicable to as wide a sample of people as possible. As such, the PAI may not fully meet this goal, as its utility with lower educated people has not been sufficiently evaluated.

The clinical sample were drawn from 69 different sites, and their primary diagnoses were compared to diagnoses recorded for all patient admissions in 1986 - as recorded by the National Institute for Mental Health. While not precisely like for like, the proportion of patients per diagnosis was sufficiently close for the purpose of comparison, and for the conclusion to be drawn that the clinical sample was not significantly different from that found at a national level.   The source populations for the clinical sample included inpatient mental health facilities (25% of the sample) and correctional facilities (10% of the sample). The latter is similar to the MCMI-III where 8% of the normative psychiatric sample were drawn from correctional facilities (Millon, 1994).   Neither of the psychometrics has had a distinct normative sample developed specifically for forensic hospital populations however.

The college sample were drawn from seven American universities and were found to be under 30, Caucasian and female in the majority.  There is no information to suggest that this college sample differs significantly from a national sample.  When comparing the means and standard deviations for the college and community samples, the college sample showed lower levels of somatic complaints, and higher energy levels and attention seeking lifestyle behaviours, demonstrating that these samples accurately reflected the expected traits of their respective populations.

During the design of the PAI, with a view to making it as widely accessible as possible, it was constructed so that demographic information (age, gender, culture etc) should not be a confounding variable to the results of anyone completing the assessment, as discussed below ('construct validity').

# PROPERTIES OF THE PAI

**Levels of Measurement**

The PAI utilises ordinal level data, asking users to rate how greatly a series of statements relate to them. The statements cover a broad range of topics to reflect the breadth of the 53 scales and sub-scales, and are measured on a four point Likert scale from 'false, not at all true' to 'very true'. The PAI offers no neutral option, with the remaining points covering degrees of truth; 'slightly true' and 'mostly true'.

Ordinal data is not viewed as being as robust as interval or ratio data, and it is suggested by Klein (1999) that a good psychometric measure should utilise at least interval data. One of the reasons expressed for this preference, is that ordinal data can infer conclusions without having the statistical clout of interval or ratio data to support the outcomes expressed. However the PAI is not unusual in its use of ordinal data, as many measures of clinical difficulties ask the respondent to identify how greatly they feel that particular statements relate to them. Self-analytical judgments such as these are useful in clinical settings, but cannot be assumed to have fixed magnitudes in that the difference between 'slightly true' and 'mostly true' is not necessarily the same amount as between 'mostly true' and 'very true'.

**Reliability**

The reliability of a psychometric tool is the extent to which it measures an intended construct, and does so while providing consistent results, across samples and time scales.

**Internal Reliability.** The internal reliability of a measure assesses whether different questions on the same test measure the same construct. Kline (1999) suggested that for a measure to demonstrate good internal reliability, an alpha

coefficient of .70 or greater is necessary. Morey (2007) reported the Cronbach's alpha values for each of the 22 main scales for the three original normative populations. For the community sample, Cronbach's alpha values ranged from .45 to .90 with a median value of .81. For the college student sample the range was from .22 to .89 with a median of .82, and for the clinical sample the range was from .23 to .93 with a median of .86. The low Cronbach's alpha levels were found in the four validity scales, while the lowest level for the other 18 main scales was .66, indicating a moderate to high level of internal reliability within the clinical, treatment and interpersonal main scales.

A number of other studies have examined the internal reliability of each of these 18 scales. With an Australian participant sample, Boyle and Lennon (1994) achieved a mean alpha coefficient of .83 for the 18 main scales, with a range of .63 to .90. Alterman et al. (1995) achieved a .75 mean alpha coefficient (range .60 to .88) when administered to African American and Latino methadone-maintenance patients. Rogers, Flores, Ustad and Sewell (1995) achieved a mean alpha coefficient of .71 for the 18 scales (general range of .51 to .86, with a single .25 scale for 'non-support') when administering the English language version of the PAI, and a mean value of .65 (range .40 to .82) for the Spanish language version, with a sample of 21 bilingual patients attending an outpatient centre for substance abuse difficulties. Schinka (1995), Boone (1998) and Tasca, Wood, Demidenko and Bissada (2002) achieved mean Cronbach's alpha values of .84, .83 and .84 respectively when administered to those with alcohol dependency issues, psychiatric inpatients, and those with eating disorder difficulties respectively.

The range and mean alpha coefficient levels identified appear roughly consistent with those found during the development of the PAI, suggesting that the items within the 18 main clinical, treatment and interpersonal scales are related

sufficiently closely to say they were measuring the same concept. Whilst this implies positive internal reliability, Boyle and Lennon (1994) advised caution in such an interpretation, explaining that high mean alpha coefficients can be suggestive of narrow scales with item redundancy.

**Test-Retest Reliability.** A good psychometric will return the same results when the same individual or population are tested on more than one occasion. This is assessed using correlation analysis, with a minimum threshold of .70 being considered to be an appropriate level.

To assess the PAI's test–retest reliability, Morey (1991) administered it to 75 community adults twice, with an average time between administrations of 24 days. The PAI was also repeatedly administered to a sample of 80 college students, 28 days apart. With regard to the community sample, test-retest correlations ranged from .71 to .94, excluding the 'inconsistency' and 'infrequency' validity scales which were found to be .29 and .43 respectively. This analysis was repeated with the college student sample, which found a test-retest range of .72 to .90, excluding the aforementioned validity scales which had test-retest values of .32 and .55. The lower test-retest values on the 'inconsistency' and 'infrequency' validity scales should be seen as a positive effect for the test. As noted by Wise, Streiner and Walfish (2010), *"...it is... nor desirable, for the two excluded scales to have high correlation coefficients, as they are measuring carelessness and not theoretical constructs"* (p.251).

Alongside Morey's initial pilot studies, a number of other studies have been undertaken which have assessed the test-retest properties of the main 18 scales of the PAI. Boyle and Lennon (1994) retested a sample of 70 participants from a total population of 211 initial participants, 28 days after initially being administered the

PAI. They found a range of retest coefficients from .62 to .86, with a mean of .73 across the 18 included scales, and commented that these findings were an approximate match to those presented in Morey's (1991) PAI professional manual. Rogers et al. (1995) found test-retest values of between .53 and .88, with an average of .73, when reassessed with the Spanish language PAI after a four week period. Corresponding values for the English language version were reported descriptively only, as .85 for the clinical scales and .66 for the treatment and interpersonal scales.

As described, there is variety across the studies in terms of the test-retest reliability of the PAI scales, with results ranging between .53 and .94, meaning that some findings are below the .70 recommended threshold. The lowest recorded variable across all studies was the 'stress' variable in the Rogers et al.'s study (.53). The feeling of stress can be quite fluid depending on immediate circumstances, which could easily change over a four week period, which thus explains its lower retest value. Most of the scales had scores of between .70 and .80 and where mean values for test-retest reliability were reported (or calculable), these were all over the .70 threshold considered to be the minimum for a reliable psychometric measure.

**Validity**

The validity of a measure is determined by how well it measures the construct that it purports to be measuring. There are various types of validity, which will be addressed in relation to the PAI.

**Face Validity.** Face validity is the most basic form of validity. On the surface, do the questions in the psychometric appear to be measuring the construct that the psychometric claims to be measuring? During the development of the PAI, the researchers started with over 2200 initial questionnaire items. According to Morey

188

(2000), items were specifically written to make sure they matched the construct being measured; this was evaluated by expert reviewers and any item which did not meet a 75% consensus of agreement was either rewritten or removed. Furthermore, experts engaged in a sorting task to see if agreement could be reached with regard to which items belonged to which PAI scale. Items that did not reach agreement were then removed. These appear to have been robust procedures to ensure the items selected were appropriate to the intention of the measure being designed.

**Content Validity.** Content validity is the term used to describe whether a test covers all parameters of the construct it is supposed to be measuring. Within each of the scales of the PAI there are a number of questions asked to cover the breadth of the particular scale, with each scale having a minimum of eight questions associated with it. The 'non-support' scale, which examines an individual's perceived social support, is the one with the fewest items devoted to it, however this appears sufficient in the context of this scale. By comparison the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet Dahlem, Zimet & Farley, 1988), a questionnaire developed specifically to investigate an individual's areas and quality of perceived social support, only contains 12 items.

Further to this, 10 of the 18 main scales of the PAI are made up of subscales. 'Somatic Complaints' (SOM), 'Anxiety' (ANX), 'Anxiety Related Disorders' (ARD), 'Depression' (DEP) 'Mania' (MAN), 'Paranoia' (PAR) 'Schizophrenia' (SCZ), 'Borderline Features' (BOR), 'Antisocial Features' (ANT) and 'Aggression' (AGG) all have subscales to help fully capture the breadth of the clinical traits in the area. For example the BOR clinical scale is made up of four subscales; 'Affective Instability', 'Identity Problems', 'Negative Relationships' and 'Self-Harm', which cover the main facets of Borderline Personality Disorder, as described in the DSM-5 (APA, 2013).

**Predictive Validity.** A tool with high predictive validity is able to predict a future outcome. Since the development of the PAI, there have been numerous studies that have attempted to use the measure for its predictive utility. Many of the studies have involved predictions of specific behaviours within offending populations. Salekin, Rogers, Ustad, and Sewell (1998) examined how well the 'Antisocial Features' (ANT) and 'Aggression' (AGG) scales could predict recidivism among female inmates after 14 months. They found that both scales demonstrated significant relationships with the likelihood of reoffending. Wang and Diamond (1999) found that the clinical subscales 'Antisocial Behaviours' (ANT-A), 'Egocentricity' (ANT-E) and 'Stimulus Seeking' (ANT-S) all assisted in the prediction of aggression within the first two months of admission from a sample of 385 offenders receiving inpatient psychiatric treatment.

Boccaccini, Murrie, Hawes, Simpler and Johnson (2010) examined the abilities of the ANT, AGG and 'Dominance' (DOM) scales of the PAI to predict post-release arrests in 1,412 released sex offenders. They found the AGG scale to be the greatest predictor of recidivism for all offences except sexually violent recidivism. ANT and DOM were found to be statistically significant predictors of nonsexual recidivism.

Utilising a sample of 129 patients held in secure units, Douglas, Hart, and Kropp (2001) reported that the AGG and ANT scales could be used to discriminate between violent and nonviolent patients. They also found that the 'Physical Aggression' (AGG-P) subscale was the greatest predictor of differentiation between these two patient groups.

Newberry and Shuker (2012) and Skopp, Edens and Ruiz (2007) both examined the predictive validity of the PAI on institutional misconduct, with the

former utilising a population of 268 male offenders and the latter a population of 113 female offenders. In the Newberry and Shuker study they found that higher scores on AGG, AGG-P, ANT, ANT-A and 'Drug Problems' (DRG) were all significantly related to a greater than 70% chance of reconviction, as well as being able to demonstrate accuracy in predicting general infractions, violent infractions and non–violent infractions. Skopp et al., found that the ANT scale predicted general and violent infractions within their sample, but was unable to predict incidents of covert infractions.

Walters and Duncan (2005) followed up 91 released prisoners who had been administered the PAI previously, to examine whether the ANT and AGG scales predicted recidivism. They found that after controlling for age, race, education and number of prior arrests using a two-step logistic regression analysis, both scales were successful at prediction of future recidivism.

**Concurrent Validity.** Concurrent validity reflects the degree to which a psychometric measure correlates with other tools that assess similar underlying constructs. Due to the fact that the PAI is comprised of 22 main non-overlapping validity, clinical, treatment and interpersonal scales, there have been a large number of studies conducted that review the relationship between just one particular individual scale and other measures assessing similar concepts. This is also the case for each of the associated 31 subscales. This is extensively reported by Morey (2007). For the purposes of brevity, examples from only the 11 main clinical scales will be covered within this critique.

Four studies were identified that compared the individual facets/scales of similar measures with their counterpart within the PAI. Morey (1991) compared the PAI to the MMPI, and across the 11 main clinical scales achieved a range of

correlation scores from .34 (ANT) to .66 (DEP). These results were superseded by the development of the MMPI-2 in 1989. Veltri, Williams and Braxton (2004) compared similar scales in the MMPI-2 with those in the PAI in a sample of 538 army veterans. The results in this case were stronger than those found with the MMPI by Morey, with a range of correlational scores from .51 (ANT) to .80 (SCZ).

Another personality assessment tool that the PAI was compared with was the MCMI-II; a psychometric measure intended to provide information on possible specific psychopathologies outlined in the DSM. Rielage (2005) assessed association between personality traits, suicidal ideation and suicide risk of 233 military patients. This was achieved through assessment on both the PAI and MCMI-II. Rielage was able to compare the similarity of the scales across both measures, and found correlation values ranging from .37 to .75.

The final measure that compared correlations with all of the main clinical scales of the PAI is the NEO-Personality Inventory (Costa & McCrae, 1985). The NEO-PI is a measure that was developed to assess the 'Big Five' personality traits as well as six lower order facets of each of the five personality traits. During the development of the PAI, Morey compared these traits and facets to the scales of the PAI and found correlations in the range of .38 to .77.

Whilst some of these correlations are low, the inherent difficulty with comparing similar subtests from different personality psychometric tests in this way is that an individual scale is not as robust a measure of any clinical concept as would be an entire psychometric test focussing on that same concept. For example, when comparing the depression clinical scale on the PAI to the Becks Depression Inventory, a scale specifically developed for depression, Evardone (2006), Romain, (2001) and Kurtz and Morey (2001) found correlational values of .81, .82 and .94. However, a

comparison between the depression clinical scales on the PAI and the NEO-PI for example, result in a lower (although still substantial) correlational value of .70.

**Construct Validity.** A psychometric with high levels of construct validity is one which is accurately measuring the construct it sets out to assess. As theories develop, as should a psychometric measure to ensure it continues to measure the construct accurately. The PAI was developed to be an advancement on the methods used in the design of the MMPI-2, which had been subject to a number of criticisms upon its release (Caldwell, 1991; Duckworth, 1991). After the release of the initial PAI, it was noted that there were a number of advantages to the PAI over the MMPI-2. White (1993) stated that it had a better design, was easier for participants to complete, was easier for clinicians to score and interpret, and was more relevant to the terms and psychopathologies that were being used at the time within the DSM.

Two of the key components in the selection of clinical scales for inclusion in the PAI were their historical significance in the classification of mental disorders, and their importance in modern clinical diagnosis (i.e., inclusion in the DSM or in the ICD). In this way, the clinical syndromes that were selected for scale development were long-standing recognised diagnostic categories such as depression and schizophrenia, whilst the inclusion of more controversial diagnoses such as pre-menstrual dysphoric disorder, and passive-aggressive disorder were avoided (Morey, 2007). This approach was successful in 'future-proofing' the PAI, which remains theoretically relevant and aligned with modern clinical diagnostic approaches in the DSM-5 (APA 2013).

Morey (2007) stated that it was of paramount importance within the PAI "*…that no quantitative item parameter should be used as the sole criterion for item selection*" (p.99). It was believed that whilst a single item parameter may be able to

distinguish a broad clinical sample (e.g., schizophrenics) from a normal sample, that it would not have the ability to make more subtle distinctions (e.g., paranoid schizophrenia from schizoaffective disorder). For that reason during the initial tool development, 2200 items were generated by the research group with each individual scale having at least three times the number of items as were planned for the final version of the questionnaire (Morey, 2000). A panel made up of experts and lay members of the public were asked to conduct a 'bias review' and remove any of the items that would be deemed offensive on the basis of age, ethnic background, sex, race or religion. They were also to highlight any items that may be endorsed to indicate presence of one of the pathologies, but could also be endorsed due to beliefs normative in certain cultures.

Later in the review process, once the item number had been reduced to a point where there was an agreement rate of nearly 95% that the remaining items were appropriate to the test, as well as appropriately placed within each of their scales, Morey progressed to the alpha and beta piloting phases with 776 items. The final 344 items were selected that best fit the PAI scales and were also applicable to a wide range of situations. To this end, the PAI was standardised on three different samples as detailed above.

**Factor Analysis.** Following the creation of the PAI, Morey (1991) used exploratory factor analysis to examine the PAI's underlying structure. The normative community and clinical samples were both reported to yield four factors for the 22 main scales, accounting for a collective 64% to 77% of the variance. In the four-factor model, Morey interpreted Factor 1 to be associated with *subjective* 'distress and affective disruption' (high positive loadings on most of the clinical main scales). Factor 2 was interpreted as associated with *objective* 'behavioural acting-out and

impulsivity' (high positive loadings on antisocial features, alcohol and drug problems). Factor 3 was described as 'egocentricity, exploitativeness and hostility in interpersonal relationships' (high positive loadings on mania, dominance, antisocial features and aggression scales). Lastly, the interpretation of Factor 4 was dependent on the source population; for the clinical normative sample, high positive loadings on two of the validity scales were said to reflect 'carelessness'. For the community normative sample, the factor was interpreted as 'social detachment' (high positive loadings on non-support, paranoia and schizophrenia, and a high negative loading on interpersonal warmth).

Support for the four-factor underlying structure of the PAI has originated from a range of studies that employed the same factor analysis technique. Karlin et al. (2005) reported a similar structure with a large sample of 432 chronic pain patients. Schinka (1995) described finding 'minor' differences in factor structure, with a sample of 301 alcohol-dependent patients. Groves and Engel (2007) also reported an extremely close match to Morey's (2007) factor structure, with congruence coefficients of at least .97, having adapted the PAI into a German language version.

The four-factor structure of the PAI has not universally been supported, however. Boyle and Lennon (1994) instead reported a five-factor model, which was subsequently summarised as reflecting 'aggressiveness', 'extraversion', 'distress', 'antisocial features' and 'perceived lack of support' by Boyle, Ward and Lennon (1994). The Australian population used in this factor analysis were combined normal and clinical (schizophrenic and alcoholic) samples, and it is unclear why this approach was taken given that Boyle et al. stated that "*Instruments reflecting psychopathology should theoretically have different factor structures in normal and clinical samples…*" (p.1442, 1994). Boyle et al. also criticised the factor analysis method

selected by Morey (1991) and others. Utilising Morey's originally presented data and analysis method, the team reported that they were able to match Morey's purported four-factor structure for the PAI's community normative sample, but that they were unable to replicate the four-factor model with the clinical normative sample, finding that the eigenvalues in fact indicated five factors.

Morey (2007), in summarising factor analyses conducted by nine different research teams (1991 – 2006), found good consistency with regard to identification of a factor relating to *internal* psychological distress, and another factor relating to *externalising* acting-out and impulsivity. This was also true of Boyle and Lennon's (1994) study. With some similarities between studies, the differences in factor models can be somewhat explained by differences in analysis methods, the scales that are included in the analysis, and the nature of the clinical or community samples used.

Morey (2007) has suggested that factor analysis should not be used as direct evidence for or against the PAI's construct validity, given that its factor structure is a by-product of the scale composition, rather than a feature that drove scale development. The factor model is a simplified linear way of presenting scale interrelations, where such interrelations may not actually be linear; an example given by Morey is that high depression scores may be related to both high and low interpersonal dominance scores. In this way, factor analysis techniques are not necessarily wholly appropriate, although they may still be of interest if the factors are able to highlight key alignments with clinical models (diagnostic or personality models, for example). In this way, Morey's analysis identifies 'psychological distress' (Factor 1) and 'acting out and impulsivity' (Factor 2) in relation to a range of psychopathologies outlined in DSM-5 (APA, 2013), whilst Factor 3 ('egocentricity, exploitativeness and hostility in interpersonal relationships') describes personality

difficulties that are extremely pertinent in forensic hospitals, where these features impact clinical presentation, treatment design, and can hinder treatment success.

## CONCLUSION

Keen interest in the PAI has resulted in a large body of research validating its psychometric properties. The PAI is an easy tool to administer, score and interpret due to the addition of computerised software, and this encourages its selection for use in large scale quantitative data collection.

The questionnaire has been demonstrated to be a valid tool, across a wide range of samples including community samples, university students, former military personnel and psychiatric populations. Predictive validity of some of the PAI scales (such as ANT and AGG) has also been identified in offender populations, with regard to institutional infarctions and recidivism upon release into the community. Although this is the case, unfortunately the PAI manual does not does present a normative sample developed specifically for forensic hospital populations. As such, psychologists have to utilise the presented normative clinical sample, which includes samples drawn from inpatient mental health facilities (25% of the sample) and correctional facilities (10% of the sample).

The PAI has successfully been translated into other languages; Spanish (Rogers et. al., 1995), Chinese (Cheung et. al., 1996) and German (Groves & Engel, 2007), with similar Cronbach alpha levels having been observed between language versions, demonstrating good internal reliability. The PAI has also been demonstrated to produce consistent results with good test–retest reliability with correlational values that meet the minimum .70 expectancy. This has been found both

during the development of the measure, as well as through a number of psychometric evaluative studies by other researchers.

The PAI was found to be comparable to other personality measures such as the MCMI and MMPI-2, when comparing like for like scales from each test. Individual scales of the PAI were also found to show comparable results to measures specifically designed to address a named psychopathology such as anxiety or depression. This suggests that the PAI is able to demonstrate good validity and robustness as a measure examining a number of clinical and personality-related difficulties. Factor analysis techniques consistently identify factor-models including variations of 'psychological distress' and 'acting out and impulsivity', which can be associated with a range of psychopathologies outlined in DSM-5 (APA, 2013).

**Use of the PAI in this Thesis**

Of significance to the current research study (Chapter two of this thesis) is the PAI's success at identifying sub-diagnostic threshold psychopathologies spanning clinical, interpersonal and treatment-related domains, all of which affect the presentation and treatability of a disordered client. These features also promoted the use of the PAI rather than the MCMI-III or MMPI-2 for use in the study, as the latter psychometrics do not consider interpersonal and treatment-related domains in the same manner.

Within each scale of the PAI the amount of difficulty observed can be quantified in comparison to the normal population, as well as in comparison to a standardised clinical group (using the 'PAI Skyline' which gives *T* values two standard deviations above the norm for the clinical group). This renders the PAI an excellent choice for use in the comparison of clinical groups in high security and medium security environments, where both the range of clinical difficulties and the

relative severity (or volume) of difficulty are important contributors to the definition of a notion of 'case complexity' within personality disorder (Chapter two).

The PAI is sufficiently sensitive to identify changes in clinical presentation over fairly short periods of time, therefore permitting its use to inspect treatment gains and change in areas of need. This enabled its re-administration with the case study, 'Andrew' (see Chapter three of this thesis) on an annual basis. As such, Andrew's clinical progress could be monitored and his treatment plan shaped to match evolving needs. In Andrew's case, changes in his PAI score profile confirmed the suitability of a transfer between MI and PD directorates within a high security hospital, and later confirmed a reduction in difficulties sufficient to warrant positive progression to an MSU.

# CHAPTER FIVE

# General Discussion

# DISCUSSION

**Thesis Design**

This thesis explored whether forensic patients living in a high security hospital setting are 'Complex Cases' or 'Difficult Cases', under the expectation that it would be possible to identify clear justification for the management of patients in a setting that costs in the region of twice as much per bed per annum than places in MSUs (£300,000 vs £165,000; Centre for Mental Health, 2014).

The driver behind the thesis question was a desire to gain an increased understanding of PD clients currently living in high security forensic hospitals such as Rampton Hospital, in the light of the introduction of the Offender Personality Disorder Pathway (OPDP; DH/MOJ, 2011). A stated principle of the OPDP strategy was that high and medium security hospitals could continue to provide treatment for PD offenders "*with co-morbid severe mental health problems*" (Joseph & Benefield, 2012, p.212). The new OPDP strategy thus had the power to rapidly alter the landscape of service provision, potentially restricting the health service's remit in provision of PD treatment services to only the care of PD offenders with evidence of active co-morbid psychotic illness, mood disorder or learning disability.

Some of the psychologists working with patients in the high security PD service at Rampton Hospital were of the opinion that the resident clients were more 'complex' than would be found in other settings. This was opinion based on personal knowledge and experience, rather than evidence-based, being that no evaluations had been published investigating the relative complexity of PD patients in different secure hospital environments. Similarly, the conceptualisation of a 'complex case' was subjectively based on personal experience, meaning that the definitions of such a case were seen to vary somewhat between clinicians at the site.

The key benefit of progressing with this study and uncovering the answer to the thesis question, was that the hospital psychology team could gain insight into their current *niche* in service provision, and thereafter define their expertise within a market that is now evolving, expanding within NOMS and potentially attenuating in the health service.  As a result, the findings may allow strategic adaptation of the hospital-based PD services to play to their current strengths, their niche market, and to perhaps become an important specialist provider within the OPDP system.

Interestingly, the PD psychology team was not concerned as to which answer would be reached in the conclusion of the research; identification of a niche market of 'difficult cases' rather than 'complex cases' is still psychologically-relevant and reflective of an important service need.  Patients who are 'difficult' (violent and aggressive) are volatile and require extensive psychological and risk management input to ensure both safe containment and positive treatment progress.  In this way, a specialist provider of care for 'difficult cases' may focus on the prioritisation of treatments to stabilise emotional lability; anger management and violence prevention treatment for violent and aggressive patients, and DBT for acute self-harming patients, for example.

All chapters of this thesis were conceived simultaneously, with each area of review dependent on the others, and planning work co-occurring rather than happening sequentially.  From the outset, the empirical study would examine 'complex cases' and the systematic literature review would examine 'difficult cases', in a dichotomic approach.  This plan altered somewhat, in that the empirical study methodology evolved with regard to an increased focus on the collection of incident data, in order to allow the study to comment on both case complexity and the presence of difficult cases in the different hospital security settings (enriching the utility of the

study within the thesis). 'Andrew', as a case study, had a presentation profile on admission that could possibly be described as fitting within both categories. With multiple clinical difficulties, and a history of severe institutional violence (rioting, attacks with weapons), his presentation profile on admission could potentially fit within the realm of 'complex cases' and 'difficult cases'. As such, Andrew proved to be an excellent addition to the thesis work, being compatible with all investigations underway in Chapters one, two, and four of the thesis.

**Thesis Findings**

In Chapter one, the systematic literature review explored the expression of institutional violence and aggression across different security settings within both healthcare and prison environments. Specifically, the aim was to compare findings from sites with regard to frequency and severity of violence, and it was anticipated that the high security sites would be caring for the more 'difficult cases' and would thus record the most incidents. Nineteen papers met the inclusion and quality requirements, and the findings of each were discussed in terms of the violence and aggression outcomes reported. The study did not, however, find any clear differences in the frequency of violent and aggressive incidents in different security level settings within health care, and limited confidence was expressed in the generalisability of the finding that incident severity may be highest in lower security settings (potentially due to the absence of fast-response Control and Restraint teams). Unfortunately, there were limited studies available pertaining to the Prison Service, meaning that adequate comparisons could not be made between healthcare and prison settings.

The process of conducting the systematic review identified difficulties in the ways in which violence and aggression research studies are conducted. This resulted in a set of recommendations being provided for the future recording and presentation

of data on violence and aggression. For example, the use of standardised reporting using IPP/pm and PP figures was suggested, as was the use of a standard categorisation of incident data including the separation of 'physical violence', from 'other violence and aggression' and 'self-directed violence' as a bare minimum. It was anticipated that adherence to the set of recommendations would permit greater cross-comparison of data from different research studies in the future, and potentially allow a meta-analysis that could analyse collective research findings in the field in an effective manner.

The empirical study herein was seen to have been shaped by these guidelines, meaning that they have now been tried and tested, and can be confirmed as being easily adhered to. Some of the incident data reported (PP values, for example), were not of particular interest to the present review, however the data were reported in the recommended way, to ensure that it can add value to the available literature base on institutional violence and aggression.

In Chapter two, the thesis' empirical research study examined differences in clinical complexity between PD patients living in a high security hospital and partner MSUs. A definition of a 'Complex Case' was proposed following a review of the literature, and the construct was subsequently explored, with male patients from PD wards in high and medium security hospital groups compared (33 participants were in the former group, and 26 in the latter). Participants completed the Personality Assessment Inventory (PAI) as a means of assessing their clinical difficulties. In addition, data pertaining to diagnoses, other clinical information, institutional incidents, and offence-focussed variables were collected. A number of significant differences were observed in the data between the hospital groups, and the resultant information was synthesised and informed the development of a Model of a Complex

Case of PD; which is discussed further below. The study results led to acceptance of the first study hypothesis that the group of PD patients resident in the high security hospital are more 'Complex Cases' than their counterparts resident in MSUs (36% of cases being 'complex' in high security compared to 15% in medium security). The second study hypothesis was rejected however, as composites of the mean Personality Assessment Inventory (PAI) score profiles were not significantly different between the high and medium security groups, meaning that greater difficulties were only identified across a small number of areas of clinical symptomology, rather than a large number of areas.

In Chapter three, the thesis case study presentation was that of 'Andrew', a 30 year old man with antisocial and paranoid PDs, and schizophrenia. He was a violent and sexual offender, resident in the high security hospital. Andrew proved to be a 'complex case' at admission to the high security hospital (as matched to the Model of a Complex Case of PD; see discussion below), who was about to transition to an MSU following treatment and a significant improvement in his clinical presentation, as explored with the PAI across a six year hospital stay. Whilst Andrew would have also met the definition of a 'Difficult Case' at admission and until 2-3 years ago, this is no longer true following successful treatment and a long period violence-free.

Andrew's assessment, formulation and violence relapse prevention treatment were presented and discussed, and it was emphasised that some positive progress was achieved during Andrew's 10-week treatment programme. In particular, using the NAS-PI psychometric assessment tool, Andrew experienced a transition from the 'dysfunctional' to 'functional' groups at post-treatment, reflecting progress on lessening his anger response to minor issues of provocation. Limitations discussed within the study included the insensitivity of single case statistics when endeavouring

to examine significant change and positive treatment gains, as his results did not show statistically significant change of scores on the NAS-PI assessment.

Finally, in Chapter four of this thesis, a critique was provided of the PAI psychometric tool. The clinical scales of the PAI were found to have been selected for inclusion due to their importance in modern clinical diagnosis, reflecting good alignment with a range of psychopathologies outlined in the DSM-5 (APA, 2013). The critique explored the validity and reliability of the tool, and its ability to assess the clinical needs of a forensic population. The PAI was found to have been constructed following a robust process, starting with over 2200 questionnaire items, and progressing through elimination procedures (tests of face validity, construct validity etc) before entering the beta-testing phase, which thereafter culminated in the release of the final version of the assessment tool. The selection of the PAI for use within this thesis was supported, as it encompasses a wide variety of clinical, interpersonal and treatment scales and could thus provide a holistic view of participants' areas of clinical strength and difficulty, rather than an examination of features of disordered personality alone.

In practical terms, I have been thoroughly impressed with the clinical utility of the PAI, since I first started to employ its use in 2011. It has, without fail, produced scale values and clinical interpretation reports that have supported subjective staff perceptions of patients in assessment. Use of the PAI does require some common sense and knowledge of the client, in that with 344 items, some minor spurious findings will always appear in the PAI commentary report accompanying the scores, which is generated by specialist software (not an issue herein, where only scores were utilised). However, it has sound practical use with clients, and in Chapter three of this thesis the PAI was identified as being sufficiently sensitive to change over a six year period to be able to assess Andrew's statistically significant treatment gains, from admission to impending discharge.

I have not had any hesitation in including the PAI scales into the Model of a Complex Case of PD, following the critique of the tool in Chapter four. Whilst the ideal outcome would have been for the PAI Composite to be able to distinguish between high and medium hospital group membership and thus 'complex' and 'standard' cases of PD (in the empirical study), this is perhaps too ambitious a request of any psychometric. The inclusion of the PAI within the Model is important, as it acknowledges that complex patients have co-occurring clinical difficulties that do not necessarily meet the thresholds of formal diagnoses, and that may lie outside the boundaries of personality functioning but within other areas of mental illness. As discussed previously, the inclusion of only formal diagnoses into the Model would overlook a great deal of the additional wealth of information that can be garnered regarding a patient's difficulties and treatment needs when additional psychometric evaluation is permitted. Its inclusion into the Model also provides additional distinction of the model as one examining PD case complexity, rather than case severity.

**A Complex Case of Personality Disorder?**

The empirical research study resulted in a proposed Model of a Complex Case of PD (as shown in Figure 5, reprinted below). The development of the model began with a literature search that identified clinical and forensic variables that may contribute to case complexity in a PD client. These variables were then examined in PD patient samples in high and medium security hospitals, and statistically significant group differences were found for 13 of the assessed variables (summarised in Table 13 in Chapter two). Collectively, 22% of the study participants were found to be a clinical match to *all* of these variables, resulting in their being considered the 'complex group'. Logistic regression and post-hoc analysis identified that a small

subset of these variables resulted in 70% of the variance in the model being explained (Nagelkerke's $R^2_N$ = .70). These were 'affective instability', 'young age at first conviction', 'depression' (including cognitive and affective depression) and 'paranoia' (including persecution paranoia), which could collectively correctly classify 93.2% of the participants (N=59) into complex and non-complex groups. As such, these variables were determined to be the components of the final Model of a Complex Case of PD. It was thereafter identified that 27% of the entire study sample (36% of the high security and 15% of the medium security group) matched this final Model.
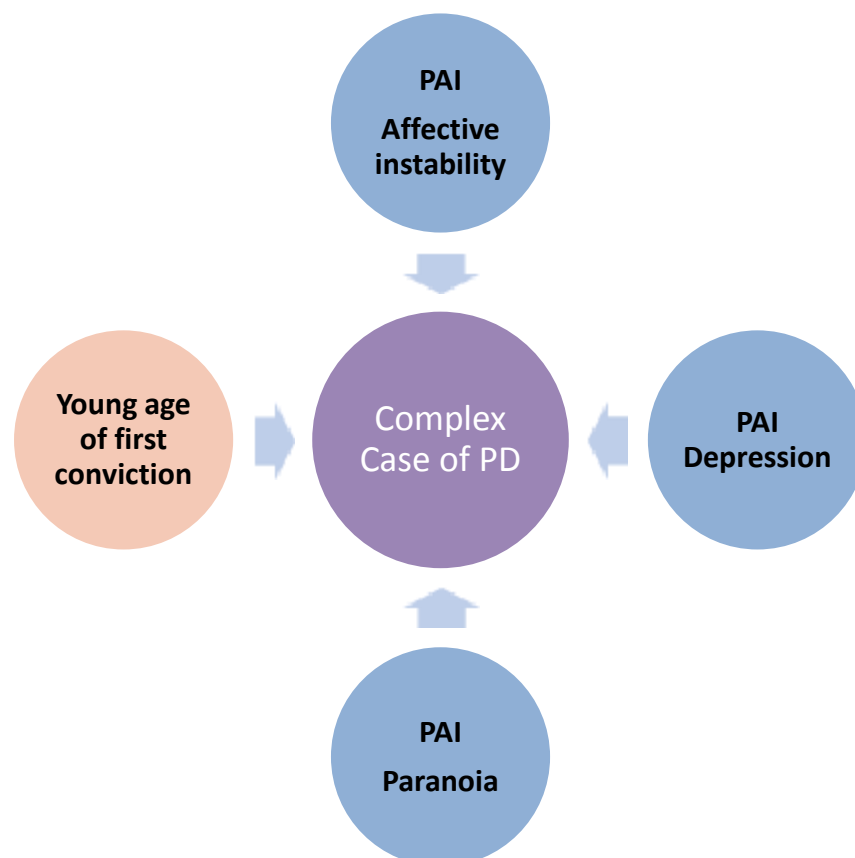


*Figure 5 (reprinted).* The final Model of a 'Complex Case' of PD.

Whilst the Model of a Complex Case of PD is described in terms of its contributing factors, the model's functionality lies within understanding the

interdependence of each of the contributing factors, and how these impact the presentation and needs of the patient. These are not disparate symptoms and traits, but a collection of difficulties that interact in order to form a unique complex case.

**Application of the Model.** The model is proposed as an exemplar of that of a complex case. It does not depict a prototype to which other cases of PD are to be compared, and then accepted as either 'complex' or 'standard' without due consideration, as heterogeneity within the diagnostic group is to be expected (Crawford, Koldobsky, Mulder, & Tyrer, 2011).

Only one variable within the model is a static variable, and must be present if the forensic PD patient is to be said to be 'complex'. This is 'young age at first conviction' (under 20 years). Of course some leeway is logically applied, for example if offending behaviours were present in youth but did not result in conviction, the patient could still be said to fit the model being that the intention of this variable is to highlight lifespan difficulties in social and occupational functioning.

Within the model, it is the included PAI variables that allow flexibility for personal uniqueness and dynamic change, as case complexity can increase or decrease in an individual patient as their symptomology fluctuates, as they progress through treatment or as they age, for example. Within the model, affective instability and paranoia are difficult clinical features specifically associated with PD, which are required attributes of a 'complex case'. Depression and difficulties with low mood, however, reflect clinical comorbidity (perhaps at a sub-diagnostic threshold level) in another area of mental health outside that of PD, which is also contributing to case complexity. With this in mind, when comparing an individual patient to the constructed model, it is potentially suitable to permit the interchange of alternate PAI mental health scales for the 'depression' scale, whilst still considering the patient to be

a 'match' to the model.    Scales measuring mental health well-being in the areas of schizophrenia (SCZ), anxiety (ANX) and anxiety-related disorders (ARD) are perhaps the most justifiable cases for interchange with the depression scale (DEP).    The patient under review against the model would possess an elevated score on at least one of these scales ($T$ = 70+), in order to protect the Model's integrity in identifying as 'complex' only those patients with clinically significant comorbid difficulties.

Interestingly, if such flexibility is permitted in the Model (ie. a complex case has a young age at first conviction, elevated affective instability, elevated paranoia, and at least one elevated scale of depression/ anxiety/ anxiety-related disorder/ or schizophrenia), there is only a small increase in the number of participants in the research study who are a match to the Model; from 27% to 29%.  It appears that such flexibility in the Model's application does not lead to a dramatic inflation of the number of patients who would be considered 'complex cases' in the population, since more than one of these mental health difficulties (DEP, SCZ, ANX, ARD) tends to be present in each participant who is a model match.

With regard to 'Andrew', the case study within this thesis (see Chapter three), his treatment gains and clinical progress were monitored during his six year hospital stay, including through the use of the PAI.  This enabled a comparison of his clinical needs on admission, and upon referral to an MSU, against the Model of a Complex Case of PD.    As presented in Figure 8 below, diagram 'A' demonstrates that Andrew's young age at first conviction and clinical difficulties with affective instability, paranoia, schizophrenia and anxiety-related trauma (amongst other areas), would have allowed him to have been classified as a complex case upon admission to hospital, if the proposed model flexibility were applied (an elevated DEP scale being interchangeable for an elevated SCZ, ANX or ARD scale).

(A) Pre-treatment

**PAI**

**Affective instability**

**Young age of first conviction**

Complex Case of PD

**PAI**

**Schizophrenia and Anxiety-Related Trauma**

**PAI**

**Paranoia**

An interchange of SCZ and ARD elevated scales, in lieu of the depression (DEP) scale.

(B) Post-treatment

**PAI**

**Anxiety-Related Trauma**

Complex Case of PD

**Young age of first conviction**

**PAI**

**Paranoia**
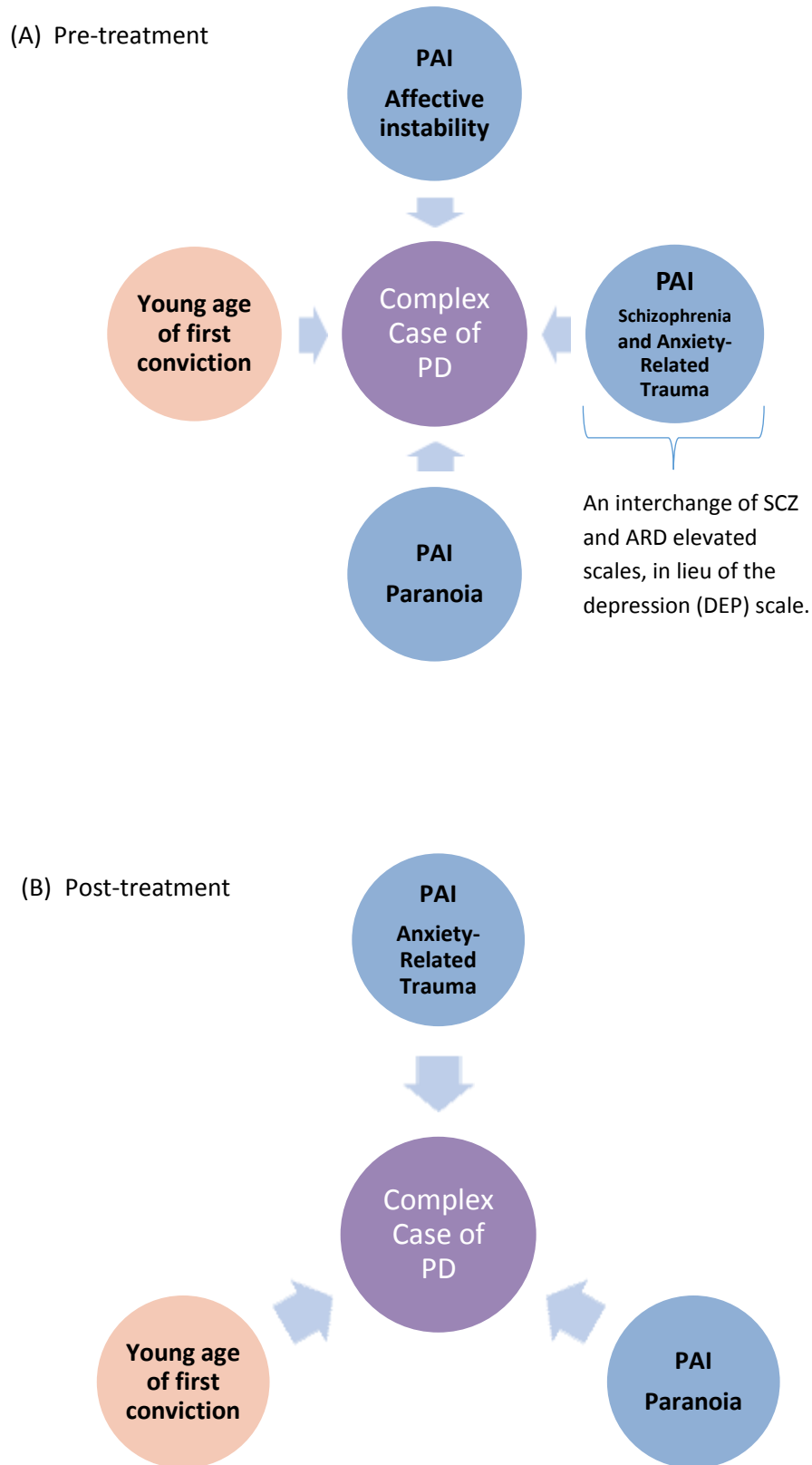
*Figure 8.* Andrew's pre- and post-treatment review against the Model of a Complex Case of Personality Disorder.

In Figure 8 diagram 'B' however, following six years of treatment Andrew no longer matches the four-variable Model, and so cannot be considered a complex case. Whilst Andrew's schizophrenic symptomology is no longer elevated, he still has elevated anxiety-related trauma, meaning that it is the reduction in his difficulties relating to affective instability that is the key change in his presentation that has reduced his case complexity. In this way, Andrew's treatment gains can be highlighted through a comparison of his profile to the complex case construct, and at the point of referral to an MSU, Andrew has transitioned from a patient with complex needs, to a patient with standard treatment needs. Andrew is therefore an excellent example of application of the Model in practice, and its possible practical use in evaluating treatment effectiveness and readiness for onwards progression.

**Case complexity or case severity?** At the high security site, a substantial portion of participants (36%) matched the Model of a Complex Case of PD and were thus identified as 'complex cases', whilst the remaining 64% were considered non-complex or 'standard' cases. In the MSU group, 15% matched the Model of a Complex Case of PD, with the majority (85%) being considered standard cases. These percentages can be contrasted with the much higher numbers of participants who would be considered 'complex or severe' cases of PD using Yang et al.'s (2010) classification of PD severity (again, the confusing use of the word 'complex' within a scale of severity must be disregarded); 82% of the high security group and 38% of the medium security group had the required two or more PD diagnoses in two or more PD clusters to be considered 'complex or severe' ('severe' additionally requiring the presence of antisocial PD).

Within the Model of a Complex Case, there are clearly some attributes that may also be seen in more severe cases of PD; increased affective instability (primarily

associated with Borderline PD) and increased features of paranoia (primarily associated with Paranoid PD), alongside greater lifespan difficulties in social and occupational functioning (reflected by a younger age at first conviction). However following regression analysis, multiple PD diagnoses were not identified as a component of a complex case, whilst these must be present in severe cases of PD according to Yang et al.'s severity classification system (2010; derived from Tyrer & Ferguson, 2000, in turn derived from earlier work by Tyrer & Johnson, 1996). The Model of a Complex Case has also been shown to require the presence of mental health difficulties outside the PD diagnosis, in mood disorder (depression) or an appropriately interchanged significant difficulty with psychosis, anxiety or anxiety-related disorders. This clinical comorbidity (perhaps at a sub-diagnostic threshold level) is not a pre-requisite for Yang et al.'s severe case of PD.

It was proposed in the thesis introduction that complex cases of PD and severe cases of PD are not the same thing, with clinical complexity in PD reflecting interrelationships between all aspects of mental health functioning, whilst an examination of PD severity is a closer analysis of personality functioning alone. The final Model of a Complex Case of PD has supported this distinction.

**A Difficult Case of Personality Disorder?**

In Chapter one, the systematic literature review did not find clear differences in the frequency of violent and aggressive incidents in different security level settings within healthcare. In the empirical research study however (Chapter two), within the incident data subcategories it was identified that in real terms 48% of participants in the high security hospital group and 24% in the MSU group engaged in 'physical violence' (PP figures), with significant differences found in the number of 'physical violence' incidents per patient, per month (IPP/pms of 0.041 and 0.028 in high and

medium security respectively). These figures reflect high population involvement in physical violence at the high security hospital site, but fairly low incident frequency. With an average ward size of 15 patients, physical violence incidents are being recorded at a rate of less than once a month on each ward. As the number of patients who are 'Difficult Cases' (violent and aggressive) is twice the number at the high security hospital than the MSU sites, this suggests that the high security site offers an important service with regard to the provision of risk management, containment and appropriate treatment for volatile individuals who cannot be safely managed elsewhere.

There were further statistically significant differences between the high and medium security hospitals with regard to number of incidents of 'non-physical violence', and 'all violence and aggression' combined, with numbers being higher in the high security hospital. However, with miniscule effect sizes and low power (due to small numbers of incidents and large standard deviations), these differences were not considered to be of import. Similarly, significant differences in the volume of 'disruptive/subversive behaviours' was deemed unlikely to be relevant to the placement of a patient in a higher security setting, given that these are most often low impact incidents such as patient-trading of chocolate bars.

Overall, there were significantly more 'total incidents' reported in the high security group (IPP/pm of 0.91 compared to 0.58 in the MSU group), which reflects the above findings as well as an elevated incidence of self-harming and suicidal behaviour in the high security group (which does not reach the level of statistical significance independently; see Table 12). As a result of these overall findings, the thesis question is also answered in the affirmative with regard to an increased placement of 'Difficult Cases' in the high security hospital.

There is limited potential to compare the violence and aggression data collated with that of studies discussed within the systematic literature review, as each study tended to use different research methods and different definitions of violence and aggression. If these problematic factors are put to one side, one study presented in Chapter one reviewed incidents in a similar patient group; that of Daffern et al. (2010). The researchers examined violence and aggression incident data within a high security DSPD / PD participant sample, and their findings equate to an IPP/pm of 0.41 (excluding self-directed violence). The comparable figures herein (note this is an 'all violence and aggression' comparison, again excluding self-directed violence) were 0.42 in high security and 0.38 in the MSUs, meaning that there is an interesting close match between the current data and Daffern et al.'s figure, obtained from the same high security hospital site a few years earlier (with no overlap in the data collection period).

The empirical study produced IPP/pm figures of 0.041 and 0.028 for high and medium security hospitals respectively, for 'physical violence' alone. The difference was a significant one. In an attempt to compare these figures with previous findings in Chapter one (again, putting the data incompatibility factors to one side), no patterns of findings emerge regarding the frequency of 'physical violence' in different settings. In high security Larkin et al. (1995) present an IPP/pm of 0.12 for males, and in medium security the following results are presented; an IPP/pm of 0.17 (Doyle et al., 2002) and an IPP/pm of 0.41 (Kennedy et al., 1995). These findings of 'physical violence' in MSUs were thus greater than the current findings within both the high and medium security groups. Logically, this may be because these studies include all patient diagnostic categories (rather than PD alone), and most include female patients as well as males.

This again highlights the difficulty in the comparison of individual studies which have used different methodology, and have only undertaken data collection at one site. The empirical study herein used the same study method and data analysis process across high and medium security sites, and was able to identify statistically different levels of 'physical violence' between groups.

## CONCLUSION

As a result of the above discussion, the thesis question conclusion is that the high security hospital is providing services for more of the 'Complex Cases' (36% vs 15% of the participant cohorts) *and* more of the 'Difficult Cases' (48% vs 24% of the participant cohorts) within the PD patient group, when compared to medium security services. There is some cross-over within these categories, with 15% of the high security participant group being considered both complex and difficult, and 4% having dual status in the medium security group. In addition, utilising Yang et al.'s (2010) classification of PD severity, 82% of the high security group were considered to have 'complex or severe PD', compared to 38% in the MSU group.

These findings have particular import with regard to the high security hospital's position as a provider of care for personality disordered patients in the OPDP pathway, wherein hospitals will continue to care for PD patients with co-morbid severe mental health difficulties. It is perhaps justifiable that current patients in the high security hospital whom fit the descriptions of a 'complex case', a 'difficult case' and a 'severe case' of PD could be said to match this strategic OPDP definition with regard to its references to 'co-morbidity' and 'severity'. As the OPDP strategy also supports the care pathway process (patients placed in healthcare environments,

progressing through a healthcare pathway into the community), the ongoing presence of PD services within MSU healthcare facilities is also justified, in order to provide continuous care during the patient's recovery journey.

**Thesis limitations and further research**

The empirical study endeavoured to recruit the largest participant population possible, but was greatly restricted by the bed numbers (and number of consenting patients) in the included hospital sites.  As a result, the study sample is small (N=59).  This is a limitation to the study, as it impacts the generalizability of the study findings.  It is therefore recommended that this research be extended, with the addition of another high security hospital site (Broadmoor or Ashworth Hospitals) along with their local MSU partners.

A replication of the empirical research study at other hospital sites will also permit the Model of a Complex Case of PD to be assessed. The model can be reviewed for compatibility of findings in other hospitals, and also in judgement of clinical utility at these sites.  Additionally, replication of the study would permit two other study limitations to be addressed.  Firstly, the PCL-R score data lacked utility in this study, as psychology reports were found to frequently report participants as either meeting or not meeting the DSPD PCL-R admission criteria score of 25+, and the original PCL-R score sheets could not be found.  In study replication, it is therefore suggested that a local psychologist be asked to kindly re-calculate actual scores for each participant, where this information is missing.  Secondly, the use of the PAI psychometric was useful with regard to the first empirical research hypothesis, but not for the second, as the mean PAI composites did not statistically differ between participant groups. Whilst this may also be true of any personality assessment tool

(due to the variation in clinical difficulties found in any patient group), it would be useful to additionally employ the use of a second tool (such as the MCMI-III) in order to ascertain if another tool would be more sensitive to between-group differences.

Additional study limitations pertain to the systematic literature review. There was a paucity of prison studies available, meaning that one of the two hypotheses of the study could not be addressed. Whilst the lack of prison data had no direct impact on this thesis overall, it will be important for research processes to be developed and extended within the prison service in the future.

Within this thesis, a systematic literature review focussing on the expression of violence and aggression in PD populations in healthcare environments alone would have been more suitable, in retrospect. This being said, however, it is likely that only one paper would have met the inclusion and quality criteria; that of Daffern et al. (2010). As such, the review outcome would have lacked merit.

The systematic literature review highlighted the heterogeneity of research study methods investigating violence and aggression in healthcare settings, resulting in findings that are not easily compared. A set of recommendations were provided that could be used in future studies to overcome these difficulties. These recommendations were followed in the empirical study herein, and found to be easily implementable. As such, the recommendations bear true import for future research in this field.

# REFERENCES

Allport, G. W. (1937). *Personality: A Psychological Interpretation.* New York: Holt, Rinehart & Winston.

Alterman, A.I., Zaballero, A.R., Lin, M.M., Siddiqui, N., Brown, L.S., Rutherford, M.J., & McDermott, P.A. (1995). Personality Assessment Inventory (PAI) scores of lower socioeconomic African American and Latino methadone maintenance patients. *Assessment, 2,* 91 – 100. doi: 10.1177/ 1073191195002001009

Alwin, N., Blackburn, R., Davidson, K., Holton, M., Logan, C., & Shine, J. (2006). *Understanding Personality Disorder: A Professional Report by the British Psychological Society.* British Psychological Society: Leicester.

American Psychiatric Association. (1987). *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., text rev.). APA: Washington.

American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). Arlington, VA, American Psychiatric Association. doi: 10.1176/appi.books.9780890425596.x00DiagnosticClassification

Andrews, D. A., & Wormith, J. S. (1984). *Criminal sentiments and criminal behavior: A construct validation.* Ottawa, Canada: Ministry of the Solicitor General of Canada. Retrieved from http://www.publicsafety.gc.ca/lbrr/archives/ rc%20451.4.p68%20a5%201984-eng.pdf

Andrews, D.A., Zinger, I., Hodge, R.D., Bonta, J., Gendreau, P., & Cullen, F.T. (1990). Does correctional treatment work? A clinically relevant and

psychologically informed meta-analysis. *Criminology, 28*(3), 369 – 404. doi: 10.1111/j.1745-9125.1990.tb01330.x

Bartholomew, K., & Horowitz, L.M. (1991). Attachment style among adults: A test of a four category model. *Journal of Personality and Social Science*, *61*, 226-244. doi: 10.1037//0022-3514.61.2.226

Boccaccini, M. T., Murrie, D. C., Hawes, S. W., Simpler, A., & Johnson, J. (2010). Predicting recidivism with the Personality Assessment Inventory in a sample of sex offenders screened for civil commitment as sexually violent predators. *Psychological Assessment, 22*, 142–148. doi: 10.1037/a0017818

Boone, D. (1998). Internal consistency reliability of the Personality Assessment Inventory with psychiatric inpatients. *Journal of Clinical Psychology, 54*, 839–843. doi:10.1002/(SICI)1097-4679(199810)54:6%3C839::AID-JCLP12 %3E3.3.CO;2-X

Bowers, L., Stewart, D., Papadopoulos, C., Dack, C., Ross, J., Khanom, H., & Jeffery, D. (2011). *Inpatient violence and aggression: a literature review.* Report from the Conflict and Containment Reduction Research Programme, Institute of Psychiatry and Kings College London. Retrieved from www.kcl.ac.uk/ ioppn/depts/hspr/research/ciemh/mhn/projects/litreview/litrevagg.pdf

Bowlby, J. (1988). *A secure base: Clinical applications of attachment theory*. London: Routledge.

Boyle, G. J. (1996). Psychometric limitations of the Personality Assessment Inventory: A reply to Morey's (1995) rejoinder. *Journal of Psychopathology and Behavioral Assessment*, *18*(2), 197-203.  doi: 10.1007/BF02229118

Boyle, G.J., & Lennon, T. (1994). Examination of the reliability and validity of the Personality Assessment Inventory. *Journal of Psychopathology and Behavioural Assessment, 16,* 173 – 187. doi: 10.1007/BF02229206

Boyle, G. J., Ward, J., & Lennon, T. J. (1994). Personality Assessment Inventory: A confirmatory factor analysis. *Perceptual and Motor Skills, 79*, 1441-1442. doi: 10.2466/pms.1994.79.3f.1441

Briere, J., Kaltman, S., & Green, B. L. (2008). Accumulated childhood trauma and symptom complexity. *Journal of Traumatic Stress*, *21*(2), 223-226. doi: 10.1002/jts.20317

Bucci, P. (2013). WPA partnership with the World Health Organization in the development of the ICD-11 chapter on mental disorders. *World Psychiatry*, *12*(1), 87–88. doi: 10.1002/wps.20024.

Caldwell, A. (1991). Commentary on The Minnesota Multiphasic Personality Inventory-2: A review. *Journal of Counselling & Development, 69*, 568- 569. doi: 10.1002/j.1556-6676.1991.tb02645.x

Carton, G., & Larkin, E. (1991). Reducing violence in a special hospital. *Nursing Standard, 5*(17), 29-31.

CASP UK (1993). *CASP Critical Appraisal Checklists*. Retrieved from http://www.casp-uk.net/

Centre for Mental Health (2014). *Secure mental health services*. Retrieved from www.centreformentalhealth.org.uk/criminal_justice/forensicservices.aspx

Cheung, F. M., Leung, K., Fan, R. M., Song, W. Z., Zhang, J. X., & Zhang, J. P. (1996). Development of the Chinese Personality Assessment Inventory. *Journal of Cross-Cultural Psychology, 27*, 143–164. doi: 10.1177/ 0022022196272003

Cohen, J. (1988). *Statistical power analysis for the behavioural sciences (2nd edition).* New York: Academic Press.

Coid, J., Yang, M., Tyrer, P., Roberts, A., & Ullrich, A. (2006). Prevalence and correlates of personality disorder in Great Britain. *The British Journal of Psychiatry, 188*, 423-431. doi: 10.1192/ bjp.188.5.423

Coldwell, J. B., & Naismith, L. J. (1989). Violent incidents on special care wards in a special hospital. *Medicine, Science and the Law, 29*(2), *116-23*.

Cooke ,D. J., Wozniak, E., & Johnstone, L. (2008). Casting light on prison violence in Scotland: Evaluating the impact of situational risk factors. *Criminal Justice and Behavior*, *35*, 1065 − 1078. doi: 10.1177/0093854808318867

Cornaggia, C.M., Beghi, M., Pavone, F., & Barale, F. (2011). Aggression in psychiatry wards: A systematic review. *Psychiatry Research, 189*, 10–20. doi: 10.1016/j.psychres.2010.12.024

Costa, P. T., & McCrae, R. R. (1985). *The NEO Personality Inventory Manual*. Odessa, FL: Psychological Assessment Resources.

Costa, P. T., & McCrae, R. R. (1992). The five-factor model of personality and its relevance to personality disorders. *Journal of Personality Disorders, 6*, 343– 359. doi: 10.1521/pedi.1992.6.4.343

Costa, P.T., & McCrae, R. R. (1990). Personality Disorders and the Five-Factor Model of Personality. *Journal of Personality Disorders, 4*(4), 362-371. doi: 10.1521/pedi.1990.4.4.362.

Crawford, M. J., Koldobsky, N., Mulder, R., & Tyrer, P. (2011). Classifying personality disorder according to severity. *Journal of Personality Disorders, 25*(3), 321-330. doi: 10.1521/pedi.2011.25.3.321

Daffern, M., Tonkin, M., Howells, K., Krishnan, G., Ijomah, G., & Milton, J. (2010). The impact of interpersonal style and perceived coercion on aggression and self-harm in personality-disordered patients admitted to a secure psychiatric hospital. *Journal of Forensic Psychiatry & Psychology, 21*(3), 426-445. doi: 10.1080/14789940903505951

Department of Health and Ministry of Justice. (2011). *Consultation on the Offender Personality Disorder Pathway Implementation Plan*. London: Department of Health. Retrieved from https://www.rcpsych.ac.uk/pdf/carepathway.pdf

Digman, J.M. (1990). Personality Structure: Emergence of the Five-Factor Model. *Annual Review of Psychology, 41,* 417-440. doi: 10.1146/annurev.ps. 41.020190.002221.

Dingfelder, S. F (2004). Treatment for the 'untreatable'. *Monitor on Psychology, 35*(3), 46-48.

Dolan, M., & Blackburn, R. (2006). Interpersonal factors as predictors of disciplinary infractions in incarcerated personality disordered offenders. *Personality and Individual Differences, 40,* 897-907. doi: 10.1016/j.paid.2005.10.003

Douglas, K. S., Hart, S. D., & Kropp, P. R. (2001). Validity of the Personality Assessment Inventory for forensic assessments. *International Journal of Offender Therapy and Comparative Criminology, 45*, 183–197. doi: 10.1177/0306624X01452005

Doyle, M., Dolan, M.C., & McGovern, J. (2002). The validity of North American risk assessment tools in predicting inpatient violent behaviour in England. *Legal and Criminological Psychology, 7*, 141-154. doi: 10.1348/1355325 02760274756

Duckworth, J. C. (1991). The Minnesota Multiphasic Personality lnventory-2: A review. *Journal of Counselling and Development, 69*, 564-567. doi: 10.1002/j.1556-6676.1991.tb02644.x

Duggan, C., Mason, L., Banerjee, P., & Milton, J. (2007). Value of standard personality assessments in informing clinical decision-making in a medium secure unit. *British Journal of Psychiatry, 190*, s15-s19. doi: 10.1192/ bjp.190.5.s15

Eaton, S., Ghannam, M., & Hunt, N. (2000). Prediction of violence on a psychiatric intensive care unit. *Medicine, Science and the Law, 40*(2), 143-146. doi: 10.1177/002580240004000210

Egger, M., Schneider, M., & Smith, G.D. (1998). Meta-analysis spurious precision? Meta-analysis of observational studies. *British Medical Journal, 316*, 140–144. doi: 10.1136/bmj.316.7125.140

Evardone, M. (2006). *Sex differences in anxiety: Testing a prenatal androgen hypothesis using behavioural and physiological markers.* Unpublished

Master's thesis, Texas A&M University, College Station. Retrieved from http://repository.tamu.edu/bitstream/handle/1969.1/5793/etd-tamu-2006A-PSYC-Evardone.pdf?sequence=1

Evershed, S. (2011). Treatment of personality disorder: Skills-based therapies. *Advances in Psychiatric Treatment, 17*, 206-213. doi: 10.1192/apt.bp. 109.006973

Eysenck, H., & Eysenck, S. (1969). *Personality Structure and Measurement*. London: Routledge.

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*, 175-191. doi: 10.3758/ BF03193146

Follette, V.M., Polusny, M.A., Bechtle, A.E., & Naugle, A.E. (1996). Cumulative trauma: The impact of child sexual abuse, adult sexual assault, and spouse abuse. *Journal of Traumatic Stress, 9*(1), 25-35. doi: 10.1007/BF02116831

Fontaine, R.G. (2007). Disentangling the psychology and law of instrumental and reactive subtypes of aggression. *Psychology, Public Policy, and Law, 13*(2), 143–165. doi: 10.1037/1076-8971.13.2.143

Gadon, L., Johnstone, L., & Cooke, D. (2006). Situational variables and institutional violence: A systematic review of the literature. *Clinical Psychology Review, 26*, 515–534. doi: 10.1016/j.cpr.2006.02.002

Gilbert, F., & Daffern, M. (2011). Illuminating the relationship between personality disorder and violence: Contributions of the General Aggression Model. *Psychology of Violence, 1*, 230-244. doi: 10.1037/a0024089

Grant, B. F., Stinson, F. S., Dawson, D. A., Chou, S. P., Ruan, W. J., & Pickering, R. P. (2004). Co-occurrence of 12-month alcohol and drug use disorders and personality disorders in the United States: Results from the national epidemiologic survey on alcohol and related conditions. *Archives of General Psychiatry, 61*(4), 361-368. doi: 10.1001/archpsyc.61.4.361

Gray, N. S., Hill, C., McGleish, A., Timmons, D., MacCulloch, M. J., & Snowden, R. J. (2003). Prediction of violence and self-harm in mentally disordered offenders: A prospective study of the efficacy of the HCR-20, PCL-R, and psychiatric symptomatology. *Journal of Consulting and Clinical Psychology, 71*(3), 443–451. doi: 10.1037/0022-006X.71.3.443

Grevatt, M., Thomas-Peter, B., & Hughes, G. (2004). Violence, mental disorder and risk assessment: Can structured clinical assessments predict the short-term risk of inpatient violence? *Journal of Forensic Psychiatry and Psychology, 15*(2), 278–292. doi:10.1080/1478994032000199095

Groves, J. A., & Engel, R. R. (2007). The German adaptation and standardization of the Personality Assessment Inventory (PAI). *Journal of Personality Assessment, 88*, 49–56. doi: 10.1207/s15327752jpa8801_07

Gudjonsson, G., Rabe-Hesketh, S., & Wilson, C. (1999). Violent incidents on a medium secure unit over a 17-year period. *Journal of Forensic Psychiatry, 10*(2), 249-263. doi: 10.1080/09585189908403679

Hallgren, K. A. (2012). Computing inter-rater reliability for observational data: An overview and tutorial. *Tutorials in Quantitative Methods for Psychology*, *8*(1), 23–34.

Hare, R. (2003). *The Psychopathy Checklist–Revised (2nd ed.).* Toronto, Ontario, Canada: Multi-Health.

Hathaway, S. R., & McKinley, J. C. (1940). A multiphasic personality schedule (Minnesota): I. Construction of the schedule. *Journal of Psychology, 10*, 249-254. doi: 10.1080/00223980.1940.9917000

Horowitz, L.M., Alden, L.E., Wiggins, J.S., & Pincus, A.L. (2000). *Inventory of Interpersonal Problems Manual.* The Psychological Corporation.

Howard, R., Khalifa, N., Duggan, C., & Lumsden, J. (2012). Are patients deemed 'dangerous and severely personality disordered' different from other personality disordered patients detained in forensic settings? *Criminal Behaviour and Mental Health, 22*(1), 65-78. doi: 10.1002/cbm.827

Howard, R.C. (2011). The quest for excitement: a missing link between personality disorder and violence? *The Journal of Forensic Psychiatry & Psychology, 22*(5) 692-705. doi: 10.1080/14789949.2011.617540

IBM Corp. (2013). *IBM SPSS Statistics for Windows, Version 22.0.* Armonk, NY: IBM Corp.

Joseph, N., & Benefield, N. (2012). A joint offender personality disorder pathway strategy: An outline summary. *Criminal Behaviour and Mental Health, 22,* 210 – 217. doi: 10.1002/cbm.1835

Karlin, B. E., Creech, S. K., Grimes, J. S., Clark, T. S., Meagher, M. W. & Morey, L. C. (2005). The Personality Assessment Inventory with chronic pain patients: Psychometric properties and clinical utility. *Journal of Clinical Psychology, 61*(12), 1571−1585. doi: 10.1002/jclp.20209

Kennedy, J., Harrison, J., Hillis, T., & Bluglass, R. (1995). Analysis of violent incidents in a regional secure unit. *Medicine, Science and the Law, 35*(3), *255-60.* doi: 10.1177/002580249503500314

Kline, P. (1999). *The handbook of psychological testing (2nd ed.).* London: Routledge

Kurtz, J.E., & Morey, L.C. (2001). Use of structured self-report assessment to diagnose borderline personality disorder during major depressive episodes. *Assessment, 8*, 291-300. doi: 10.1177/107319110100800305

Larkin, E., Murtagh, S., & Jones, S. (1988). A preliminary study of violent incidents in a Special Hospital (Rampton). *British Journal of Psychiatry, 153,* 226-231. doi: 10.1192/bjp.153.2.226

Lindman, H. R. (1974). *Analysis of variance in complex experimental designs.* San Francisco: W. H. Freeman & Co.

Livesley, J. (2008). Integrated therapy for complex cases of Personality Disorder. *Journal of Clinical Psychology, 64*(2), 207—221. doi: 10.1002/jclp.20453

Logan, C., & Johnstone, L. (2010). Personality disorder and violence: Making the link through risk formulation. *Journal of Personality Disorders, 24*(5), 610-633. doi: 10.1521/pedi.2010.24.5.610

Lyddon, W. J., & Sherry, A. (2001). Developmental personality styles: An attachment theory conceptualization of personality disorders. *Journal of Counselling & Development, 79*, 405–414. doi: 10.1002/j.1556-6676.2001. tb01987.x

Markowitz, F.E. (2003). Socioeconomic disadvantage and violence, recent research on culture and neighborhood control as explanatory mechanisms. *Aggression and Violent Behavior, 8*, 145-154. doi: 10.1016/S1359-1789(01)00059-3

Millon, T. (1987). *Manual for the Millon Clinical Multiaxial Inventory-II (2nd ed.).* Minneapolis MN: National Computer Systems.

Millon, T. (1994). T*he Millon Clinical Multiaxial Inventory-III Manual.* Minneapolis, MN: National Computer Systems.

Ministry of Justice. (2010). *Safety in custody statistics 2010.* Retrieved from http://www.justice.gov.uk/statistics/prisons-and-probation/safety-in-custody

Morey, L.C. (1991). *The Personality Assessment Inventory professional manual.* Odessa, FL: Psychological Assessment Resources.

Morey, L.C. (2000). The Challenge of Construct Validity in the Assessment of Psychopathology. In Goffin, R. D., & Helmes, E. (Eds.), *Problems and Solutions in Human Assessment: Honoring Douglas N Jackson at Seventy*. Boston: Kluwer. doi: 10.1007/978-1-4615-4397-8_7

Morey, L.C. (2007). *The Personality Assessment Inventory professional manual* (2nd Edition). Lutz, FL: Psychological Assessment Resources.

Morey, L.C., & Quigley, B. D. (2002). The use of the Personality Assessment Inventory (PAI) in assessing offenders. *International Journal of Offender*

*Therapy and Comparative Criminology*, *46*(3), 333-349.  doi: 10.1177/ 0306624X02463007

Mulder, R. T., & Joyce, P. R. (1997). Temperament and the structure of personality disorder symptoms. *Psychological Medicine, 27*(1), 99-106.  doi: 10.1017/ S0033291796004114

Muthukumaraswamy, A., Beer, M. D., & Ratnajothy, K. (2008). Aggression patterns and clinical predictors of inpatient aggression in a mental health low secure unit population. *Journal of Psychiatric Intensive Care, 4*, 9-16. doi: 10.1017/S1742646408001283

Myers, R. (1990). Classical and Modern Regression with Applications (2nd edition). Boston, MA: Duxbury.

Newberry, M., & Shuker, R. (2012). Personality Assessment Inventory (PAI) profiles of offenders and their relationship to institutional misconduct and risk of reconviction. *Journal of Personality Assessment, 94*(6), 586–592. doi: 10.1080/00223891.2012.669220

NHS Protect. (2012). *Guidance on data requirements for the annual violence against staff (VAS) collection exercise*.  Retrieved from http://www.nhsbsa.nhs.uk

Novaco, R. W. (2003). *The Novaco Anger Scale and Provocation Inventory Manual*. Los Angeles, CA: Western Psychological Services.

Office for National Statistics. (2014).  *Focus on: Violent Crime and Sexual Offences, 2012/13*.  Retrieved from: http://www.ons.gov.uk/ons/dcp171776_352364.pdf.

O'Loughlan, A. (2014). The offender personality disorder pathway: Expansion in the face of failure? *The Howard Journal, 53*(2), 173 – 192. doi: 10.1111/ hojo.12058

Papadopoulos, C., Ross, J., Stewart, D., Dack, C., James, K., & Bowers, L. (2012). The antecedents of violence and aggression within psychiatric in-patient settings. *Acta Psychiatrica Scandinavica, 125*, 425-439. doi: 10.1111/ j.1600-0447.2012.01827.x

Pauker, S. G., & Kassirer, J. P. (1980). The threshold approach to clinical decision making. *The New England Journal of Medicine*, *302*(20), 1109-1117. doi: 10.1056/NEJM198005153022003

Pereira, S., Dawson, P., & Sarsam, M. (2006a). The national survey of PICU and low secure services: 1. Patient characteristics. *Journal of Psychiatric Intensive Care, 2*, 7-12. doi: 10.1017/S1742646406000227

Pereira, S., Dawson, P., & Sarsam, M. (2006b). The national survey of PICU and low secure services: 2. Unit characteristics. *Journal of Psychiatric Intensive Care*, *2*, 13-19. doi: 10.1017/S1742646406000239

Perneger, T. V. (1998). What's wrong with Bonferroni adjustments. *British Medical Journal*, *316*(7139), 1236–1238. doi: 10.1136/bmj.316.7139.1236

Rielage, J.K. (2005). Assessing the association between veterans' personality traits, suicidal ideation, and suicide risk with the PAI and the MCMI-II (Doctoral dissertation, Southern Illinois University, 2005). *Dissertation Abstracts International, 66,* 572.

Rix, G., & Seymour, D. (1988). Violent incidents on a Regional Secure Unit. *Journal of Advanced Nursing, 13,* 746-751. doi: 10.1111/j.1365-2648.1988. tb00565.x

Rogers, P., Watt, A., Gray, N. S., MacCulloch, M., & Gournay, K. (2002). Content of command hallucinations predicts self-harm but not violence in a medium secure unit. *Journal of Forensic Psychiatry, 13*(2)*,* 251-262. doi: 10.1080/09585180210150096

Rogers, R., Flores, J., Ustad, K., & Sewell, K. W. (1995). Initial validation of the Personality Assessment Inventory-Spanish version with clients from Mexican American communities. *Journal of Personality Assessment, 64*(2), 340-348. doi: 10.1207/s15327752jpa6402_12

Rogers, R., Gillis, J.R., Turner, R.E., & Frise-Smith, T. (1990). The clinical presentation of command hallucinations in a forensic population. *American Journal of Psychiatry, 147,* 1304-1307.

Romain, P.M. (2001). Use of the Personality Assessment Inventory with an ethnically diverse sample of psychiatric outpatients. (Doctoral dissertation, Pepperdine University). *Dissertation Abstracts International, 61,* 6147.

Ruscio, A. M., & Holohan, D. R. (2006). Applying empirically supported treatments to complex cases: Ethical, empirical, and practical considerations. *Clinical Psychology: Science and Practice, 13*(2), 146-162. doi: 10.1111/j.1468-2850.2006.00017.x

Rutherford, M., & Duggan, S. (2008). Forensic mental health services: facts and figures on current provision. *The British Journal of Forensic Practice*, *10*, 4-10. doi: 10.1108/14636646200800020

Salekin, R. T., Rogers, R., Ustad, K. L., & Sewell, K.W. (1998). Psychopathy and recidivism among female inmates. *Law and Human Behavior*, *22*, 109-127. doi: 10.1023/A:1025780806538

Sattar, G. (2004). *Prisoner-on-prisoner homicide in England and Wales between 1990 and 2001*. Available as Online Report No. 46/04 (RDS OLR 46/04) on the Home Office website, http://www.homeoffice.gov.uk/.

Saulsman, L. M., & Page, A.C. (2004). The five-factor model and personality disorder empirical literature: A meta-analytic review. *Clinical Psychology Review, 23,* 1055–1085. doi: 10.1016/j.cpr.2002.09.001

Schinka, J.A. (1995). Personality Assessment Inventory scale characteristics and factor structure in the assessment of alcohol dependency. *Journal of Personality Assessment, 64*, 101–111. doi: 10.1207/s15327752jpa6401_6

Shepherd, M., & Lavender, T. (1999). Putting aggression into context: An investigation into contextual factors influencing the rate of aggressive incidents in a psychiatric hospital. *Journal of Mental Health, 8*(2), 159-170. doi: 10.1080/09638239917535

Sherbourne, C., Wells, D., Hays, K.B., Rogers, R.D., Rogers, W., Burnam, A., & Judd, L.L. (1994). Subthreshold depression and depressive disorder: Clinical characteristics of general medical and mental health specialty outpatients. *American Journal of Psychiatry, 151*(12), 1777-1784. doi:10.1176/ajp. 151.12.1777

Shields, I.W., & Simourd, D.J. (1991). Predicting predatory behavior in a population of incarcerated young offenders. *Criminal Justice and Behavior, 18*(2), 180-194. doi: 10.1177/0093854891018002006

Simourd, D.J., & Van De Ven, J. (1999). Assessment of criminal attitudes criterion-related validity of the criminal sentiments scale-modified and ride in delinquency scale. *Criminal Justice and Behavior, 26*(1), 90-106. doi: 10.1177/0093854899026001005.

Sirdifield, C., Gojkovic, D., Brooker, C., & Ferriter, M. (2009). A systematic review of research on the epidemiology of mental health disorders in prison populations: A summary of findings. *The Journal of Forensic Psychiatry & Psychology*, *20*(S1), S78–S101. doi: 10.1080/14789940802594445

Skopp, N. A., Edens, J. F., & Ruiz, M. A. (2007). Risk factors for institutional misconduct among incarcerated women: An examination of the criterion related validity of the Personality Assessment Inventory. *Journal of Personality Assessment, 88*, 106–117. doi: 10.1207/s15327752jpa8801_14

Srivastava, S., John, O. P., Gosling, S. D., & Potter, J. (2003). Development of personality in early and middle adulthood: Set like plaster or persistent change? *Journal of Personality and Social Psychology, 84*(5), 1041 – 1053. doi: 10.1037/0022-3514.84.5.1041

Tarrier, N., Wells, A., & Haddock, G. (Eds) (1998). *Treating Complex Cases: The Cognitive Behavioural Therapy Approach*. Wiley-Blackwell.

Tasca, G.A., Wood, J., Demidenko, N., & Bissada, H. (2002). Using the PAI in an eating disordered population: Scale characteristics and differences among

diagnostic groups. *Journal of Personality Assessment, 79*, 337-356. doi: 10.1207/S15327752JPA7902_14

Tetley, A.C., Hogue, T.E., & Evershed, S. (2010). Predictors of progression from high to medium secure services for personality disordered patients. *Personality and Mental Health, 4*(2), 108-120. doi: 10.1002/pmh.103

Thomas, S.D., Dolan, M., Johnston, S., Middleton, H., Harty, M.A., Carlisle, J., … Jones, P. (2004). Defining the needs of patients with intellectual disabilities in the high security psychiatric hospitals in England. *Journal of Intellectual Disability Research, 48*(6), 603-610. doi: 10.1111/j.1365-2788.2004.00629.x

Torpy, D., & Hall, M. (1993). Violent incidents in a Secure Unit. *Journal of Forensic Psychiatry, 4*(3), 517-544. doi: 10.1080/09585189308408219

Tyrer, P., & Ferguson, B. (2000). Classification of personality disorder. In P. Tyrer (Ed.), *Personality Disorders: Diagnosis, Management and Course* (second edition, pp.13-43). Oxford: Butterworth Heinemann.

Tyrer, P., & Johnson, T. (1996). Establishing the severity of personality disorder. *American Journal of Psychiatry, 153*(12), 1593-1597.

Tyrer, P., Crawford, M., Sanatinia, R., Tyrer, H., Cooper, S., Muller-Pollard, C., & Weich, S. (2014). Preliminary studies of the ICD-11 classification of personality disorder in practice. *Personality and Mental Health, 8,* 254–263. doi: 10.1002/pmh.1275

Tyrer, P., Mulder, R., Crawford, M., Newton-Howes, G., Simonsen, E., Ndetei, D., & Barrett, B. (2010). Personality disorder: A new global perspective. *World Psychiatry*, *9*(1), 56–60. doi: 10.1002/j.2051-5545.2010.tb00270.x

Uppal, G., & McMurran, M. (2009). Recorded incidents in a high-secure hospital: A descriptive analysis. *Criminal Behaviour & Mental Health, 19,* 265-276. doi: 10.1002/cbm.741

Veltri, C.O.C., Williams, J.E., & Braxton, L. (2004). *MMPI-2 RC scales and the Personality Assessment Inventory in a veteran sample.* Poster presentation presented at the meeting of the American Psychological Society, Chicago, IL.

Walker, Z., & Seifert, R. (1994*).* Violent incidents in a psychiatric intensive care unit. *British Journal of Psychiatry, 164,* 826-828. doi: 10.1192/bjp.164.6.826

Walters, G. D., & Duncan, S. A. (2005). Use of the PCL-R and PAI to predict release outcome in inmates undergoing forensic evaluation. *The Journal of Forensic Psychiatry and Psychology, 16*, 459 – 476. doi: 10.1080/ 14789940500034405

Wang, E.W., & Diamond, P. M. (1999). Empirically identifying factors related to violence risk in corrections. *Behavioral Sciences and the Law*, *17*, 377-389. doi:10.1002/(SICI)1099-0798(199907/09)17:3%3C377::AID-BSL351%3E3.3. CO;2-D

Ward, T. (2002). Good lives and the rehabilitation of sexual offenders: Promises and problems. *Aggression and Violent Behavior, 7*, 513-528. doi: 10.1016/S1359-1789(01)00076-3

Webster, C. D., Douglas, K. S., Eaves, D., & Hart, S. D. (1997). *HCR–20: Assessing Risk for Violence (Version 2).* Simon Fraser University.

White, J. (1993). *The Personality Assessment Inventory in a forensic setting*. Paper presented at the 28th Annual Convention or the American Psychological Association, Los Angeles.

Wise, E.A., Walfish, S., & Streiner, D. (2010). A review and comparison of the reliabilities of the MMPI-2, MCMI-III and PAI presented in their respective test manuals. *Measurement and Evaluation in Counseling and Development, 42*(4), 246 - 254. doi: 10.1177/0748175609354594

Wong, S. C. P. (1999). *Violence reduction program: Program management manual*. Unpublished manuscript (held by hospital psychology department).

World Health Organisation. (1992). *International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10).* Geneva: WHO.

Yakeley, J., & Williams, A. (2014). Antisocial personality disorder: New directions. *Advances in Psychiatric Treatment, 20*, 132-143. doi: 10.1192/apt.bp.113. 011205

Yang, M., Coid, J., & Tyrer, P. (2010). Personality pathology recorded by severity: National survey. *The British Journal of Psychiatry, 197*, 193-199. doi: 10.1192/bjp.bp.110.078956.

Yu, R., Geddes J.R., & Fazel, S. (2012). Personality disorders, violence, and antisocial behavior: A systematic review and meta-regression analysis. *Journal of Personality Disorders, 26*, 775-92. doi: 10.1521/pedi.2012.26.5.775

Zimet, G. D., Dahlem, N. W., Zimet, S. G., &. Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment, 52,* 30-41. doi: 10.1207/s15327752jpa5201_2

# APPENDIX 1

## Systematic Literature Review:  Searches and Search Terms

The searches were conducted between 07th July and 03rd August 2012. Many of the search facilities allowed the search parameters to be set to 1983 and beyond, however some data sets were either limited to more recent documents, or had no such time-setting facility (see individual items below for full details).

The search terms set out below resulted in the following number of 'hits':
1) PsycINFO (1983 to July 07th 2012)                                              = 8079
2) MEDLINE (1983 to July 07th 2012)                                            = 4117
3) Web of Science (S, SS and CP Citation Indices;1983 to July 07th 2012) =18753
4) NCJRS (1983 to July 27th 2012)                                                = 500
5) Cochrane library (1983 to July 27th 2012)                                   = 541
6) Campbell library (2002 to July 27th 2012)                                   = 77
7) NHS Evidence (August 03rd 2012)                                             = 386
8) Government Publications Office (1994 to August 03rd 2012)         = 992
9) EThOS (August 03rd 2012)                                                        = 40


## PsycINFO, MEDLINE, Web of Science

Identical search terms were used on the PsycINFO (searching title, abstract, key concept), MEDLINE (searching title, abstract, keyword heading) and Web of Science (Science, Social Sciences and Conference Proceedings Citation Indices; searching topic which in turns incorporates title, abstract, author keywords, and keywords plus into the search) electronic databases.  These search terms were as follows:

(ABH*) OR (abuse*) OR (abusive*) OR (aggressi*) OR (assault*) OR (attack*) OR (blade*) OR (bodily harm) OR (conflict*) OR (cruel*) OR (danger*) OR (destructi*) OR (fight*) OR (firearm*) OR (GBH*) OR (homicid*) OR (hostag*) OR (kill*) OR (manslaughter*) OR (murder*) OR (offence*) OR (offense*) OR (rape) OR (riot*) OR (unlawful*) OR (violation*) OR (violen*) OR (weapon*)
        - *AND* -
(Ashworth) OR (Broadmoor) OR (custodial) OR (gaol*) OR (high security) OR (high secure) OR (jail*) OR (low security) OR (low secure) OR (medium security) OR (medium secure) OR (Moss Side) OR (Park Lane) OR (MSU*) OR (prison*) OR (Rampton) OR (RSU*) OR (secure unit*) OR (WEMSS) OR (psychiat* hospital*) OR (psychiat* ward*) OR (mental health hospital*) OR (mental health ward*) OR (mental health care hospital*) OR (mental health care ward*) OR (secure hospital*) OR (secure ward*) OR (forensic hospital*) OR (forensic ward*) OR (special hospital*)


## NCJRS Abstracts Database

The 'general search' facility searches for terms anywhere in the database record, including titles, abstracts, annotations, subject headings and abstracts.  Documents are returned based on the presence, frequency, location, proximity, and density of the search terms entered.  The display is limited to the 500 most relevant records,

necessitating the use of highly specific search parameters.  The search terms used on the American NCJRS electronic database were as follows:

violen*, aggressi*, hospital*, prison*, UK, United Kingdom, England, Wales, Britain.


## Cochrane & Campbell Libraries

The Cochrane Library search was conducted in the 'title, abstract or keywords' function, and six data faculties were searched; the database of systematic reviews, the database of other reviews, economic evaluations, trials, methods studies and technology assessments.

The Campbell Library limits searches to 2002 and beyond.  The search was conducted in the 'all text' function.

The following search terms were used for both searches:
(violen* OR aggressi*) AND (Hospital* OR Prison*)


## NHS Evidence

An NHS Evidence search was conducted, which is general search separate from the journals and databases function also available on the NHS Evidence website.  The search was refined to examine 'grey literature' only, thereby excluding materials that would otherwise have been gained from earlier bibliographic database searches.

This search was repeated as a database search within the journals and databases function, selecting only the BNI (British Nursing Index), Health Business Elite and HMIC (Health Management Information Consortium) databases, to avoid repeated searching of PsycINFO etc.  The second search was time limited to 1983 and beyond, which was not possible with the first search.

The search terms used were as follows:
(violence or aggression) AND (prison or hospital)


## Government Publications Office

The Government Publications Office search involved the searching of two websites; official-documents.co.uk and justice.gov.uk.

Searches on the former were run twice, for the time periods 1994-2005 and 2005-present.  Earlier reports were not accessible.  The limited search capabilities of the site meant that the following four searches were run separately for each of the two time periods.
- hospital and violence
- hospital and aggression
- prison and violence
- prison and aggression

Searches on the latter website were run twice, once in the 'publications' function and once in the 'statistics' function. Each of the following search terms were input individually, with 'hits' examined; (violence) and (aggression).

## EThOS: Electronic Theses Online Service

With limited searching capabilities, maximised results were found using the search terms:
(aggressi* or violen*) and (Prison* or Hospital*)

# APPENDIX 2

## Systematic Literature Review:  Inclusion and exclusion criteria (PICO / PECO)

|  | *Inclusion* | *Exclusion* |
|---|---|---|
| *Population* | Inpatients; prisoners<br><br>Adults; young offenders<br><br>Males and females<br><br>General population, MI and PD patients, all offence types<br><br>Populations from England & Wales | Outpatients; probationers<br><br>Children<br><br>LD units;  Elderly care units<br><br>LD offenders / patients<br>Dementia patients<br><br>All other countries (with different legal systems) |
| *Exposure* | Low, medium, high security mental health facilities.  Psychiatric hospitals with mixed ward types.  DSPD and PICU units.<br><br>Cat A, B, C, D, YOI or otherwise categorised prisons<br><br>Publically or privately owned facilities | Acute health facilities<br><br>Psychiatric hospitals without locked wards<br><br>Psychiatric hospitals where ward doors are locked only during incidents eg. prevention of absconding |
| *Comparator* | Any distinct group as permitted within the defined inclusion populations (see above), or no specified comparator (eg. single institution studies or parts of studies). | Data from excluded populations (as above) will not be evaluated or synthesised. |
| *Outcomes* | Offending behaviour on official records (inc. police records, convictions)<br><br>Formal records of violent, aggressive, abusive, sexually-inappropriate incidents (incident reports, file records etc)<br><br>Injury reports – staff / peer | Violence/aggression reported in Staff surveys<br>Violent/aggression reported in Patient / Prisoner surveys<br>Restraint-use reports<br>Rapid tranquilisation use reports<br>Self-injurious behaviour reports |
| *Study design* | Observational Studies:<br>Cohort, Case Control and Case Series Studies<br><br>Primary studies dated 1983 onwards (date of Mental Health Act).<br><br>NB. This includes Official Releases (Government reports etc) that contain primary level data. | Editorials, reviews, opinion papers, commentaries and book chapters.<br><br><br>Secondary research |
| *Language* | Material published in English & Welsh only, matching the inclusion populations (as above). | All other languages |

# Inclusion/Exclusion study eligibility assessment form

**Study identifier:**                            **Final decision:** Include/Exclude

| Type and language of study | | |
|---|---|---|
| Q1. Is the study design: <br><br> a) Cohort <br> b) Case Control <br> c) Case Series | Yes / No | **If no exclude** |
| Q2. Is the study reported in English or Welsh? | Yes / No | **If no exclude** |

| Participants in the study | | |
|---|---|---|
| Q3. Were the participants male/female adults aged 18 years old or over OR those categorised as 'young offenders' / healthcare equivalent? | Yes / No | **If no exclude** |
| Q4. Were the participants inpatient or prisoner populations from England & Wales? | Yes / No | **If no exclude** |
| Q5. Were *all* of the participants either Learning Disabled, suffering from dementia, or residing in LD or Elderly Care facilities? | Yes / No | **If YES exclude** |

| Exposures in the study | | |
|---|---|---|
| Q6. Were the participants resident in publically or privately managed: <br> a) Low, medium, high security MH facilities. <br> b) Psychiatric hospitals with mixed ward types <br> c) DSPD units <br> d) PICU units <br> e) Cat A, B, C, D or otherwise termed prisons | Yes / No | **If no exclude** |

| Comparators in the study | | |
|---|---|---|
| Q7. Where a comparator group is included: <br><br> Was the comparator group one of the included participant groups as defined above? | Yes / No | **If YES include** |
| *If not*, is data pertaining to the target participant groups separable from the other data? | Yes / No | **If no exclude** |

| Outcomes in the study | | |
|---|---|---|
| Q8. Were at least one of the following outcomes measured:<br>  a) Offending behaviour on official records (eg. police records, convictions)<br>  b) Formal records of violent, aggressive, abusive, sexually-inappropriate incidents (eg. incident reports, file records)<br>  c) Injury reports – staff / peer | Yes / No | **If no exclude** |
| **Comments:** | | |

# APPENDIX 3

## Quality Assessment Forms (adapted from CASP)

### (A) Form for Cohort Studies

**Study identifier:**                        **Final decision:** Pass / Fail

| Study Validity Screening | Y | P | N | U | Comments |
|---|---|---|---|---|---|
| Did the study address a clearly focused issue? In terms of: <br> - the study aim <br> - the populations / comparators studied <br> - the situational variables studied <br> - the outcomes considered | | | | | |
| Did the authors use an appropriate <u>method</u> to answer their question? <br> - was a cohort study appropriate? <br><br> - did the authors consider /present a <u>denominator</u> for their results? *[eg. number of violent incidents per capita? No. of beds / patients in the sample?]* | | | | | |

**if YES on both counts, continue…**

| Quality Criteria | Y | P | N | U* | Comments |
|---|---|---|---|---|---|
| *Inclusion & Selection bias* | | | | | |
| Were the participants representative of the overall source population? *eg. were whole populations studied, or random/ matched samples drawn from the population(s).* | | | | | |
| Were the cohort populations similar in terms of demographic/ background factors? | | | | | |
| Were the inclusion/exclusion criteria for participants explicit, and was there an established reliable system for selecting the cases? | | | | | |
| Are there a sufficient number of participants in the study to make the results meaningful? | | | | | |
| If selected participants were special in some way *(eg. drawn from a 'rehab' or 'admission' ward only)*, was this appropriate, explained and its relevance reflected upon? | | | | | |

| Quality Criteria | Y | P | N | U* | Comments |
|---|---|---|---|---|---|
| If any of an institution's populations were excluded from the study *(eg. Segregation Unit or ICU ward)*, was there acceptable reason for doing so, and was the impact of this exclusion reflected upon? | | | | | |
| Was there any advance control/adjustment for the effects of confounding population factors? | | | | | |
| Was the recruitment response rate low? If so, did the authors consider why? | | | | | |
| If participants prospectively or retrospectively consented to participate in the study, *were those who participated the same as those who did not?* | | | | | |
| *Performance bias* | | | | | |
| Were the participants blind to the outcome measure and/or the study? | | | | | |
| If a multiple site study, were the assessors blind to participants' exposure status? | | | | | |
| *Measurement and Detection bias* | | | | | |
| Were classifications of 'aggression', 'violence', 'abuse' etc pre-determined and explained? | | | | | |
| Where applicable, were measures of 'severity' pre-determined and explained? | | | | | |
| Was the record keeping handled by appropriate personnel? | | | | | |
| Do the selected measures / records of the violence/aggression/abuse etc reflect <u>a true measure</u> of the target behaviours? | | | | | |
| Where subjective measures were used, was there more than one person applying ratings, or were subsequent validation checks conducted? | | | | | |
| Do the selected measures / records of the violence/aggression/abuse etc reflect <u>a complete and reliable record</u> of the behaviours under surveillance? | | | | | |
| Were the measures / records of the violence/aggression/abuse etc comparable to those used in other studies? | | | | | |
| Were the same measures / records of the violence/aggression/abuse etc used across all participants / groups / populations? | | | | | |
| Were the records subject to *validation* after-the-fact? (eg. violence categorisation error checks) | | | | | |

| Quality Criteria | Y | P | N | U* | Comments |
|---|---|---|---|---|---|
| Was the *study period sufficiently long* to minimise impact of outlying periods (eg. increased disruptive behaviour at a time such as Christmas)? | | | | | |
| *Attrition bias* | | | | | |
| If data were collected over a period of time (eg 6 months) or at fixed intervals, were patient/prisoner transfers and study drop-outs accounted for? | | | | | |
| Were the participant attrition rates (due to patient/ prisoner transfers, drop-outs etc) similar across cohorts? | | | | | |
| *The results* | | | | | |
| Are the results believable? | | | | | |
| Were the measures / records of the violence/ aggression/abuse etc presented in a suitable way? (eg. number of each subcategory per ward). | | | | | |
| Have the authors identified all important confounding factors? | | | | | |
| Have confounding factors been accounted for in the analysis? | | | | | |
| If there was missing data, was there any statistical attempt to deal with it? | | | | | |
| Was the statistical analysis appropriate? | | | | | |
| Can the results be applied to other similar populations? (*generalisability*) | | | | | |

**TOTAL SCORE**  _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

**TOTAL QUALITY   PERCENTAGE**    _ _ _ _ _ _ _

**Scoring System:**     1 points for every high quality 'Yes' (Y) response
0.5 point for every 'Partial' (P) or 'Unclear' (U) response
0 points for every low quality 'No' (N) response

**\*Unclear (U)** classifications may be further investigated when studies are potentially of sufficiently high quality to progress to the next stage.  Where studies fail to score sufficiently highly on the other questions, this further investigation will not take place.  The key method of investigation will be contacting the study authors by email.  The study may later be excluded, if no response is received.

## (B) Form for Case Control Studies

**Study identifier:**                                        **Final decision:** Pass / Fail

| Study Validity Screening | Y | P | N | U | Comments |
|---|---|---|---|---|---|
| Did the study address a clearly focused issue? In terms of: <br> - the study aim <br> - the populations / comparators studied <br> - the situational variables studied <br> - the outcomes considered | | | | | |
| Did the authors use an appropriate <u>method</u> to answer their question? <br> - was a case control study appropriate? <br><br> - did the authors consider /present a <u>denominator</u> for their results? *[eg. number of violent incidents per capita? No. of beds / patients in the sample?]* | | | | | |

**if YES on both counts, continue…**

| Quality Criteria | Y | P | N | U* | Comments |
|---|---|---|---|---|---|
| ***Inclusion & Selection bias*** | | | | | |
| Were the participants representative of the overall source population? *eg. was the whole population studied, or random/ matched samples drawn from the population.* | | | | | |
| Were the inclusion/exclusion criteria for participants explicit, and was there an established reliable system for defining the cases and controls? | | | | | |
| Are there a sufficient number of cases and controls in the study to make the results meaningful? | | | | | |
| If selected participants were special in some way *(eg. drawn from a 'rehab' or 'admission' ward only)*, was this appropriate, explained and its relevance reflected upon? | | | | | |
| If any of an institution's populations were excluded from the study *(eg. Segregation Unit or ICU ward)*, was there acceptable reason for doing so, and was the impact of this exclusion reflected upon? | | | | | |

| Quality Criteria | Y | P | N | U* | Comments |
|---|---|---|---|---|---|
| Was there any advance control/adjustment for the effects of confounding population factors? | | | | | |
| Was the recruitment response rate low? If so, did the authors consider why? | | | | | |
| If participants prospectively or retrospectively consented to participate in the study, *were those who participated the same as those who did not?* | | | | | |
| *Performance bias* | | | | | |
| Were the participants blind to the outcome measure and/or the study? | | | | | |
| If a multiple site study, were the assessors blind to participants' exposure status? | | | | | |
| *Measurement and Detection bias* | | | | | |
| Were classifications of 'aggression', 'violence', 'abuse' etc pre-determined and explained? | | | | | |
| Where applicable, were measures of 'severity' pre-determined and explained? | | | | | |
| Was the record keeping handled by appropriate personnel? | | | | | |
| Do the selected measures / records of the violence/aggression/abuse etc reflect <u>a true measure</u> of the target behaviours? | | | | | |
| Where subjective measures were used, was there more than one person applying ratings, or were subsequent validation checks conducted? | | | | | |
| Do the selected measures / records of the violence/aggression/abuse etc reflect <u>a complete and reliable record</u> of the behaviours under surveillance? | | | | | |
| Were the measures / records of the violence/aggression/abuse etc comparable to those used in other studies? | | | | | |
| Were the same measures / records of the violence/aggression/abuse etc used across all participants / groups / populations? | | | | | |
| Were the records subject to *validation* after-the-fact? (eg. violence categorisation error checks) | | | | | |

| Quality Criteria | Y | P | N | U* | Comments |
|---|---|---|---|---|---|
| Was the *study period sufficiently long* to minimise impact of outlying periods (eg. increased disruptive behaviour at a time such as Christmas)? | | | | | |
| *Attrition bias* | | | | | |
| If data were collected over a period of time (eg 6 months) or at fixed intervals, were patient/prisoner transfers and study drop-outs accounted for? | | | | | |
| Were the participant attrition rates (due to patient/ prisoner transfers, drop-outs etc) similar across cases and controls? | | | | | |
| *The results* | | | | | |
| Are the results believable? | | | | | |
| Were the measures / records of the violence/ aggression/abuse etc presented in a suitable way? (eg. number of each subcategory per ward). | | | | | |
| Have the authors identified all important confounding factors? | | | | | |
| Have confounding factors been accounted for in the analysis? | | | | | |
| If there was missing data, was there any statistical attempt to deal with it? | | | | | |
| Was the statistical analysis appropriate? | | | | | |
| Can the results be applied to other similar populations?  (*generalisability*) | | | | | |

**TOTAL SCORE**   _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

**TOTAL QUALITY PERCENTAGE**   _ _ _ _ _ _ _

**Scoring System:**      1 points for every high quality 'Yes' (Y) response
0.5 point for every 'Partial' (P) or 'Unclear' (U) response
0 points for every low quality 'No' (N) response

**\*Unclear (U)** classifications may be further investigated when studies are potentially of sufficiently high quality to progress to the next stage.  Where studies fail to score sufficiently highly on the other questions, this further investigation will not take place.  The key method of investigation will be contacting the study authors by email.  The study may later be excluded, if no response is received.

## (C) Form for Case Series Studies

**Study identifier:**                           **Final decision:** Pass / Fail

| Study Validity Screening | Y | P | N | U | Comments |
|---|---|---|---|---|---|
| Did the study address a clearly focused issue? In terms of:<br>　　- the study aim<br>　　- the populations studied<br>　　- the situational variables studied<br>　　- the outcomes considered | | | | | |
| Did the authors use an appropriate <u>method</u> to answer their question?<br>　　- was a case series study appropriate?<br><br>　　- did the authors consider /present a <u>denominator</u> for their results? *[eg. number of violent incidents per capita? No. of beds / patients in the sample?]* | | | | | |

**if YES on both counts, continue…**

| Quality Criteria | Y | P | N | U* | Comments |
|---|---|---|---|---|---|
| *Inclusion & Selection bias* | | | | | |
| Were the cases representative of the overall source population?<br>*eg. were whole populations studied, or random/ matched samples drawn from the population(s).* | | | | | |
| Were cases described in terms of demographic/ background factors? | | | | | |
| Were the inclusion/exclusion criteria for participants explicit, and was there an established reliable system for selecting the cases? | | | | | |
| Are there a sufficient number of cases in the study to make the results meaningful? | | | | | |
| If selected cases were special in some way *(eg. drawn from a 'rehab' or 'admission' ward only)*, was this appropriate, explained and its relevance reflected upon? | | | | | |
| If any of an institution's populations were excluded from the study *(eg. Segregation Unit or ICU ward)*, was there acceptable reason for doing so, and was the impact of this exclusion reflected upon? | | | | | |

| Quality Criteria | Y | P | N | U* | Comments |
|---|---|---|---|---|---|
| Was there any advance control/adjustment for the effects of confounding population factors? | | | | | |
| Was the recruitment response rate low? If so, did the authors consider why? | | | | | |
| If participants prospectively or retrospectively consented to participate in the study, *were those who participated the same as those who did not?* | | | | | |
| *Performance bias* | | | | | |
| Were the participants blind to the outcome measure and/or the study? | | | | | |
| If a multiple site study, were the assessors blind to participants' exposure status? | | | | | |
| *Measurement and Detection bias* | | | | | |
| Were classifications of 'aggression', 'violence', 'abuse' etc pre-determined and explained? | | | | | |
| Where applicable, were measures of 'severity' pre-determined and explained? | | | | | |
| Was the record keeping handled by appropriate personnel? | | | | | |
| Do the selected measures / records of the violence/aggression/abuse etc reflect a true measure of the target behaviours? | | | | | |
| Where subjective measures were used, was there more than one person applying ratings, or were subsequent validation checks conducted? | | | | | |
| Do the selected measures / records of the violence/aggression/abuse etc reflect a complete and reliable record of the behaviours under surveillance? | | | | | |
| Were the measures / records of the violence/aggression/abuse etc comparable to those used in other studies? | | | | | |
| Were the same measures / records of the violence/aggression/abuse etc used across all participants / groups / populations? | | | | | |
| Were the records subject to *validation* after-the-fact? (eg. violence categorisation error checks) | | | | | |
| Was the *study period sufficiently long* to minimise impact of outlying periods (eg. increased disruptive behaviour at a time such as Christmas)? | | | | | |

| Quality Criteria | Y | P | N | U* | Comments |
|---|---|---|---|---|---|
| *Attrition bias* | | | | | |
| If data were collected over a period of time (eg 6 months) or at fixed intervals, were patient/prisoner transfers and study drop-outs accounted for? | | | | | |
| *The results* | | | | | |
| Are the results believable? | | | | | |
| Were the measures / records of the violence/ aggression/abuse etc presented in a suitable way? (eg. number of each subcategory per ward). | | | | | |
| Have the authors identified all important confounding factors? | | | | | |
| Have confounding factors been accounted for in the analysis? | | | | | |
| If there was missing data, was there any statistical attempt to deal with it? | | | | | |
| Was the statistical analysis appropriate? | | | | | |
| Can the results be applied to other similar populations?  (g*eneralisability*) | | | | | |

**TOTAL SCORE**   _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

**TOTAL QUALITY PERCENTAGE**   _ _ _ _ _ _ _

**Scoring System:**     1 points for every high quality 'Yes' (Y) response
0.5 point for every 'Partial' (P) or 'Unclear' (U) response
0 points for every low quality 'No' (N) response

**\*Unclear (U)** classifications may be further investigated when studies are potentially of sufficiently high quality to progress to the next stage.  Where studies fail to score sufficiently highly on the other questions, this further investigation will not take place.  The key method of investigation will be contacting the study authors by email.  The study may later be excluded, if no response is received.

# Data Extraction Form

| General information | |
|---|---|
| Date of data extraction | |
| Full citation | |
| Quality assessment % | %    (    /    items unclear) |
| Ethics committee approval | Reported   /   Not reported |
| Study Aim | |

| Re-verification of study eligibility | |
|---|---|
| Population:<br>  - Inpatients / prisoners<br>  - Adults; young offenders<br>  - Males and females<br>  - General population, MI and PD patients, all offence types<br>  - Populations from England & Wales | Yes   /   No   /<br>Unclear |
| Exposure:<br>  - Low, medium, high security MH facilities<br>  - Psychiatric hospitals with mixed ward types<br>  - DSPD units<br>  - PICU units<br>  - Cat A, B, C, or D prisons | Yes   /   No   /<br>Unclear |
| Comparator details (insert): | Yes (included pop.)<br><br>Yes (excluded pop.)<br><br>None |

| | |
|---|---|
| Outcomes:<br>- Offending behaviour on official records (eg. police records, convictions)<br>- Formal records of violent, aggressive, abusive, sexually-inappropriate incidents (eg. incident reports, file records etc)<br>- Injury reports – staff / peer | Yes  /  No  /  Unclear |
| Design of Study | Cohort  /  Case Control /  Case Series<br><br>Prospective / Retrospective |
| Language of report | English /Welsh |

| **Specific information** |
|---|

| *Population Characteristics* |
|---|

| | |
|---|---|
| Target population(s) | |
| Control population(s) | |
| Number of participants at start and at end of study *(Note refusal and attrition rates; reasons for drop-out)* | |
| Population inclusion/exclusion criteria | |
| Recruitment procedures *(inc. participation rates if available)* | |
| Were participants blinded to the study? If so, how? | |

| | |
|---|---|
| Characteristics of participants (eg. mean, SD, range):<br>- Age<br>- Ethnicity<br>- SES<br>- Gender<br>- Mental Health status<br>- Offending details<br>- Duration in current institution<br>- Other | |
| *Exposure Characteristics* | |
| Single multiple site study? | |
| Setting(s)? | |
| Security level(s)? | |
| *Measurement Characteristics* | |
| What were the measurement tools? | |
| How was the data obtained? | |
| Were the measures / tools validated? If so, how? | |
| Who carried out the measurement? (Was the assessor blinded, and if so how was this achieved?) | |
| What was the time period of the measurement? | |
| What *outcomes* and study variables were measured? | |
| Any biases spotted? | |

| Outcome Characteristics | |
|---|---|
| Statistical tests used | |
| How is missing data dealt with? | |
| Has adjustment been made for confounds? | |
| Results and Author's interpretation (inc. statistical significance) | |
| Power calculation or effect size details | |
| Issues concerning reporting of findings (eg. provision of appropriate denominator for incident figures) | |
| Does the published report include all outcomes that were pre-specified? *ie. is there a suggestion of selective outcome reporting?* | |
| **Summary** | |
| Other notes/limitations | |
| Author(s) contacted? | Yes / No        Response received?   Yes / No |

# APPENDIX 4

## Glossary

**Risk Assessment and Psychometric Assessment Tools:**

- BHS (Beck Hopelessness Scale) – a 20-item self-report questionnaire of pessimism and hopelessness (clinical symptomology).

- BPRS (Brief Psychiatric Rating Scale) – a 16 item tool completed by care staff to evaluate current severity of mental illness (clinical symptomology).

- CIRCLE (Chart of Interpersonal Reactions in Closed Living Environments) – a staff-rated measure to assess interpersonal style in mentally disordered offenders.

- HCR-20 (Historical Clinical Risk Management-20) – measures 20 variables that relate to future risk of violence; the historic factors being static, and the clinical and risk management factors having dynamic elements.

- MAES:SF (Macarthur Admission Experience Survey Short Form) – a structured interview that results in scores against three scales; the patient's perceived levels of coercion (the MPCS scale), negative pressures and 'voice' (perception of how they were treated on admission).

- MCMI-III (Millon Clinical Multiaxial Inventory-III) – a 175 item self-report questionnaire that provides a measure of personality disorders and clinical syndromes in adults. The tool is often used in a clinical setting when questions arise about the specific diagnosis a person may have, prior to (or in review of) formal diagnostic evaluation.

- MMPI-2 (Minnesota Multiphasic Personality Inventory) – a 567 item true/false questionnaire that assesses ten categories of abnormal human behaviour. These have little direct measureable association with disorders of personality or mental illness.

- PCL-R (Psychopathy Checklist-Revised) – an evaluation of psychopathy based on interview assessments and file-based information.

- PCL:SV (Psychopathy Checklist: Screening Version) – a 12 item shorter evaluation of psychopathy, conceptually and empirically related to the PCL-R.

- VRAG (Violence Risk Appraisal Guide) – an evaluation of risk based on 12 variables including the PCL-R score, age and ten static risk factors.

- VRS (Violence Risk Scale) – a risk assessment that integrates gains from progress in treatment with risk assessment and prediction decisions.

**Categories of secure mental health service:**

- *High security services*
  - there are three high security hospitals, which were previously known as Special Hospitals. Persons admitted to these hospitals are detained under mental health legislation because they are thought to pose 'a grave and immediate danger to the public.' High security hospitals are as physically secure as Category B prisons, and some buildings within the hospital perimeter may have extra security measures.
- *Medium security services*
  - these can be termed Medium or Regional Secure Units; MSUs or RSUs. There is a loose definition that patients who are suited to medium security settings are those who present a serious but less immediate danger to others and have the potential to abscond.
- *Low security services*
  - comprise Psychiatric Intensive Care Units (PICUs; typically for short stays) and Low Security Units (typically for longer stays). Low security settings are considered necessary for patients who present a less serious physical danger to others. Unit security measures are intended to impede rather than prevent absconding, with greater reliance on staffing arrangements and less reliance on physical security measures.

**Categories of prison security:**

- *High Security prisons*
  – for high security Category A prisoners (Belmarsh, Manchester, Woodhill).
- *High Security prisons* and/or *Dispersal prisons*
  - for high security Category A and B status prisoners (Frankland, Full Sutton, Long Lartin, Wakefield, Whitemoor).
- *Category B prisons*
  – closed prisons for those who do not need maximum security conditions but for whom escape needs to be made difficult.
- *Category C prisons*
  - closed prisons with less internal security.
- *Category D or Open prisons*
  - for prisoners not believed to be a risk to the public or in danger of escaping.
- *Training prisons*
  - for long-term prisoners (can be equivalent to Category C or D)
- Young offender Institutions (YOIs)
  - for people aged 15 to 21 who have committed an offence.
- *Local prisons*
  - for un-convicted people on remand and prisoners who are newly convicted or sentenced and who have become short-term prisoners.

# APPENDIX 5

## Personality Assessment Inventory (PAI; Morey, 2007)

## Scale Descriptions

**Validity Scales**

| | |
|---|---|
| Inconsistency (INC) | Indicates if a client is answering consistently throughout inventory. Each pair consists of highly correlated (i.e., positively, negatively) items. |
| Infrequency (INF) | Indicates if client is responding carelessly, randomly, or idiosyncratically. Items are neutral with respect to psychopathology and have either extremely high or low endorsement rates. |
| Negative Impression (NIM) | Suggests an exaggerated, unfavourable impression or malingering. |
| Positive Impression (PIM) | Suggests the presentation of a very favourable impression or reluctance to admit minor flaws. |

**Clinical scales**

| | |
|---|---|
| Somatic Complaints (SOM) | Preoccupation with health matters and somatic complaints related to somatization or conversion disorders. Subscales of Conversion (SOM-C), Somatization (SOM-S), and Health Concerns (SOM- H). |
| Anxiety (ANX) | Phenomenology and observable signs of anxiety with an emphasis on assessment across different response modalities. Subscales are Cognitive (ANX-C), Affective (ANX-A), and Physiological (ANX-P). |
| Anxiety-Related Disorders (ARD) | Symptoms and behaviours related to specific anxiety disorders. Subscales are Obsessive-Compulsive (ARD-O), Phobias (ARD-P), and Traumatic Stress (ARD-T). |
| Depression (DEP) | Symptoms and phenomenology of depressive disorders. Subscales include Cognitive (DEP-C), Affective (DEP-A), and Physiological (DEP-P). |
| Mania (MAN) | Affective, cognitive, and behavioural symptoms of mania and hypomania. Subscales include Activity Level (MAN-A), Grandiosity (MAN-G), and Irritability (MAN-I) |
| Paranoia (PAR) | Symptoms of paranoid disorders and on more enduring characteristics of paranoid personality. Subscales include Resentment (PAR-R), Hypervigilance (PAR-H), and Persecution (PAR-P). |

| | |
|---|---|
| Schizophrenia (SCZ) | Symptoms relevant to the broad spectrum of schizophrenic disorders. Subscales include Psychotic Experiences (SCZ-P), Social Detachment (SCZ-S), and Thought Disorder (SCZ-T). |
| Borderline Features (BOR) | Attributes indicative of borderline personality functioning, including unstable and fluctuating interpersonal relations, impulsivity, affective liability and instability, and uncontrolled anger. Subscales of Affective Instability (BOR-A), Identity Problems (BOR-I), Negative Relationships (BOR-N), and Self-Harm (BOR-S). |
| Antisocial Features (ANT) | Focuses on history of illegal acts and authority problems, egocentrism, lack of empathy and loyalty, instability, and excitement-seeking. Subscales include Antisocial Behaviours (ANT-A), Egocentricity (ANTE), and Stimulus-Seeking (ANT-S). |
| Alcohol Problems (ALC) | Problematic consequences of alcohol use and features of alcohol dependence. |
| Drug Problems (DRG) | Problematic consequences of drug use (both prescription and illicit) and features of drug dependence. |

**Treatment scales**

| | |
|---|---|
| Aggression (AGG) | Characteristics and attitudes related to anger, assertiveness, hostility and aggression. Subscales are Aggressive Attitude (AGG-A), Verbal Aggression (AGG-V), and Physical Aggression (AGG-P) |
| Suicidal Ideation (SUI) | Suicidal ideation, ranging from hopelessness to thoughts and plans for the suicidal act. |
| Stress (STR) | Measures the impact of recent stressors on major life areas. |
| Non-support (NON) | Measures a lack of perceived social support, considering both the level and quality of available support. |
| Treatment Rejection (RXR) | Focusses on attributes and attitudes indicating a lack of interest and motivation in making personal changes of a psychological or emotional nature. |

**Interpersonal scales**

| | |
|---|---|
| Dominance (DOM) | Assesses the extent to which a person is controlling and independent in personal relationships. A bipolar dimension, with a dominant style at the high end and a submissive style at the low end. |
| Warmth (WRM) | Assesses the extent to which one is interested in supportive and empathic personal relationships. A bipolar dimension, with a warm outgoing style at the high end, and a cold rejecting style at the low end. |

# APPENDIX 6

Psychometric assessment:  The Personality Assessment Inventory (PAI; Morey 2007)

1. My friends are available if I need them. .................................... F  ST  MT  VT
2. I have some inner struggles that cause problems for me. ...................... F  ST  MT  VT
3. My health condition has restricted my activities. ............................ F  ST  MT  VT
4. I am so tense in certain situations that I have great difficulty getting by. ........ F  ST  MT  VT
5. I have to do some things a certain way or I get nervous. ...................... F  ST  MT  VT
6. Much of the time I'm sad for no real reason. ............................... F  ST  MT  VT
7. Often I think and talk so quickly that other people cannot follow my train of thought. ............................................................... F  ST  MT  VT
8. Most of the people I know can be trusted. ................................. F  ST  MT  VT
9. Sometimes I cannot remember who I am. .................................... F  ST  MT  VT
10. I have some ideas that others think are strange. ............................ F  ST  MT  VT
11. I was usually well-behaved at school. ..................................... F  ST  MT  VT
12. I've seen a lot of doctors over the years. .................................. F  ST  MT  VT
13. I'm a very sociable person. ............................................. F  ST  MT  VT
14. My mood can shift quite suddenly. ....................................... F  ST  MT  VT
15. Sometimes I feel guilty about how much I drink. ........................... F  ST  MT  VT
16. I'm a "take charge" type of person. ...................................... F  ST  MT  VT
17. My attitude about myself changes a lot. ................................... F  ST  MT  VT
18. People would be surprised if I yelled at someone. .......................... F  ST  MT  VT
19. My relationships have been stormy. ...................................... F  ST  MT  VT
20. At times I wish I were dead. ............................................ F  ST  MT  VT
21. People are afraid of my temper. ......................................... F  ST  MT  VT
22. Sometimes I use drugs to feel better. .................................... F  ST  MT  VT
23. I've tried just about every type of drug. .................................. F  ST  MT  VT
24. Sometimes I let little things bother me too much. .......................... F  ST  MT  VT
25. I often have trouble concentrating because I'm nervous. ...................... F  ST  MT  VT

| F = FALSE, NOT AT ALL TRUE, | ST = SLIGHTLY TRUE, | MT = MAINLY TRUE, | VT = VERY TRUE |
|---|---|---|---|

26. I often fear I might slip up and say something wrong. .......................... F  ST  MT  VT

27. I feel that I've let everyone down. ......................................... F  ST  MT  VT

28. I have many brilliant ideas. ............................................... F  ST  MT  VT

29. Certain people go out of their way to bother me. ........................... F  ST  MT  VT

30. I just don't seem to relate to people very well. ............................ F  ST  MT  VT

31. I've borrowed money knowing I wouldn't pay it back. ....................... F  ST  MT  VT

32. Much of the time I don't feel well. ......................................... F  ST  MT  VT

33. I often feel jittery. ........................................................ F  ST  MT  VT

34. I keep reliving something horrible that happened to me. .................... F  ST  MT  VT

35. I hardly have any energy. .................................................. F  ST  MT  VT

36. I can be very demanding when I want things done quickly. ................... F  ST  MT  VT

37. People usually treat me pretty fairly. ...................................... F  ST  MT  VT

38. My thinking has become confused. ......................................... F  ST  MT  VT

39. I get a kick out of doing dangerous things. ................................ F  ST  MT  VT

40. My favorite poet is Raymond Kertezc. ..................................... F  ST  MT  VT

41. I like being around my family. ............................................. F  ST  MT  VT

42. I need to make some important changes in my life. ......................... F  ST  MT  VT

43. I've had illnesses that my doctors could not explain. ....................... F  ST  MT  VT

44. I can't do some things well because of nervousness. ........................ F  ST  MT  VT

45. I have impulses that I fight to keep under control. .......................... F  ST  MT  VT

46. I've forgotten what it's like to feel happy. ................................. F  ST  MT  VT

47. I take on so many commitments that I can't keep up. ....................... F  ST  MT  VT

48. I have to be alert to the possibility that people will be unfaithful. .............. F  ST  MT  VT

49. I have visions in which I see myself forced to commit crimes. ................. F  ST  MT  VT

50. Other people sometimes put thoughts into my head. ........................ F  ST  MT  VT

51. I've deliberately damaged someone's property. ............................. F  ST  MT  VT

52. My health problems are very complicated. ................................. F  ST  MT  VT

53. It's easy for me to make new friends. ...................................... F  ST  MT  VT

54. My moods get quite intense. .............................................. F  ST  MT  VT

55. I have trouble controlling my use of alcohol. ............................... F  ST  MT  VT

56. I'm a natural leader. ...................................................... F  ST  MT  VT

57. Sometimes I feel terribly empty inside. .................................... F  ST  MT  VT

| F = FALSE, NOT AT ALL TRUE, | ST = SLIGHTLY TRUE, | MT = MAINLY TRUE, | VT = VERY TRUE |
| --- | --- | --- | --- |

58. I tell people off when they deserve it. ............................................. F ST MT VT

59. I want to let certain people know how much they've hurt me. ................... F ST MT VT

60. I've thought about ways to kill myself. ............................................. F ST MT VT

61. Sometimes my temper explodes and I completely lose control. ................. F ST MT VT

62. People have told me that I have a drug problem. .............................. F ST MT VT

63. I never use drugs to help me cope with the world. ............................. F ST MT VT

64. Sometimes I'll avoid someone I really don't like. .............................. F ST MT VT

65. It's often hard for me to enjoy myself because I am worrying about things. ....... F ST MT VT

66. I have exaggerated fears. ........................................................ F ST MT VT

67. Sometimes I think I'm worthless. ................................................ F ST MT VT

68. I have some very special talents that few others have. ......................... F ST MT VT

69. Some people do things to make me look bad. ................................... F ST MT VT

70. I don't have much to say to anyone. ............................................. F ST MT VT

71. I'll take advantage of others if they leave themselves open to it. ................ F ST MT VT

72. I suffer from a lot of pain. ....................................................... F ST MT VT

73. I worry so much that at times I feel like I am going to faint. .................... F ST MT VT

74. Thoughts about my past often bother me while I'm thinking about something else. F ST MT VT

75. I have no trouble falling asleep. ................................................. F ST MT VT

76. I get quite irritated if people try to keep me from accomplishing my goals. ...... F ST MT VT

77. I seem to have as much luck in life as others do. ............................... F ST MT VT

78. My thoughts get scrambled sometimes. .......................................... F ST MT VT

79. I do a lot of wild things just for the thrill of it. ................................. F ST MT VT

80. Sometimes I get ads in the mail that I don't really want. ....................... F ST MT VT

81. If I'm having problems, I have people I can talk to. ............................. F ST MT VT

82. I need to change some things about myself, even if it hurts. .................... F ST MT VT

83. I've had numbness in parts of my body that I can't explain. .................... F ST MT VT

84. Sometimes I am afraid for no reason. ........................................... F ST MT VT

85. It bothers me when things are out of place. ..................................... F ST MT VT

86. Everything seems like a big effort. .............................................. F ST MT VT

87. Recently I've had much more energy than usual. ............................... F ST MT VT

88. Most people have good intentions. .............................................. F ST MT VT

89. Since the day I was born, I was destined to be unhappy. ....................... F ST MT VT

| F = FALSE, NOT AT ALL TRUE, | ST = SLIGHTLY TRUE, | MT = MAINLY TRUE, | VT = VERY TRUE |
| --- | --- | --- | --- |

90. Sometimes it seems that my thoughts are broadcast so that others can hear them.   F  ST  MT  VT

91. I've done some things that weren't exactly legal.   F  ST  MT  VT

92. It's a struggle for me to get things done with the medical problems I have.   F  ST  MT  VT

93. I like to meet new people.   F  ST  MT  VT

94. My mood is very steady.   F  ST  MT  VT

95. There have been times when I've had to cut down on my drinking.   F  ST  MT  VT

96. I would be good at a job where I tell others what to do.   F  ST  MT  VT

97. I worry a lot about other people leaving me.   F  ST  MT  VT

98. When I get mad at other drivers on the road, I let them know.   F  ST  MT  VT

99. People once close to me have let me down.   F  ST  MT  VT

100. I've made plans about how to kill myself.   F  ST  MT  VT

101. Sometimes I'm very violent.   F  ST  MT  VT

102. My drug use has caused me financial strain.   F  ST  MT  VT

103. I've never had problems at work because of drugs.   F  ST  MT  VT

104. I sometimes complain too much.   F  ST  MT  VT

105. I'm often so worried and nervous that I can barely stand it.   F  ST  MT  VT

106. I get very nervous when I have to do something in front of others.   F  ST  MT  VT

107. I don't feel like trying anymore.   F  ST  MT  VT

108. My plans will make me famous someday.   F  ST  MT  VT

109. People around me are faithful to me.   F  ST  MT  VT

110. I'm a loner.   F  ST  MT  VT

111. I'll do most things if the price is right.   F  ST  MT  VT

112. I am in good health.   F  ST  MT  VT

113. Sometimes I feel dizzy when I've been under a lot of pressure.   F  ST  MT  VT

114. I've been troubled by memories of a bad experience for a long time.   F  ST  MT  VT

115. I rarely have trouble sleeping.   F  ST  MT  VT

116. Sometimes I get upset because others don't understand my plans.   F  ST  MT  VT

117. I've given a lot, but I haven't gotten much in return.   F  ST  MT  VT

118. Sometimes I have trouble keeping different thoughts separate.   F  ST  MT  VT

119. My behavior is pretty wild at times.   F  ST  MT  VT

120. My favorite sports event on television is the high jump.   F  ST  MT  VT

121. I spend most of my time alone.   F  ST  MT  VT

122. I need some help to deal with important problems. ............................ F ST MT VT
123. I've had episodes of double vision or blurred vision. ........................ F ST MT VT
124. I'm not the kind of person who panics easily. ............................... F ST MT VT
125. I can relax even if my home is a mess. ..................................... F ST MT VT
126. Nothing seems to give me much pleasure. ................................... F ST MT VT
127. At times my thoughts move very quickly. ................................... F ST MT VT
128. I usually assume people are telling the truth. .............................. F ST MT VT
129. I think I have three or four completely different personalities inside of me. ..... F ST MT VT
130. Others can read my thoughts. .............................................. F ST MT VT
131. I used to lie a lot to get out of tight situations. ........................... F ST MT VT
132. My medical problems always seem to be hard to treat. ....................... F ST MT VT
133. I am a warm person. ...................................................... F ST MT VT
134. I have little control over my anger. ........................................ F ST MT VT
135. My drinking seems to cause problems in my relationships with others. ........ F ST MT VT
136. I have trouble standing up for myself. ..................................... F ST MT VT
137. I often wonder what I should do with my life. .............................. F ST MT VT
138. I'm not afraid to yell at someone to get my point across. .................... F ST MT VT
139. I rarely feel very lonely. .................................................. F ST MT VT
140. I've recently been thinking about suicide. .................................. F ST MT VT
141. Sometimes I smash things when I'm upset. .................................. F ST MT VT
142. I never use illegal drugs. .................................................. F ST MT VT
143. I sometimes do things so impulsively that I get into trouble. .................. F ST MT VT
144. Sometimes I'm too impatient. .............................................. F ST MT VT
145. My friends say I worry too much. .......................................... F ST MT VT
146. I'm not easily frightened. .................................................. F ST MT VT
147. I can't seem to concentrate very well. ...................................... F ST MT VT
148. I have accomplished some remarkable things. ............................... F ST MT VT
149. Some people try to keep me from getting ahead. ............................ F ST MT VT
150. I don't feel close to anyone. .............................................. F ST MT VT
151. I can talk my way out of just about anything. ............................... F ST MT VT
152. I seldom have complaints about how I feel physically. ....................... F ST MT VT
153. I can often feel my heart pounding. ........................................ F ST MT VT

154. I can't seem to get over something from my past. ............................ F  ST  MT  VT

155. I've been moving more slowly than usual. ................................ F  ST  MT  VT

156. I have great plans and it irritates me that people try to interfere. .............. F  ST  MT  VT

157. People don't appreciate what I've done for them. ........................... F  ST  MT  VT

158. Sometimes it feels as if somebody is blocking my thoughts. .................. F  ST  MT  VT

159. If I get tired of a place, I just pick up and leave. .............................. F  ST  MT  VT

160. Most people would rather win than lose. ................................ F  ST  MT  VT

161. Most people I'm close to are very supportive. ............................. F  ST  MT  VT

162. I'm curious why I behave the way I do. .................................. F  ST  MT  VT

163. There have been times when my eyesight got worse and then better again. ..... F  ST  MT  VT

164. I am a very calm and relaxed person. ................................... F  ST  MT  VT

165. People say that I'm a perfectionist. .................................... F  ST  MT  VT

166. I've lost interest in things I used to enjoy. .............................. F  ST  MT  VT

167. My friends can't keep up with my social activities. ......................... F  ST  MT  VT

168. People generally hide their real motives. ................................ F  ST  MT  VT

169. People don't understand how much I suffer. .............................. F  ST  MT  VT

170. I've heard voices that no one else could hear. ............................ F  ST  MT  VT

171. I like to see how much I can get away with. .............................. F  ST  MT  VT

172. I've had only the usual health problems that most people have. ............... F  ST  MT  VT

173. It takes me a while to warm up to people. ................................ F  ST  MT  VT

174. I've always been a pretty happy person. ................................. F  ST  MT  VT

175. Drinking helps me get along in social situations. .......................... F  ST  MT  VT

176. I feel best in situations where I am the leader. ............................ F  ST  MT  VT

177. I can't handle separation from those close to me very well. .................. F  ST  MT  VT

178. I always avoid arguments if I can. ...................................... F  ST  MT  VT

179. I've made some real mistakes in the people I've picked as friends. ............. F  ST  MT  VT

180. I have thought about suicide for a long time. ............................. F  ST  MT  VT

181. I've threatened to hurt people. ........................................ F  ST  MT  VT

182. I've used prescription drugs to get high. ................................ F  ST  MT  VT

183. When I'm upset, I typically do something to hurt myself. .................... F  ST  MT  VT

184. I don't take criticism very well. ....................................... F  ST  MT  VT

185. I don't worry about things any more than most people. ...................... F  ST  MT  VT

| F = FALSE, NOT AT ALL TRUE, | ST = SLIGHTLY TRUE, | MT = MAINLY TRUE, | VT = VERY TRUE |
|---|---|---|---|

186. I don't mind driving on freeways. ................................................ F  ST  MT  VT

187. No matter what I do, nothing works. ............................................ F  ST  MT  VT

188. I think I have the answers to some very important questions. ................. F  ST  MT  VT

189. There are people who want to hurt me. ......................................... F  ST  MT  VT

190. I enjoy the company of other people. .......................................... F  ST  MT  VT

191. I don't like being tied to one person. .......................................... F  ST  MT  VT

192. I have a bad back. ............................................................ F  ST  MT  VT

193. It's easy for me to relax. ..................................................... F  ST  MT  VT

194. I have had some horrible experiences that make me feel guilty. ............... F  ST  MT  VT

195. I often wake up very early in the morning and can't get back to sleep. ........ F  ST  MT  VT

196. It bothers me when other people are too slow to understand my ideas. ......... F  ST  MT  VT

197. Usually I've gotten credit for what I've done. ................................ F  ST  MT  VT

198. My thoughts tend to quickly shift around to different things. ................. F  ST  MT  VT

199. The idea of "settling down" has never appealed to me. ....................... F  ST  MT  VT

200. My favorite hobbies are archery and stamp-collecting. ....................... F  ST  MT  VT

201. People I know care about me. ................................................ F  ST  MT  VT

202. I'm comfortable with myself the way I am. ................................... F  ST  MT  VT

203. I've had episodes when I've lost the feeling in my hands. ..................... F  ST  MT  VT

204. I often feel as if something terrible is about to happen. ..................... F  ST  MT  VT

205. I'm usually aware of objects that have a lot of germs. ....................... F  ST  MT  VT

206. I have no interest in life. ................................................... F  ST  MT  VT

207. I feel like I need to keep active and not rest. ............................... F  ST  MT  VT

208. People think I'm too suspicious. ............................................ F  ST  MT  VT

209. Every once in a while I totally lose my memory. ............................. F  ST  MT  VT

210. There are people who try to control my thoughts. ........................... F  ST  MT  VT

211. I was never expelled or suspended from school when I was young. ............ F  ST  MT  VT

212. I've had some unusual diseases and illnesses. ............................... F  ST  MT  VT

213. It takes a while for people to get to know me. .............................. F  ST  MT  VT

214. I've had times when I was so mad I couldn't do enough to express all my anger. F  ST  MT  VT

215. Some people around me think I drink too much alcohol. ...................... F  ST  MT  VT

216. I prefer to let others make decisions. ....................................... F  ST  MT  VT

217. I don't get bored very easily. ............................................... F  ST  MT  VT

218. I don't like raising my voice. ........................................................ F ST MT VT
219. Once someone is my friend, we stay friends. ................................. F ST MT VT
220. Death would be a relief. ............................................................. F ST MT VT
221. I've never started a physical fight as an adult. ............................. F ST MT VT
222. My drug use is out of control. ..................................................... F ST MT VT
223. I'm too impulsive for my own good. ............................................ F ST MT VT
224. Sometimes I put things off until the last minute. ......................... F ST MT VT
225. I don't worry about things that I can't control. ............................ F ST MT VT
226. I don't mind heights. ................................................................. F ST MT VT
227. I think good things will happen to me in the future. ...................... F ST MT VT
228. I think I would be a good comedian. ............................................ F ST MT VT
229. People seldom treat me badly on purpose. ................................. F ST MT VT
230. I like to be around other people if I can. ..................................... F ST MT VT
231. I don't like to stay in a relationship very long. ............................ F ST MT VT
232. I have a weak stomach. ............................................................. F ST MT VT
233. When I'm under a lot of pressure, I sometimes have trouble breathing. ........ F ST MT VT
234. I keep having nightmares about my past. .................................... F ST MT VT
235. I have a good appetite. .............................................................. F ST MT VT
236. I have no patience with people who try to hold me back. ............... F ST MT VT
237. People who are successful generally earned their success. .......... F ST MT VT
238. Sometimes I wonder if my thoughts are being taken away. ........... F ST MT VT
239. I like to drive fast. .................................................................... F ST MT VT
240. I don't like to have to buy things that are overpriced. .................... F ST MT VT
241. In my family, we argue more than we talk. .................................. F ST MT VT
242. Many of my problems are my own doing. ..................................... F ST MT VT
243. I've had times when my legs became so weak that I couldn't walk. ........... F ST MT VT
244. I seldom feel anxious or tense. .................................................. F ST MT VT
245. People see me as a person who pays a lot of attention to detail. .............. F ST MT VT
246. Lately I've been happy much of the time. ..................................... F ST MT VT
247. Recently I have needed less sleep than usual. ............................ F ST MT VT
248. Things are rarely as they seem on the surface. ........................... F ST MT VT
249. Sometimes my vision is only in black and white. .......................... F ST MT VT

| F = FALSE, NOT AT ALL TRUE, | ST = SLIGHTLY TRUE, | MT = MAINLY TRUE, | VT = VERY TRUE |
|---|---|---|---|

250. I have a sixth sense that tells me what is going to happen. ..................... F ST MT VT

251. I've never been in trouble with the law. ...................................... F ST MT VT

252. For my age, my health is pretty good. ....................................... F ST MT VT

253. I try to include people who seem left out. .................................... F ST MT VT

254. Sometimes I have an alcoholic drink first thing in the morning. .............. F ST MT VT

255. My drinking has caused me problems at home. ............................. F ST MT VT

256. I say what's on my mind. .................................................... F ST MT VT

257. I usually do what other people tell me to do. ............................... F ST MT VT

258. I have a bad temper. ........................................................ F ST MT VT

259. It takes a lot to make me angry. ............................................ F ST MT VT

260. I've thought about what I would say in a suicide note. ....................... F ST MT VT

261. I can't think of reasons to go on living. ..................................... F ST MT VT

262. I've had health problems because of my drug use. ........................... F ST MT VT

263. I spend money too easily. .................................................... F ST MT VT

264. I sometimes make promises I can't keep. .................................... F ST MT VT

265. I usually worry about things more than I should. ............................. F ST MT VT

266. I will not ride in airplanes. .................................................. F ST MT VT

267. I have something worthwhile to contribute. .................................. F ST MT VT

268. Lately I feel so confident that I think I can accomplish anything. .............. F ST MT VT

269. People have had it in for me. ................................................ F ST MT VT

270. I make friends easily. ....................................................... F ST MT VT

271. I look after myself first; let others take care of themselves. ................... F ST MT VT

272. I get more headaches than most people. ..................................... F ST MT VT

273. I get sweaty hands often. .................................................... F ST MT VT

274. Since I had a very bad experience, I am no longer interested in some things that
I used to enjoy. ............................................................ F ST MT VT

275. I often wake up in the middle of the night. .................................. F ST MT VT

276. At times I am very touchy and easily annoyed. .............................. F ST MT VT

277. I'm not the type of person to hold a grudge. ................................. F ST MT VT

278. Thoughts in my head suddenly disappear. ................................... F ST MT VT

279. I'm not a person who turns down a dare. .................................... F ST MT VT

280. Most people look forward to a trip to the dentist. ............................ F ST MT VT

281. I spend little time with my family. .................................... F ST MT VT

282. I can solve my problems by myself. .................................... F ST MT VT

283. At times parts of my body have been paralyzed. ........................ F ST MT VT

284. I am easily startled. .................................................. F ST MT VT

285. I keep myself under tight control. .................................... F ST MT VT

286. I'm almost always a happy and positive person. ........................ F ST MT VT

287. I hardly ever buy things on impulse. .................................. F ST MT VT

288. People have to earn my trust. ........................................ F ST MT VT

289. I don't have any good memories from my childhood. ..................... F ST MT VT

290. I don't believe that there are people who can read minds. ............. F ST MT VT

291. I've never taken money or property that wasn't mine. .................. F ST MT VT

292. I like to talk with people about their medical problems. .............. F ST MT VT

293. I'm an affectionate person. .......................................... F ST MT VT

294. I never drive when I've been drinking. ................................ F ST MT VT

295. I hardly ever drink alcohol. .......................................... F ST MT VT

296. People listen to my opinions. ........................................ F ST MT VT

297. If I get poor service from a business, I let the manager know about it. .......... F ST MT VT

298. My temper never gets me into trouble. ................................ F ST MT VT

299. My anger never gets out of control. .................................. F ST MT VT

300. I've thought about how others would react if I killed myself. ................... F ST MT VT

301. I have a lot to live for. ............................................ F ST MT VT

302. My best friends are those I use drugs with. ........................... F ST MT VT

303. I'm a reckless person. ............................................... F ST MT VT

304. There have been times when I could have been more thoughtful than I was. ..... F ST MT VT

305. Sometimes I get so nervous that I'm afraid I'm going to die. .................. F ST MT VT

306. I don't mind traveling in a bus or train. ............................. F ST MT VT

307. I'm pretty successful at what I do. ................................... F ST MT VT

308. I could never imagine myself being famous. ............................ F ST MT VT

309. I'm the target of a conspiracy. ...................................... F ST MT VT

310. I keep in touch with my friends. ..................................... F ST MT VT

311. When I make a promise, I really don't need to keep it. ................ F ST MT VT

312. I frequently have diarrhea. .......................................... F ST MT VT

272

| F = FALSE, NOT AT ALL TRUE, | ST = SLIGHTLY TRUE, | MT = MAINLY TRUE, | VT = VERY TRUE |
|---|---|---|---|

313. I have very steady hands. ........................................... F ST MT VT

314. I avoid certain things that bring back bad memories. ..................... F ST MT VT

315. I have little interest in sex. .......................................... F ST MT VT

316. I have little patience with those who disagree with my plans. .............. F ST MT VT

317. Being helpful to other people pays off in the end. ...................... F ST MT VT

318. I can concentrate now as well as I ever could. ......................... F ST MT VT

319. I never take risks if I can avoid it. .................................. F ST MT VT

320. In my free time I might read, watch TV, or just relax. .................. F ST MT VT

321. I have a lot of money problems. .................................... F ST MT VT

322. My life is very unpredictable. ..................................... F ST MT VT

323. There have been many changes in my life recently. .................... F ST MT VT

324. There isn't much stability at home. ................................. F ST MT VT

325. Things are not going well in my family. .............................. F ST MT VT

326. I'm happy with my job situation. ................................... F ST MT VT

327. I worry about having enough money to get by. ........................ F ST MT VT

328. My relationship with my spouse or partner is not going well. ............ F ST MT VT

329. I have severe psychological problems that began very suddenly. .......... F ST MT VT

330. I'm a sympathetic person. ......................................... F ST MT VT

331. Close relationships are important to me. ............................. F ST MT VT

332. I'm very impatient with people. .................................... F ST MT VT

333. I have more friends than most people I know. ......................... F ST MT VT

334. My drinking has never gotten me into trouble. ........................ F ST MT VT

335. My drinking has caused problems with my work. ....................... F ST MT VT

336. I don't like letting people know when I disagree with them. ............. F ST MT VT

337. I'm a very independent person. .................................... F ST MT VT

338. When I get mad, it's hard for me to calm down. ....................... F ST MT VT

339. People think I'm aggressive. ...................................... F ST MT VT

340. I'm considering suicide. .......................................... F ST MT VT

341. Things have never been so bad that I thought about suicide. ............ F ST MT VT

342. My drug use has never caused problems with my family or friends. ......... F ST MT VT

343. I'm careful about how I spend my money. ............................ F ST MT VT

344. I rarely get in a bad mood. ....................................... F ST MT VT

# APPENDIX 7

## Participant Consent Form

(Final version 1.0, Date: 19th May 2014)

**Title of Study:** In a comparison of personality-disordered patients in high security and medium security hospital settings; are high security patients more 'Complex Cases' who require specialist treatment?

**REC ref:** 14/EM/1012

**Name of Researchers**: Antonia Harrison & Dr Sue Evershed

**Name of Participant:**

**Please initial box**

1. I confirm that I have read and understand the information sheet version number 1.0 dated 19th May 2014 for the above study and have had the opportunity to ask questions.

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without my medical care or legal rights being affected. I understand that should I withdraw then the information collected so far cannot be erased and that this information may still be used in the project analysis.

3. I understand that relevant sections of my medical notes and data collected in the study may be looked at by authorised individuals from the University of Nottingham, the research group and regulatory authorities where it is relevant to my taking part in this study. I give permission for these individuals to have access to these records and to collect, store, analyse and publish information obtained from my participation in this study. I understand that my personal details will be kept confidential.

4. I have talked to the researcher about where I would like my newly completed Personality Assessment Questionnaire stored, and discussed which I would prefer. My decision is (please place initials in one box):

    Researcher store PAI questionnaire confidentially

    *or*, store PAI questionnaire in my hospital psychology file

5. I agree to take part in the above study.

_____    _____    _____
Name of Participant                    Date                        Signature

_____    _____    _____
Name of Person taking consent        Date                        Signature

3 copies: 1 for participant, 1 for the project notes and 1 for the medical notes

# APPENDIX 8

## Participant Information Sheet

(Final version 1.0: 19<sup>th</sup> May 2014)

**Title of Study:** In a comparison of personality-disordered patients in high security and medium security hospital settings; are high security patients more 'Complex Cases' who require specialist treatment?

**Name of Researcher(s):** Antonia Harrison & Dr Sue Evershed

We would like to invite you to take part in our research study. Before you decide we would like you to understand why the research is being done and what it would involve for you. One of our team will go through this information sheet with you and answer any questions you have. Talk to others about the study if you wish. Ask us if there is anything that is not clear.

### What is the purpose of the study?

The main purpose of this study is to determine whether there are differences in clinical mental health needs between patients with personality disorder who are resident in high security hospitals, and those who are resident in medium security hospitals.

It is predicted that there will be a difference in the overall mental health profiles of the two patient groups (high security vs. medium security), and that the patients living in higher security settings will have greater or more complicated mental health needs. Patients with more complicated mental health needs are sometimes referred to as 'complex cases' by clinical staff at the hospital.

If this study finds such a difference between patients living in high security and medium security hospitals, this would tell us that the patient groups might have different treatment needs. This may then help the services with treatment planning for their patients.

We would also hope to be able to identify some of the *typical differences* between patients living in high security and medium security hospitals. In the future, this information could then be used by patients and their clinical teams when they are working on their care pathway planning, and thinking about when it might be the right time to transfer to another service or to step down into a community setting.

### Why have I been invited?

You are being invited to take part in this study because you are a male patient, who is over 18 years of age, with a diagnosis of personality disorder. You also currently reside in one of the four secure hospitals that are participating in this research study.

We are asking everyone who matches these criteria if they would please participate in the study. We are inviting 65 participants like you to take part, across different hospital sites.

**Do I have to take part?**

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and you will be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. This would not affect your legal rights. A decision to withdraw at any time, or a decision not to take part, will not have any negative consequences for you, and will not impact your care at this hospital.

**What will happen to me if I take part?**

If you agree to take part in the study, we would like to thank you for doing so. Your participation is greatly appreciated.

**i)       What YOU will do:-**

There is one part of this study where we need your active participation. You will be asked to complete the Personality Assessment Inventory (PAI) questionnaire. The PAI questionnaire has 344 questions, which examine features of your personality. You read the statements (or have them read to you) and decide on a 4-point scale from 'False' to 'Very True' as to how much you agree that the statements reflect your personality.

As the questionnaire is quite long, most people take more than an hour to complete it. As such, we will need to book more than one session with you. We suggest that the first session be booked to last 60 minutes, if this length of time is comfortable for you. The researcher will arrange a time to come and see you that is convenient to your schedule within the hospital. You may need to attend a second or third session to ensure you finish the PAI questionnaire. It is important to keep going until the questionnaire is finished.

You may remember having already completed the PAI questionnaire before, while at this hospital. If you have completed it recently, that is great news! We will ask your psychologist for a copy of the questionnaire scores, and you will not need to complete the questionnaire again with the researcher.

**ii)      What WE will do:-**

All of the other information that is needed for the study is already recorded in your hospital files, such as the names of any mental health diagnoses that you might have in addition to personality disorder. We will obtain this information from your file records, and we will only extract the summary information that is needed for the study, and no extra detail. It will be important for you to look at the list of information we will need, before you sign your consent form. We will discuss the list with you in person, and answer any questions you have.

Once the researchers have your completed PAI questionnaire, and the file information from your records, your involvement in the research will be finished. The research team will

analyse all the anonymised participant information, and they will ensure that you are given a written summary of the research findings at the end of the study.

The file information that we obtain will be held confidentially, and we will not record your name or other personally-identifying information such as your date of birth with this file information, to ensure that your identity is always carefully protected.

You will be asked to choose where your completed PAI questionnaire is stored. In normal circumstances, the researchers would store it confidentially in a securely locked cabinet (without your name written on it). However, you can choose to have it stored in your hospital psychology file instead. You may wish this to happen so that your psychologist can access the questionnaire results. This would mean that they would not need to ask you to fill in the PAI questionnaire again in the next year, if it was decided that the PAI questionnaire would be useful to you and your psychologist when planning your psychology treatment.

**Expenses and payments**

Participants will not be paid to participate in the study. Your participation in this study is voluntary.

**What are the possible disadvantages and risks of taking part?**

There are no foreseeable risks or disadvantages to participating in this study, but please do ask the researcher questions if you have any concerns.

In order to minimise discomfort when completing the PAI questionnaire, you may want to take your time and split the questionnaire over more than one session. If this is the case, do bring a drink with you, and take breaks to stretch your legs or use the bathroom. On the other hand, you might want to complete the whole questionnaire in one go. If so, we will try to make arrangements to give you a little extra time on top of the recommended 60 minute session if you'd prefer to get your questionnaire finished and out of the way.

When completing the PAI questionnaire, you will be thinking about your own personality traits and your feelings about yourself and people you know. It is therefore possible that you might start thinking negatively about yourself or other people. If you tell the researcher that you are feeling very low in mood or are having thoughts of hurting yourself or someone else we will always make sure that this is shared with your care team on your ward, so that they can give you the help and support that you need. We will not make any exceptions to this.

**What are the possible benefits of taking part?**

We cannot promise that the study will help you directly but the information we get from this study may help us gain a greater understanding of the possible differences in the clinical mental health needs between patients in high security and in medium security hospitals. Ultimately, this knowledge may in the future help all patients who reside in secure settings. If we are able to identify some of the *typical differences* between patients living in high security and medium security hospitals, this information could be used by clinical teams

when they plan care pathways, hospital transfers and step down movements to community settings. This study could therefore help the clinical teams ensure that patients are housed in the correct security setting for their mental health and risk needs.

**What happens when the research study stops?**

After your part in the research, the scores from your PAI questionnaire, and the information we take from the file records will be entered into a computer database (accessible only by the researchers). Each participant will have been assigned a 'number' so that we do not need to record names on the computer database. We want the information to be kept anonymised at all times, to maintain all the participants' confidentiality.

The researcher will then analyse the anonymous data, and look for differences between the groups of people resident in the high security and medium security hospitals. We will provide you with a summary of the findings once this study has been completed.

**What if there is a problem?**

If you have a concern about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions. The researchers contact details are given at the end of this information sheet. If you remain unhappy and wish to complain formally, you can do this by contacting NHS Complaints. Details can be obtained from your hospital.

**Will my taking part in the study be kept confidential?**

We will follow ethical and legal practice and all information about you will be handled in confidence. Your hospital care team will know that you are taking part in this study, and we will ensure that a copy of your signed participation consent form is placed in your hospital file.

All information which is collected about you during the course of the research will be kept **strictly confidential**, stored in a secure and locked office, and on a password protected computer database. Any information about you which leaves the hospital will have your name removed (anonymised) and a unique number will be used so that you cannot be recognised from it. The computer database will only have this unique number on it, and will never have your name recorded.

If you join the study, some parts of your study records and the data collected for the study will be looked at by authorised persons from the University of Nottingham who are organising the research. They may also be looked at by authorised people to check that the study is being carried out correctly – examples of authorised people would include an appointed person from the Research Office at your hospital, or a Regulatory Inspector. All such people will have a duty of confidentiality to you as a research participant and we will do our best to meet this duty.

There will be one single list that connects participants' names to the unique numbers, and this will be kept in a locked cabinet. This list will be kept in case authorised people need to conduct an audit and check that the research team carried out this study correctly. This list will be kept for 12 months after the end of the study so that we are able to contact you about the findings of the study (unless you advise us that you do not wish to be contacted). All other data (research data) will be anonymised and will be kept securely for 7 years. After this time your data will be disposed of securely. During this time all precautions will be taken by all those involved to maintain your confidentiality, only members of the research team will have access to your personal data.

No identifying information about you will be included in any publications using your data. These processes adhere to the strict standards set out in the Data Protection Act, 1998

**What will happen if I don't want to carry on with the study?**

Your participation is voluntary and you are free to withdraw at any time, without giving any reason, and without your legal rights being affected. A decision to withdraw at any time, or a decision not to take part, will not have any negative consequences for you and will not impact your care at this hospital. If you withdraw then the information collected so far cannot be erased and this information may still be used in the project analysis. No new information will be collected.

If you withdraw from the study before completing the PAI questionnaire, your questionnaire scores will not be examined, and will therefore not be entered onto the computer database. The questionnaire itself will be stored securely in the file archives for 7 years, before being disposed of securely.

**What will happen to the results of the research study?**

The results of the research study will be analysed to see if there are significant differences in the case complexity of personality disordered patients in high security and medium security hospitals.

A study summary sheet will be produced that provides an explanation of the overall study findings, in layman's terms. The summary will not reference individual participants, clinical teams or wards, as study findings will be presented in terms of outcomes at the 'medium security' and 'high security' sites only. A copy of this study summary sheet will automatically be sent to you on your ward within four months of the end of the study. Please tell the research team if you do not want to be sent a study summary sheet.

This study will also form the basis of a research report that will be submitted for an educational qualification (a Doctorate in Forensic Psychology). The study findings may also be presented at a professional conference or appear in a professional journal at a later date. No identifying information about participants will appear in any such reports or publications.

**Who is organising and funding the research?**

This research is being organised by the University of Nottingham and is being funded by a small subsidy from the University of Nottingham, allocated to cover the costs of buying the PAI questionnaires only.

**Who has reviewed the study?**

All research in the NHS is looked at by independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by the East Midlands NHS Research Ethics Committee.

**Further information and contact details**

At your hospital site, the name of the contact persons for this research study are Antonia Harrison and Dr Sue Evershed, in the psychology department of the Men's Personality Disorder Service *(*contact persons to be edited as appropriate for the different study sites).* Please ask a member of your ward nursing team to telephone the psychology department if you have any questions.  We will agree an appointment time with you, and visit you on the ward to answer your questions.

If you require any further information from the University of Nottingham regarding this study please contact the Chief Investigator for this research study:

Dr Simon Duff
Director of Top-Up Doctorate
Room B15 YANG Fujia Building
Jubilee Campus, University of Nottingham
Wollaton Road, Nottingham, NG8 1BB
Phone: 0115 823 2213

If you would like independent advice or further information about your rights when participating in research studies, please contact your local Advocacy Service at your hospital. Your Advocacy Service can provide you with support, and direct you to sources of further relevant information.

# APPENDIX 9

Table A1. *Logistic regression summary*

| | $B$ | Std. Error $B$ | 95% CL for exp $b$ | | |
| --- | --- | --- | --- | --- | --- |
| | | | Lower | exp $b$ | Upper |
| *Step 1* | | | | | |
| Affective instability (BOR-A) | 0.19 | 0.08 | 1.03 | 1.21 | 1.42 |
| Age at first conviction | -0.26 | 0.13 | 0.60 | 0.77 | 1.00 |
| Depression (DEP) | 0.17 | 0.15 | 0.89 | 1.19 | 1.58 |
| Paranoia (PAR) | -0.06 | 0.13 | 0.73 | 0.94 | 1.21 |
| Cognitive depression (DEP-C) | -0.03 | 0.12 | 0.78 | 0.97 | 1.22 |
| Affective depression (DEP-A) | -0.07 | 0.09 | 0.78 | 0.94 | 1.12 |
| Persecution paranoia (PAR-P) | 0.11 | 0.13 | 0.87 | 1.11 | 1.43 |
| Constant | -21.72 | 7.95 | | 0.00 | |
| *Step 2* | | | | | |
| Affective instability (BOR-A) | 0.13 | 0.09 | 0.97 | 1.14 | 1.36 |
| Age at first conviction | -0.33 | 0.17 | 0.51 | 0.72 | 1.00 |
| Depression (DEP) | 0.29 | 0.19 | 0.92 | 1.34 | 1.93 |
| Paranoia (PAR) | -0.26 | 0.23 | 0.49 | 0.77 | 1.20 |
| Cognitive depression (DEP-C) | -0.09 | 0.14 | 0.70 | 0.91 | 1.19 |
| Affective depression (DEP-A) | -0.07 | 0.10 | 0.77 | 0.93 | 1.13 |
| Persecution paranoia (PAR-P) | 0.16 | 0.13 | 0.90 | 1.17 | 1.52 |
| Hypervigilance paranoia (PAR-H) | 0.19 | 0.15 | 0.90 | 1.21 | 1.64 |
| Constant | -21.70 | 8.01 | | 0.00 | |
| *Step 3* | | | | | |
| Affective instability (BOR-A) | 0.13 | 0.09 | 0.95 | 1.13 | 1.35 |
| Age at first conviction | -0.33 | 0.17 | 0.52 | 0.72 | 1.00 |
| Depression (DEP) | 0.29 | 0.19 | 0.92 | 1.33 | 1.94 |
| Paranoia (PAR) | -0.26 | 0.23 | 0.50 | 0.77 | 1.21 |
| Cognitive depression (DEP-C) | -0.09 | 0.14 | 0.70 | 0.91 | 1.19 |
| Affective depression (DEP-A) | -0.08 | 0.10 | 0.75 | 0.92 | 1.13 |
| Persecution paranoia (PAR-P) | 0.15 | 0.14 | 0.88 | 1.16 | 1.52 |
| Hypervigilance paranoia (PAR-H) | 0.20 | 0.16 | 0.90 | 1.22 | 1.66 |
| Schizophrenia (SCZ) | 0.02 | 0.05 | 0.91 | 1.02 | 1.13 |
| Constant | -21.47 | 7.98 | | 0.00 | |
| *Step 4* | | | | | |
| Affective instability (BOR-A) | 0.29 | 0.16 | 0.97 | 1.34 | 1.84 |
| Age at first conviction | -0.47 | 0.27 | 0.36 | 0.62 | 1.06 |
| Depression (DEP) | 0.46 | 0.28 | 0.91 | 1.59 | 2.77 |
| Paranoia (PAR) | -0.28 | 0.31 | 0.41 | 0.76 | 1.39 |
| Cognitive depression (DEP-C) | -0.24 | 0.18 | 0.56 | 0.79 | 1.11 |
| Affective depression (DEP-A) | -0.20 | 0.15 | 0.60 | 0.82 | 1.11 |
| Persecution paranoia (PAR-P) | 0.19 | 0.17 | 0.86 | 1.21 | 1.69 |
| Hypervigilance paranoia (PAR-H) | 0.12 | 0.21 | 0.75 | 1.13 | 1.70 |
| Schizophrenia (SCZ) | -0.02 | 0.08 | 0.84 | 0.98 | 1.14 |
| Sch. social detachment (SCZ-S) | 0.22 | 0.13 | 0.96 | 1.24 | 1.62 |
| Constant | -34.19 | 14.79 | | 0.00 | |

|  | $B$ | Std. Error $B$ | 95% CL for exp $b$ | | |
|---|---|---|---|---|---|
|  |  |  | Lower | exp $b$ | Upper |
| *Step 5* |  |  |  |  |  |
| Affective instability (BOR-A) | 0.22 | 0.18 | 0.87 | 1.25 | 1.79 |
| Age at first conviction | -0.50 | 0.28 | 0.35 | 0.60 | 1.04 |
| Depression (DEP) | 0.48 | 0.27 | 0.96 | 1.61 | 2.72 |
| Paranoia (PAR) | -0.21 | 0.28 | 0.47 | 0.81 | 1.40 |
| Cognitive depression (DEP-C) | -0.22 | 0.16 | 0.58 | 0.80 | 1.10 |
| Affective depression (DEP-A) | -0.23 | 0.17 | 0.57 | 0.80 | 1.11 |
| Persecution paranoia (PAR-P) | 0.14 | 0.18 | 0.81 | 1.15 | 1.63 |
| Hypervigilance paranoia (PAR-H) | 0.11 | 0.16 | 0.81 | 1.11 | 1.53 |
| Schizophrenia (SCZ) | -0.03 | 0.08 | 0.83 | 0.97 | 1.14 |
| Sch. social detachment (SCZ-S) | 0.26 | 0.16 | 0.94 | 1.29 | 1.77 |
| Physical aggression (AGG-P) | 0.09 | 0.12 | 0.86 | 1.09 | 1.38 |
| Constant | -38.90 | 18.45 |  | 0.00 |  |
| *Step 6* |  |  |  |  |  |
| Affective instability (BOR-A) | -7.53 | 637.04 | 0.00 | 0.00 |  |
| Age at first conviction | -14.66 | 827.69 | 0.00 | 0.00 |  |
| Depression (DEP) | 25.86 | 754.32 | 0.00 | * |  |
| Paranoia (PAR) | -5.88 | 940.69 | 0.00 | 0.00 |  |
| Cognitive depression (DEP-C) | -9.90 | 312.08 | 0.00 | 0.00 | * |
| Affective depression (DEP-A) | -17.85 | 551.56 | 0.00 | 0.00 |  |
| Persecution paranoia (PAR-P) | -1.33 | 769.25 | 0.00 | 0.26 |  |
| Hypervigilance paranoia (PAR-H) | 14.28 | 445.65 | 0.00 | * |  |
| Schizophrenia (SCZ) | 2.33 | 132.48 | 0.00 | 10.26 | * |
| Sch. social detachment (SCZ-S) | 8.85 | 317.42 | 0.00 | 6998 | * |
| Physical aggression (AGG-P) | 7.49 | 310.67 | 0.00 | 1785 | * |
| Suicidal ideation (SUI) | 4.67 | 192.50 | 0.00 | 106.18 | * |
| Constant | -1483 | 51399 |  | 0.00 |  |
| Step 7 |  |  |  |  |  |
| Affective instability (BOR-A) | -3.19 | 454.80 | 0.00 | 0.04 |  |
| Age at first conviction | -6.57 | 569.38 | 0.00 | 0.00 |  |
| Depression (DEP) | 8.67 | 1478 | 0.00 | 5840 |  |
| Paranoia (PAR) | -7.72 | 847.69 | 0.00 | 0.00 |  |
| Cognitive depression (DEP-C) | -1.09 | 923.04 | 0.00 | 0.34 |  |
| Affective depression (DEP-A) | -10.63 | 541.71 | 0.00 | 0.00 |  |
| Persecution paranoia (PAR-P) | 2.02 | 645.51 | 0.00 | 7.56 |  |
| Hypervigilance paranoia (PAR-H) | 11.20 | 504.76 | 0.00 | 72873 |  |
| Schizophrenia (SCZ) | 3.06 | 229.85 | * | 21.24 | * |
| Sch. social detachment (SCZ-S) | 1.47 | 474.00 | 0.00 | 4.33 |  |
| Physical aggression (AGG-P) | 3.79 | 263.00 | * | 44.31 | * |
| Suicidal ideation (SUI) | 4.59 | 223.98 | * | 98.25 | * |
| Total number of PDs | 19.39 | 2223 | 0.00 | * |  |
| Constant | -992.73 | 39269 |  | 0.00 |  |

Notes. *Indicates +/- numbers too large to be tabulated / computed.

# APPENDIX 10

Participant consent form for case study

To whom it may concern

## Case Study Consent Form

I was the supervisor of Antonia Harrison whilst she was working with the client now known as 'Case Study 2' on an individually tailored violence relapse prevention programme. I can confirm that the client gave his informed consent for his work to be used as a case study, signing a copy of the attached consent form (both sections) prior to commencing his schedule of work with Antonia in January 2012.

Yours faithfully

Phil Wilmot
**Consultant Forensic & Clinical Psychologist**

Date 17/7/14

# CONSENT FORM

This form is to be used by a client and a member of staff who are currently working together. It asks for consent for the information gathered within psychology sessions and from clinical files to be used to prepare a Case Study for academic purposes.

**I understand that:**
1. Antonia Harrison is a Forensic Psychologist in Training, who is supervised by psychologists at *xxxx* Hospital, and also at the University of Nottingham.

2. Information gathered within my psychology sessions and from clinical files will be used to prepare a Case Study for academic purposes. This Case Study will be read by Antonia Harrison's supervisors at *xxxx* Hospital and at the University, but it will not contain any personal information that identifies me (such as my name or date of birth).

3. If I decide to agree to Antonia Harrison preparing a Case Study, I can withdraw my consent prior to its completion, without giving a reason. This will not affect my assessment or my treatment in any way.

I have read and understand the information above. I have had the opportunity to think about the information and ask questions, which have been answered to my satisfaction. I now consent for the information gathered within psychology sessions and from clinical files to be used to prepare a Case Study for academic purposes.

**Print name:** _____  **Date:** _____

**Signed:** _____

**In the presence of:** _____  **Signed:** _____


## Case Study Publications in Academic Journals

A Case Study can sometimes be published in an academic journal, if it does not contain any personal information (such as patient names or dates of birth).

I agree that I consent to Antonia Harrison's Case Study being published in a journal, and that direct quotes that I have said may be used in the journal as long as any personal information has been changed to protect my identity and to preserve confidentiality.

**I AGREE   /   I DO NOT AGREE**   *(please circle)*

**Print name:** _____  **Date:** _____

**Signed:** _____

**In the presence of:** _____  **Signed:** _____

# APPENDIX 11

## Personality Assessment Inventory (PAI; Morey 2007))
## Psychometric Results

The PAI is a 344 item self-report inventory, with 22 scales; four validity, 11 clinical, five treatment, and two interpersonal scales. PAI scores are converted to $T$ scores, whereby roughly 84% of the comparison group will have a $T$ score below 60, and 98% will have a $T$ score below 70. The PAI report is computer-generated, presenting the self-description and a descriptive commentary on the likely impact of areas of concern on both the patient and those around them.

Key findings in 2011

*Clinical Features:* The configuration of the clinical scales suggests a person who is impulsive, hostile and un-empathic. His interpersonal relationships are likely to be short lived and characterised by marked conflict, and even those close relationships that are maintained will have most likely suffered strain from his hostile and self-centred style. The combination of impulsivity, egocentricity, and anger could cause him to lash out impulsively at those whom he feels has slighted him in some way.

With respect to anger management, the respondent describes himself as potentially prone to more extreme displays of anger, including damage to property and threats to assault others. These outbursts may be unexpected and take others by surprise. It is likely that those around him may be intimidated by his temper and by his potential for violence.

The respondent's self-description indicates significant suspiciousness and hostility in his relations with others. He is quick to believe that he is being treated inequitably and will hold a grudge against others, even if the perceived affront is unintentional. Because he is likely to question and mistrust the motives of those around him, working relationships with others are likely to be very strained, despite the efforts of others to demonstrate support and assistance.

The results indicate that he may experience to a mild degree, maladaptive behaviour patterns aimed at controlling anxiety. The respondent has likely experienced a disturbing traumatic event in the past; an event that continues to distress him and produce recurrent episodes of anxiety.

*Self-Concept and Treatment Considerations:* The self-concept of the respondent appears to involve a reasonably stable and positive self-evaluation that, as is the case with most individuals, may be occasionally punctuated by periods of self-doubt or pessimism. He describes approaching life with a clear sense of purpose and distinct convictions, with a well-articulated sense of who he is and what his goals are.

He appears motivated for treatment. His responses suggest an acknowledgement of important problems and the perception of a need for help in dealing with these problems. He reports a positive attitude towards the possibility of personal change, the value of therapy, and the importance of personal responsibility.

A comparison of findings in 2005 and 2011

Andrew's scores on the PAI generally decrease between 2005 and 2011, as can be seen pictorially in Figure 6 (presented in the main body of the report). The statistical significance of the changes were assessed using the reliability change index, as follows in Table A2.

Table A2: *A comparison of PAI scale scores in 2005 and 2011.*

| | PAI Manual Data | | | | Calculations | | Treatment Effects | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dysfunctional Group | | Functional Group | | Test-retest Reliability | Cut Off Scores (C) | Pre treat-ment score (2005) | Post treat-ment score (2011) | Reliability Change Index |
| | Mean | St Dev | Mean | St Dev | | | | | |
| *Validity Scales* | | | | | | | | | |
| ICN | 6.57 | 3.04 | 4.92 | 2.69 | 0.31 | 5.69 | 10 | 5 | -1.40 |
| INF | 3.18 | 2.47 | 2.84 | 2.04 | 0.48 | 2.99 | 6 | 1 | **-1.98*** |
| NIM | 4.38 | 4.27 | 1.5 | 2.2 | 0.75 | 2.48 | 14 | 5 | **-2.98*** |
| PIM | 12.24 | 5.07 | 13.08 | 4.36 | 0.78 | 12.69 | 12 | 14 | 0.59 |
| *Main Clinical Scales* | | | | | | | | | |
| SOM | 19.34 | 14.39 | 7.86 | 6.92 | 0.83 | 11.59 | 27 | 24 | -0.36 |
| ANX | 28.5 | 15.51 | 18.46 | 10.32 | 0.88 | 22.47 | 20 | 10 | -1.32 |
| ARD | 28.27 | 12.39 | 19.2 | 8.78 | 0.83 | 22.96 | 31 | 34 | 0.42 |
| DEP | 27.38 | 15.1 | 13.2 | 8.68 | 0.87 | 18.38 | 26 | 14 | -1.56 |
| MAN | 25.34 | 10.15 | 27.21 | 9.48 | 0.83 | 26.31 | 38 | 29 | -1.52 |
| PAR | 24.86 | 11.44 | 18.87 | 8.57 | 0.84 | 21.44 | 58 | 41 | **-2.63*** |
| SCZ | 21.03 | 11.79 | 13.44 | 7.68 | 0.82 | 16.43 | 31 | 9 | **-3.11*** |
| BOR | 31.39 | 13.85 | 22.93 | 10.33 | 0.86 | 26.54 | 38 | 29 | -1.23 |
| ANT | 18.88 | 11.37 | 18.92 | 10.44 | 0.89 | 18.90 | 47 | 31 | **-3.00*** |
| ALC | 10.44 | 10.53 | 5.96 | 5.53 | 0.92 | 7.50 | 9 | 3 | -1.42 |
| DRG | 8.62 | 8.91 | 3.01 | 3.88 | 0.79 | 4.71 | 13 | 4 | -1.56 |
| *Treatment Scales* | | | | | | | | | |
| AGG | 19.69 | 11.18 | 16.48 | 9.69 | 0.81 | 17.97 | 41 | 28 | -1.89 |
| SUI | 9.09 | 9.42 | 3.92 | 5.2 | 0.8 | 5.76 | 10 | 14 | 0.67 |
| STR | 11.91 | 5.75 | 6.12 | 4.08 | 0.83 | 8.52 | 13 | 7 | -1.79 |
| NON | 8.44 | 5.13 | 4.43 | 3.56 | 0.78 | 6.07 | 13 | 5 | **-2.35*** |
| RXR | 9.1 | 5.45 | 14.12 | 4.16 | 0.79 | 11.95 | 9 | 10 | 0.28 |

| | PAI Manual Data | | | | Calculations | | Treatment Effects | | |
| | Dysfunctional Group | | Functional Group | | Test-retest Reliability | Cut Off Scores (C) | Pre treatment score (2005) | Post treatment score (2011) | Reliability Change Index |
| | Mean | St Dev | Mean | St Dev | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Interpersonal Scales* | | | | | | | | | |
| DOM | 19.43 | 6.49 | 21.66 | 5.79 | 0.68 | 20.61 | 28 | 25 | -0.58 |
| WRM | 21.16 | 6.6 | 25 | 5.54 | 0.77 | 23.25 | 13 | 28 | **3.35\*** |
| *Subscales* | | | | | | | | | |
| SOM-C | 5.31 | 5.43 | 1.55 | 2.29 | 0.68 | 2.67 | 8 | 5 | -0.69 |
| SOM-S | 7.19 | 5.08 | 3.48 | 3.09 | 0.79 | 4.88 | 6 | 5 | -0.30 |
| SOM-H | 6.83 | 5.6 | 2.84 | 3.02 | 0.81 | 4.24 | 13 | 14 | 0.29 |
| ANX-C | 10.73 | 6.01 | 7.12 | 4.61 | 0.85 | 8.69 | 6 | 3 | -0.91 |
| ANX-A | 10.25 | 5.62 | 6.87 | 3.86 | 0.79 | 8.25 | 7 | 4 | -0.82 |
| ANX-P | 7.52 | 5.13 | 4.48 | 3.18 | 0.83 | 5.64 | 7 | 3 | -1.34 |
| ARD-O | 10.65 | 4.43 | 8.52 | 4.07 | 0.74 | 9.54 | 9 | 11 | 0.63 |
| ARD-P | 8.1 | 4.42 | 6.42 | 3.4 | 0.69 | 7.15 | 5 | 3 | -0.57 |
| ARD-T | 9.52 | 6.83 | 4.26 | 4.46 | 0.82 | 6.34 | 17 | 20 | 0.73 |
| DEP-C | 8.31 | 5.43 | 4.5 | 3.5 | 0.77 | 5.99 | 7 | 6 | -0.27 |
| DEP-A | 9.34 | 5.89 | 3.91 | 3.35 | 0.85 | 5.88 | 11 | 6 | -1.55 |
| DEP-P | 9.74 | 5.48 | 4.78 | 3.39 | 0.75 | 6.68 | 8 | 2 | -1.55 |
| MAN-A | 7.2 | 3.61 | 7.75 | 3.46 | 0.68 | 7.48 | 15 | 7 | **-2.77\*** |
| MAN-G | 8.29 | 5.03 | 10.01 | 4.73 | 0.81 | 9.18 | 11 | 11 | 0.00 |
| MAN-I | 9.85 | 5.01 | 9.45 | 4.35 | 0.79 | 9.64 | 12 | 11 | -0.31 |
| PAR-H | 9.88 | 4.47 | 8.07 | 3.67 | 0.78 | 8.89 | 21 | 11 | **-3.37\*** |
| PAR-P | 5.7 | 4.6 | 3.51 | 3.21 | 0.75 | 4.41 | 20 | 17 | -0.92 |
| PAR-R | 9.28 | 4.23 | 7.3 | 3.32 | 0.74 | 8.17 | 17 | 13 | -1.31 |
| SCZ-P | 4.7 | 3.87 | 4.68 | 3.09 | 0.74 | 4.69 | 17 | 8 | **-3.23\*** |
| SCZ-S | 8.83 | 5.51 | 4.14 | 3.56 | 0.83 | 5.98 | 5 | 1 | -1.24 |
| SCZ-T | 7.49 | 5.36 | 4.61 | 3.74 | 0.78 | 5.79 | 9 | 0 | **-2.53\*** |

|  | PAI Manual Data | | | | Test-retest Reliability | Calculations | Treatment Effects | | |
|---|---|---|---|---|---|---|---|---|---|
|  | Dysfunctional Group | | Functional Group | | | Cut Off Scores (C) | Pre treat-ment score (2005) | Post treat-ment score (2011) | Reliability Change Index |
|  | Mean | St Dev | Mean | St Dev | | | | | |
| BOR-A | 8.28 | 4.53 | 5.74 | 3.7 | 0.82 | 6.88 | 11 | 9 | -0.74 |
| BOR-I | 8.92 | 4.4 | 7.13 | 3.46 | 0.79 | 7.92 | 6 | 4 | -0.70 |
| BOR-N | 8.82 | 3.96 | 5.95 | 3.32 | 0.72 | 7.26 | 10 | 10 | 0.00 |
| BOR-S | 5.36 | 3.8 | 4.11 | 2.73 | 0.78 | 4.63 | 11 | 6 | **-1.98*** |
| ANT-A | 9.31 | 5.8 | 6.34 | 4.71 | 0.83 | 7.67 | 22 | 17 | -1.48 |
| ANT-E | 4.46 | 3.45 | 4.97 | 3.16 | 0.75 | 4.73 | 12 | 8 | -1.64 |
| ANT-S | 6.1 | 4.52 | 7.61 | 4.35 | 0.85 | 6.87 | 13 | 6 | **-2.83*** |
| AGG-A | 7.77 | 4.45 | 5.86 | 4.01 | 0.72 | 6.77 | 16 | 9 | **-2.10*** |
| AGG-F | 7.12 | 3.77 | 7.97 | 4.01 | 0.75 | 7.53 | 12 | 9 | -1.13 |
| AGG-P | 4.79 | 4.7 | 2.65 | 3.33 | 0.77 | 3.54 | 13 | 10 | -0.94 |

Notes. *These scales demonstrate significant change, using the Reliability Change Index

# APPENDIX 12

Psychometric assessment: Novaco Anger Scale–Provocation Inventory (NAS-PI; Novaco, 2003)

## NAS-PI
### PC Answer Sheet
Raymond W. Novaco, Ph.D.

Name: _____  ID Number: _____  Age: _____

Date: _____  Examiner ID: _____  Gender: ☐ Female  ☐ Male

Education (Years Completed): ☐ <6  ☐ 6  ☐ 7  ☐ 8  ☐ 9  ☐ 10  ☐ 11  ☐ 12  ☐ 13  ☐ 14  ☐ 15  ☐ 16  ☐ >16

Race/Ethnicity: ☐ American Indian/Alaska Native  ☐ Asian  ☐ Black/African American  ☐ Hispanic/Latino  ☐ Native Hawaiian/Pacific Islander  ☐ White  ☐ Other _____

The statements in Part A describe things that people sometimes think, feel, and do. How true are they for you? For each statement, indicate whether it is (1) never true, (2) sometimes true, or (3) always true. Check the number that best describes how true the statement is for you.

**PART A**

(Never true = 1, Sometimes true = 2, Always true = 3)

1. When something wrong is done to me, I am going to get angry.
2. Once something makes me angry, I keep thinking about it.
3. Every week I meet someone I dislike.
4. I know that people are talking about me behind my back.
5. When something makes me angry, I put it out of my mind and think of something else.
6. Some people would say that I am a hothead.
7. My muscles feel tight and wound-up.
8. When I get angry, I stay angry for hours.
9. I walk around in a bad mood.
10. If I feel myself getting angry, I can calm myself down.
11. My temper is quick and hot.
12. When someone yells at me, I yell back at them.
13. I have had to be rough with people who bothered me.
14. I feel like smashing things.
15. When I am frustrated by a problem, I try to find a solution.
16. I get angry because I have a good reason to be angry.
17. I can't sleep when something wrong has been done to me.
18. If I don't like someone, it doesn't bother me to hurt their feelings.
19. People can be trusted to do what they say.
20. I try to see positive things in other people.
21. When I get angry, I get really angry.
22. When I think about something that makes me angry, I get even more angry.
23. I feel agitated and unable to relax.
24. I get annoyed when someone interrupts me.
25. I am able to stay cool in the face of pressure.
26. If someone bothers me, I react first and think later.
27. If I don't like somebody, I'll tell them off.
28. When I get mad, I can easily hit someone.
29. When I get angry, I throw or slam things.
30. When I have a conflict with someone, I speak to that person about the problem.
31. If I lose my temper with someone, it's because they deserved it.
32. When someone makes me angry, I think about getting even.
33. If someone cheats me, I'd make them feel sorry.
34. People act like they are being honest when they really have something to hide.
35. If someone says something nasty, I can swallow my pride and let it go.
36. When I get angry, I feel like smashing things.
37. Some people get angry and get over it, but for me it takes a long time.

*continue on back page*

| Never true | Sometimes true | Always true | | |
|---|---|---|---|---|
| 1 | 2 | 3 | 38. | I have trouble sleeping or falling asleep. |
| 1 | 2 | 3 | 39. | A lot of little things bug me. |
| 1 | 2 | 3 | 40. | When I get agitated, I can relax by taking deep breaths. |
| 1 | 2 | 3 | 41. | I have a fiery temper that arises in an instant. |
| 1 | 2 | 3 | 42. | Some people need to be told to "get lost." |
| 1 | 2 | 3 | 43. | If someone hits me first, I hit them back. |
| 1 | 2 | 3 | 44. | When I get angry at someone, I take it out on whomever is around. |
| 1 | 2 | 3 | 45. | If I disagree with someone, I try to say something constructive. |
| 1 | 2 | 3 | 46. | The more someone bothers me, the more I'll get angry. |
| 1 | 2 | 3 | 47. | I feel like I am getting a raw deal out of life. |
| 1 | 2 | 3 | 48. | When I don't like somebody, there's no point in being nice to them. |
| 1 | 2 | 3 | 49. | When someone does something nice for me, I wonder about the hidden reason. |
| 1 | 2 | 3 | 50. | If someone is bothering me, I try to understand why. |
| 1 | 2 | 3 | 51. | It makes my blood boil to have someone make fun of me. |
| 1 | 2 | 3 | 52. | When I get mad at someone, I give them the silent treatment. |
| 1 | 2 | 3 | 53. | My head aches when people annoy me. |
| 1 | 2 | 3 | 54. | It bothers me when someone does things the wrong way. |
| 1 | 2 | 3 | 55. | I can get rid of tension by imagining something calm and relaxing. |
| 1 | 2 | 3 | 56. | When I get angry, I fly off the handle before I know it. |
| 1 | 2 | 3 | 57. | When I start to argue with someone, I don't stop until they do. |
| 1 | 2 | 3 | 58. | Some people need to get knocked around. |
| 1 | 2 | 3 | 59. | If someone makes me angry, I'll tell other people about them. |
| 1 | 2 | 3 | 60. | I can walk away from an argument. |

**Continue with the following items unless you have been told to stop here.**

For the statements in Part B, decide how angry each situation would make you feel. Check the number that best describes how angry each situation would make you feel. Please give an answer for each statement, and give only one answer to each statement.

| Not at all angry | A little angry | Fairly angry | Very angry | **PART B** | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 1. | Being criticized in front of other people for something that you have done. |
| 1 | 2 | 3 | 4 | 2. | You see someone bully another person who is smaller or less powerful. |
| 1 | 2 | 3 | 4 | 3. | Someone keeps making noise when you are trying to concentrate. |
| 1 | 2 | 3 | 4 | 4. | People who act like they know it all. |
| 1 | 2 | 3 | 4 | 5. | Being slowed down by another person's mistakes. |
| 1 | 2 | 3 | 4 | 6. | Someone cuts in front of you when you are in line to get something. |
| 1 | 2 | 3 | 4 | 7. | You are watching a TV program, when someone comes along and switches the channel. |
| 1 | 2 | 3 | 4 | 8. | People who don't really listen when you talk to them. |
| 1 | 2 | 3 | 4 | 9. | You get cold food that is supposed to be hot. |
| 1 | 2 | 3 | 4 | 10. | Someone looking over your shoulder while you are working. |
| 1 | 2 | 3 | 4 | 11. | Someone else gets credit for work that you did. |
| 1 | 2 | 3 | 4 | 12. | People who think that they are better than you are. |
| 1 | 2 | 3 | 4 | 13. | Someone makes fun of the clothes you are wearing. |
| 1 | 2 | 3 | 4 | 14. | You get singled out for correction, when someone else doing the same thing is ignored. |
| 1 | 2 | 3 | 4 | 15. | You make plans to do something with a person who backs out at the last minute. |
| 1 | 2 | 3 | 4 | 16. | People who think that they are always right. |
| 1 | 2 | 3 | 4 | 17. | Just after waking up in the morning, someone starts giving you a hard time. |
| 1 | 2 | 3 | 4 | 18. | Someone looks through your things without your permission. |
| 1 | 2 | 3 | 4 | 19. | Being accused of something that you didn't do. |
| 1 | 2 | 3 | 4 | 20. | You lend something to someone, and they fail to return it. |
| 1 | 2 | 3 | 4 | 21. | Someone who is always disagreeing with you. |
| 1 | 2 | 3 | 4 | 22. | You are hungry and tired, and someone plays a practical joke on you. |
| 1 | 2 | 3 | 4 | 23. | You are overcharged by someone for a repair. |
| 1 | 2 | 3 | 4 | 24. | You need to get somewhere in a hurry, but you get stuck in traffic. |
| 1 | 2 | 3 | 4 | 25. | You are carrying a hot drink, and someone bumps into you. |

# APPENDIX 13

Psychometric assessment: Inventory of Interpersonal Problems (IIP-32; Horowitz, Alden, Wiggins & Pincus, 2000)

## IIP-32 Question/Scoring Sheet

Name: _____

Date: ____ / ____ / ____
Month  Day  Year

Sex: Male ☐  Female ☐

People have reported having the following problems in relating to other people. Please read the list below, and for each item, consider whether it has been a problem for you with respect to **any** significant person in your life. Then fill in the numbered circle that describes how distressing that problem has been.

**The following are things you find hard to do with other people.**

It is hard for me to:

*Columns: Not at all (0), A little bit (1), Moderately (2), Quite a bit (3), Extremely (4)*

1. Say "no" to other people
2. Join in on groups
3. Keep things private from other people
4. Tell a person to stop bothering me
5. Introduce myself to new people
6. Confront people with problems that come up
7. Be assertive with another person
8. Let other people know when I am angry
9. Socialize with other people
10. Show affection to people
11. Get along with people
12. Be firm when I need to be
13. Experience a feeling of love for another person
14. Be supportive of another person's goals in life
15. Feel close to other people
16. Really care about other people's problems
17. Put somebody else's needs before my own
18. Feel good about another person's happiness
19. Ask other people to get together socially with me
20. Be assertive without worrying about hurting the other person's feelings

**The following are things that you do too much.**

21. I open up to people too much.
22. I am too aggressive toward other people.
23. I try to please other people too much.
24. I want to be noticed too much.
25. I try to control other people too much.
26. I put other people's needs before my own too much.
27. I am overly generous to other people.
28. I manipulate other people too much to get what I want.
29. I tell personal things to other people too much.
30. I argue with other people too much.
31. I let other people take advantage of me too much.
32. I am affected by another person's misery too much.

# APPENDIX 14

Psychometric assessment: Criminal Sentiments Scale - Modified (CSS-M; Shields & Simourd, 1991)

## CRIMINAL SENTIMENTS SCALE - MODIFIED

This is not a test, and there are no 'right' and 'wrong' answers.

For each statement, circle the appropriate answer according to how you feel about it. Indicate your preference by circling 'Agree' or 'Uncertain' or 'Disagree'. Only one can be circled.

| | | | | |
|---|---|---|---|---|
| 1. | Pretty well all laws deserve our respect. | Agree | Uncertain | Disagree |
| 2. | It's our duty to obey all laws. | Agree | Uncertain | Disagree |
| 3. | Laws are usually bad. | Agree | Uncertain | Disagree |
| 4. | The law is rotten to the core. | Agree | Uncertain | Disagree |
| 5. | You cannot respect the law because it's there only to help a small and selfish group of people. | Agree | Uncertain | Disagree |
| 6. | All laws should be obeyed just because they are laws. | Agree | Uncertain | Disagree |
| 7. | The law does not help the average person. | Agree | Uncertain | Disagree |
| 8. | The law is good. | Agree | Uncertain | Disagree |
| 9. | Law and justice are the same thing. | Agree | Uncertain | Disagree |
| 10. | The law makes slaves out of most people for few people on the top. | Agree | Uncertain | Disagree |
| 11. | Almost any jury can be fixed. | Agree | Uncertain | Disagree |
| 12. | You cannot get justice in court. | Agree | Uncertain | Disagree |
| 13. | Lawyers are honest. | Agree | Uncertain | Disagree |
| 14. | The prosecution often produces fake witnesses. | Agree | Uncertain | Disagree |
| 15. | Judges are honest and kind. | Agree | Uncertain | Disagree |
| 16. | Court decisions are pretty well always fair. | Agree | Uncertain | Disagree |
| 17. | Just about anything can be fixed in court if you have enough money. | Agree | Uncertain | Disagree |
| 18. | A judge is a good person. | Agree | Uncertain | Disagree |
| 19. | The police are honest. | Agree | Uncertain | Disagree |
| 20. | A cop is a friend to people in need. | Agree | Uncertain | Disagree |
| 21. | Life would be better with fewer cops. | Agree | Uncertain | Disagree |

| 22. | The police should be paid more for their work. | Agree | Uncertain | Disagree |
|-----|-----|-----|-----|-----|
| 23. | The police are as crooked as the people they arrest. | Agree | Uncertain | Disagree |
| 24. | Society would be better off if there were more police. | Agree | Uncertain | Disagree |
| 25. | The police almost never help people. | Agree | Uncertain | Disagree |
| 26. | Sometimes a person like me has to break the law to get ahead in life. | Agree | Uncertain | Disagree |
| 27. | Most successful people broke the law to get ahead in life. | Agree | Uncertain | Disagree |
| 28. | You should always obey the law, even if it keeps you from getting ahead in life. | Agree | Uncertain | Disagree |
| 29. | It is okay to break the law as long as you don't get caught. | Agree | Uncertain | Disagree |
| 30. | Most people would commit crimes if they know they wouldn't get caught. | Agree | Uncertain | Disagree |
| 31. | There is never a good reason to break the law. | Agree | Uncertain | Disagree |
| 32. | A hungry man has the right to steal. | Agree | Uncertain | Disagree |
| 33. | It is okay to get around the law as long as you don't actually break it. | Agree | Uncertain | Disagree |
| 34. | You should only obey those laws that are reasonable. | Agree | Uncertain | Disagree |
| 35. | You are crazy to work for a living if there is an easier way, even if it means breaking the law. | Agree | Uncertain | Disagree |
| 36. | People who have broken the law have the same sorts of ideas about life as me. | Agree | Uncertain | Disagree |
| 37. | I prefer to be with people who obey the law rather than people who break the law. | Agree | Uncertain | Disagree |
| 38. | I'm more like a professional criminal than people who break the law now and then. | Agree | Uncertain | Disagree |
| 39. | People who have been in trouble with the law are more like me than people who don't have trouble with the law. | Agree | Uncertain | Disagree |
| 40. | I have very little in common with people who never break the law. | Agree | Uncertain | Disagree |
| 41. | No one who breaks the law can be my friend. | Agree | Uncertain | Disagree |

# APPENDIX 15

## Pre-Post Treatment Psychometric Results

Three psychometric assessments were administered before and after the treatment programme, which enable evaluation of treatment effects. The tools are described below, and summary results provided.

### Inventory of Interpersonal Problems (IIP-32; Horowitz, Alden, Wiggins & Pincus, 2000)

The IIP is a self-report instrument that identifies a person's most salient interpersonal difficulties. The IIP-32 contains 32 items (half that of the full version) and is used as a brief screening tool. The presented scores indicate the person's level of difficulty in interpersonal functioning, relative to a sample based on the U.S. census, across eight domains of behaviour; 'domineering/controlling', 'vindictive/self-centred', 'cold/distant', 'socially inhibited', 'non-assertive', 'overly-accommodating', 'self-sacrificing' and 'intrusive/needy' behaviours.

In addition, 'individual-based' *T* scores allow the individual's scores on the eight scales to be assessed relative to each other, thus allowing the pinpointing of the particular areas of interpersonal problems that the individual finds most distressing. The scores may be used to examine an individual's difficulties before and after clinical treatment.

Table A3. *Summary of Pre-Post Intervention Change on the IIP-32*

|  | Individual-based *T* scores | |
|---|---|---|
|  | Pre treatment | Post treatment |
| *IIP-32 subscales* | | |
| Domineering / controlling | 69* | 60* |
| Vindictive / self-centred | 52 | 52 |
| Cold / distant | 53 | 53 |
| Socially inhibited | 54 | 50 |
| Non-assertive | 49 | 53 |
| Overly accommodating | 60* | 54 |
| Self-sacrificing | 48 | 55 |
| Intrusive / needy | 50 | 50 |
| Overall score | 40* | 40* |

*Denotes problematic areas falling 10 or more points above or below the mean

**Criminal Sentiments Scale - Modified (CSS-M; Shields & Simourd, 1991)**

The CSS-M is a self-report measure that examines antisocial beliefs and attitudes. It is a modified version of the CSS, created by Andrews & Wormith (1984); the key differences being the use of a 3-point rather than 5-point likert scale, and the reversing of the scoring mechanism so that higher scores reflect greater pro-criminal attitudes. The CSS-M's 41 questionnaire items are grouped within three areas; 'attitudes to law/court/police', 'tolerance for law violations' and 'identification with criminal others'. The CSS-M was designed as an assessment tool and a predictor of recidivism, with social learning theory suggesting that pro-criminal attitude is one of many factors causally related to criminal behaviour. The creators found that the CSS-M significantly predicts violent reoffending, but does not predict non-violent reoffending.

Table A4. *Summary of Pre-Post Intervention Change on the CSS-M*

| | Individual scores | | Simourd & Van de Ven, 1999 (mean scores) | | |
|---|---|---|---|---|---|
| | Pre treat-ment | Post treat-ment | Non-violent offenders (n=54) | Violent offenders (n=87) | Total sample (n=141) |
| *CSS subscales* | | | | | |
| Attitudes to law-court-police (out of 50) | 29 | 22 | 20.9 | 12.3 | 15.5 |
| Tolerance for law violations (out of 20) | 16 | 14 | 8.3 | 4.9 | 6.2 |
| Identification with criminal others (out of 12) | 10 | 7 | 4.8 | 3.7 | 4.1 |
| Overall score (out of 82) | 55 | 43 | 34.0 | 20.8 | 25.8 |

**Novaco Anger Scale–Provocation Inventory (NAS-PI; Novaco, 2003)**

The NAS-PI is a two-part self-report questionnaire used to assess components of anger disposition and anger reactivity to situations of provocation. The 60 NAS items focus on how an individual experiences anger, with five scores produced; a total score and scores on 'cognitive', 'arousal', 'behavioural' and 'anger regulation' subscales. The 25 PI items focus on situations that lead to anger, in five areas; 'disrespectful treatment', 'unfairness', 'frustration', 'annoying traits of others' and 'irritations', producing the total PI score. The NAS-PI is designed to assess anger as a problem of psychological functioning and physical health, and can be used with persons who are mentally disordered. The tool can be used to assess therapeutic change, and as it was developed and standardised with community and clinical populations, the provided group data permits the assessment of clinically significant change within single subject research studies.

Table A5. *Statistical Analysis of Post-Intervention Change on the NAS-PI, using the Reliability Change Index*

| | NAS-PI Manual Data | | | | | Calculations | Treatment Effects | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dysfunctional Group Homicide Perpetrators in Psychiatric Hospital | | Functional Group Matched Comparison Group | | Scale test-retest reliability | Cut Off Scores (C) Between dysfunctional and functional groups | Pre-treatment score | Post-treatment score | Reliability Change Index |
| | Mean score | St Dev | Mean score | St Dev | | | | | |
| *Novaco Anger Scale* | | | | | | | | | |
| Cognitive | 30.0 | 6.1 | 29.3 | 5.0 | 0.47 | 29.6 | 30 | 30 | 0.00 |
| Arousal | 27.6 | 6.8 | 27.6 | 6.1 | 0.78 | 27.6 | 27 | 27 | 0.00 |
| Behaviour | 27.1 | 7.2 | 27.5 | 6.8 | 0.81 | 27.3 | 28 | 27 | -0.23 |
| *Anger regulation | 27.9 | 5.2 | 25.2 | 3.9 | 0.72 | 26.4 | 29 | 28 | -0.26 |
| Total Score | 84.7 | 18.9 | 84.4 | 26.6 | 0.76 | 84.6 | 85 | 84 | -0.08 |
| *Provocation Inventory* | | | | | | | | | |
| Disrespectful Treatment | 11.3 | 3.5 | 11.6 | 3.1 | 0.70 | 11.5 | 15 | 12 | -1.11 |
| Unfairness | 15.7 | 4.4 | 14.6 | 3.9 | 0.85 | 15.1 | 14 | 12 | -0.83 |
| Frustration | 15.0 | 4.3 | 15.7 | 3.9 | 0.78 | 15.4 | 15 | 12 | -1.05 |
| Annoying traits of others | 10.8 | 4.0 | 11.6 | 3.8 | 0.68 | 11.2 | 15 | 12 | -0.94 |
| Irritations | 14.4 | 4.5 | 13.2 | 3.9 | 0.82 | 13.6 | 13 | 11 | -0.74 |
| Total Score | 67.2 | 17.8 | 66.7 | 16.5 | 0.82 | 66.9 | 72 | 59 | -1.22 |

Notes.  *Higher scores on anger regulation are desirable, whilst lower scores on all other scales are desirable.

RCI value of 1.96 or higher represents a significant change at p <0.05

# APPENDIX 16

## Treatment Materials

The diary card presented below was used during Andrew's treatment programme, as between-session-work. It was printed as double-sided sheet, with the treatment goals on the reverse to serve as a memory aide.



| *New VRP Relapse Prevention Work 2012* *Diary Card* | |
|---|---|
| Date: _ _ _ _ _ _ _ _ _ _ _ Day: _ _ _ _ _ _ Time: _ _ _ _ Location: _ _ _ _ _ _ _ _ _ _ _ _ _ _ | |
| **Trigger:** | |
| **Relevant Goal:** (see over) | |
| **How did I respond?:** | **Description:** |
| | **Was it easy?** |
| | **How did it feel?** |
| | **What could I have done better / differently?** |
| | **My final reflection:** Eg. If my response was positive, how might I apply this to other situations? |

VRP Relapse Prevention Diary Card (back)



**VRP Programme Goal 1**

To be less judgemental and understand the view of other people

**Examples**
- When working with new staff
- During interactions with people I don't like

**VRP Programme Goal 2**

To be expressive of anger in situations where I disagree with what is being said or done. To not suppress anger due to fear that I might lose control.

*NB. To be mindful of the intimidation factor'.*

**Examples**
- In ward rounds, and in one-to-one sessions with my RMO

**VRP Programme Goal 3**

To develop a legal work ethic

**Examples**
*It was agreed that this does not have to be covered on the diary card at present*

**VRP Programme Goal 4**

To challenge criminal attitudes and influence of criminal peers

**Examples**
- When interacting with peers at Boredom Busters, or in E-Court / the Yard.

**Goal developed from Relapse Prevention Plan 5**

To respond positively rather than negatively to people in problematic situations

**Examples**
- When someone is in my face or playing games with me.

**OVERALL VRP PROGRAMME AIM**

To address *all* violence and aggression - not just behaviour that has been subject to charges or convictions. There is strong emphasis on understanding and breaking cycles of violence/aggression as they manifest day to day, and on how personality factors contribute to risk of violent and aggressive behaviour.

298