Anger: Its Role and Relation to Aggression and Coercive Containment in Secure Adult Mental Health Services

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ABSTRACT

BACKGROUND: Inpatient aggression is common in mental health services resulting in significant costs. Anger is an important risk factor, but research into the role of its constituents is limited. The role of nursing staff's anger in their reactions to aggressive patients is poorly understood.

AIMS: This thesis examined the role of anger and its components in patient aggression and nursing staff's coercive containment practices. Objectives were to: i) better understand the relationship between patient anger and aggression; ii) identify whether patients' self-reported anger adds value to violence-risk assessment tools; iii) determine whether nursing staff anger is related to exposure to inpatient aggression and in their attitudes towards and involvement in coercive containment; iv) determine how anger is manifested in the interpersonal styles of both patients and nursing staff, and identify whether any specific nurse-patient interpersonal relationship-type is associated with inpatient aggression and/or coercive containment.

METHODS: Two systematic literature reviews were conducted on patient anger and nursing staff anger, respectively. Correlational study designs were adopted across four empirical studies using validated questionnaires and cognitive tasks. Aggression and containment incident data and clinician-rated violence risk assessments were retrieved.

RESULTS: Patients (n = 93) and nursing staff (n = 68) from low and medium secure mental health services were recruited. Using explicit cognitive processing measures, patient anger was associated with hostility and rumination tendencies. Patients' self-reported anger was significantly positively correlated with clinician-rated, anger-related violence risk assessment items, and predicted inpatient aggression but not beyond clinicians' ratings. Nursing staff anger was associated with exposure to patient aggression perceived as humiliating; nursing staff who reported higher levels of anger approved more of physical restraint. Patients' self-reported anger was related to their nurse-rated hostile interpersonal style while nurses' self-reported anger was related to their patient-rated dominant interpersonal style.

CONCLUSIONS: Implications of this programme of research demonstrates that anger plays an important role in the occurrence and management of inpatient aggression. They provide significant new knowledge to incorporate into evidence-based anger treatment programmes and staff training and support.

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LIST OF ABBREVIATIONS

ACF	Assessment Classification of Function
ACMQ	Attitude to Containment Measures Questionnaire
AIHQ	Ambiguous Intentions Hostility Questionnaire
ARS	Anger Rumination Scale
AUC	Area under curve
BDHI	Buss-Durke Hostility Inventory
BPAQ	Buss-Perry Aggression Questionnaire
BPRS	Brief Psychiatric Rating Symptom
BSI	Brief Symptom Inventory
CI	Confidence Interval
CIRCLE	Chart of Interpersonal Reactions in Closed Environments
CERQ	Cognitive Emotion Regulation Questionnaire
CGI	Clinical Global Impression
CPRS	Comprehensive Psychopathological Rating Scale
DH	Department of Health
DSM	Diagnostic and Statistical Manual of Mental Disorders
GAM	General Aggression Model
GATE	Graph Appraisal Tool for Epidemiological studies
HCR-20	Historical Clinical Risk Management 20 scheme
ICD	International Classification of Diseases
ICM	Integrative Cognitive Model
IMI-C	Impact Message Inventory-Circumplex
K	Number of studies
M	Sample mean
N	Total number of cases
n	Number of cases in a subsample
NAS-PI	Novaco Anger Scale-Provocation Inventory
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NRES	National Research Ethics Service
OAS	Overt Aggression Scale
OR	Odd Ratio
PANAS-X	Positive and Negative Affect Schedule – Expanded Form

PANNS	Positive and Negative Syndrome Scale
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PAS	Problem Appraisal Scale
POPAS	Perception Of Prevalence of Aggression Scale
PRN	Pro re nata medication
RC	Responsible Clinician
REC	Research Ethics Committee
RIM	Reflective-Impulsive Model
SIP	Social Information Processing
SPJ	Structured Professional Judgement
START	Short-Term Assessment of Risk and Treatability
STAXI	State-Trait Anger Expression Inventory
VIF	Variance Inflation Factor
WARS	Ward Anger Rating Scale
WCT	Word Completion Task
WCST	Wisconsin Card Sorting Task
WHO	World Health Organisation

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1. CHAPTER ONE

1.1. THESIS INTRODUCTION

1.1.1. Background and context

Individuals sectioned under the Mental Health Act (2008) for assessment and treatment are admitted into inpatient mental health services. The experience of being in a mental health setting, especially for those who are involuntarily detained and sometimes treated without their consent, can be daunting. Thus, being hospitalised with restricted liberties can bring its own set of challenges (McGuinness, Dowling & Trimble, 2013). Dealing with such challenges alongside mental health disorders, other patients, staff, the environment and the mental health care system can be frustrating (Gilburt, Rose & Slade, 2008). These experiences can result in high levels of anger and give rise to flashpoints for conflict. Such conflict may involve aggressive behaviour (Bowers, 2014). Clinical staff would then need to make decisions about the use of containment, such as physical restraint in the interest of safety. Aggressive behaviour and the use of coercive containment methods can make psychiatric wards unpleasant, anxiety-provoking and a dangerous environment for both patients and staff.

Approximately 40% of inpatients exhibit aggressive behaviour (Bowers et al., 2011). It is estimated that the consequences of inpatient aggression can cost the National Health Service (NHS) £69 million a year (National Audit Office, 2003). Flood, Bowers and Parkin (2008) found that the most expensive conflict behaviour to manage was verbal aggression, with a total cost of £10.5 million each year, followed by physical aggression toward others (£4.9 million), towards self (£4 million) and towards objects (£3.3 million). Working with challenging patients can be physically and emotionally demanding for clinical staff which can affect their wellbeing and, in turn, impact negatively on the quality of care with subsequent implications for the care organisation (Paparella, 2015). Staff victims of patient assault commonly experience symptoms of posttraumatic stress disorder (Caldwell, 1992; Wykes & Whittington, 1998). There has been a surge of interest in providing mental health support in the workplace across various industries, including healthcare (NHS England, 2015). This recognition comes from an increased awareness of mental health conditions and its impact on functioning in self-care, relationships and at work (World Health Organisation (WHO), 2002).

Consequences in the workplace can include absenteeism, reduced work performance, job satisfaction and changed relationships with colleagues (Flannery & Walker, 2008; Antonysamy, 2013). Reduced retention of staff (Owen, Tarantello & Jones, 1998) as well as a reliance on temporary staff can disrupt the clinical routine of services and affect standards of patient care (Pai & Lee, 2011).

Empirical research has been conducted which has contributed to a body of knowledge concerning the antecedents and consequences of inpatient aggression (Bowers et al., 2011). This has led to the development of the *Safewards Model* (Bowers, 2014). This primarily concerns what staff can do to affect the rates of conflict, such as patient aggression and the rates of containment - including the use of physical restraint with or without seclusion. The model comprises six domains that are identified as key influences in the rates of conflict and containment: patient community, patient characteristics, regulatory framework, staff team, physical environment and outside hospital. It is indicated within the staff team domain that staff anxiety and frustration in response to patients' disruptive behaviour has the capacity to amplify patient anger and trigger further or more extreme conflict behaviours. Also, symptoms, personality traits and demographic features, which constitute the patient characteristics domain, are believed to contribute to the rise of conflict behaviour becoming more likely. Within both domains, however, the role of anger in and between patients and nursing staff is not clear.

The use of coercive containment can give rise to further patient aggression rather than successfully prevent it (Bowers, 2014). It is therefore important to understand the role of anger between those involved. This will allow for both associated incidents to be addressed and any ruptures in therapeutic relationships that may unfold because of anger to be mended. Anger is considered as a multidimensional (DiGuiseppe & Tafrate, 2007) that includes physiological, cognitive and behavioural dimensions. However, little is known about the assessment of patient anger and how anger is manifested in incidents of inpatient aggression. Similarly, the measurement of nursing staff anger and its association with the use of coercive containment is not well established. The interaction between nursing staff and patients is a common precursor to incidents of inpatient aggression (Papadopoulous, Stewart, Dack, James & Bowers, 2012). However, the study of interpersonal styles and dyads of nursing staff and

patients in relation to aggressive and coercive containment incidents has not been previously investigated.

The aim of this thesis is to examine the role of anger in and between patients and nursing staff in relation to inpatient aggression and in its containment in secure adult mental health services. The thesis therefore comprises two distinct but interrelated strands of research that investigate anger in both a patient and a nursing staff sample. Quantitative methods are employed using questionnaires and cognitive tasks. Routinely collected data about incidents of patient aggression, physical restraint with or without seclusion, and clinician-rated violence risk assessments were retrieved and included in statistical tests. Patient research pertains to: an examination of the cognitive components of anger and its relationship with inpatient aggression (Study One); and exploring whether patients' self-reported anger adds incremental predictive validity, over clinicians' ratings in the assessment of risk, for inpatient aggression (Study Two). Research with nursing staff involves the examination of their anger disposition and its relationship with the approval and involvement in coercive containment of patient aggression (Study Three). Both nursing staff and patients' interpersonal style, and the characteristic dyads, are explored in relation to inpatient aggression and in its containment (Study Four).

This project provides an opportunity to advance the understanding of anger in patients as a risk factor of inpatient aggression, and anger in nursing staff in terms of their preparedness to use coercive containment. It is acknowledged that inpatient aggression can be caused by a multitude of factors since wards are complex environments, staffed with individuals from a range of backgrounds and experiences of working within a regulatory framework, who are caring for patients, who are also from a range of backgrounds that present with complex needs. As within the Safewards Model (Bowers, 2014), two out of the six domains concern patient characteristics and characteristics of the staff team, and it is across these two domains that the relevance of anger is a recurring theme. Therefore, the scope of this thesis examines anger specifically, in terms of its measurement and its association with inpatient incidents, to inform risk assessment and risk management protocols.

1.1.2. Structure of the thesis

The overall structure of this thesis takes the form of nine chapters, including this introductory chapter (See Figure 1.1. Thesis map). Two literature reviews are presented which focus on patient anger and nursing staff anger respectively. Previous research has indicated that patient anger is a risk factor for inpatient aggression (Doyle & Dolan, 2006); thus, the aim of the literature review is to gain understanding of what aspects of anger are assessed and how it has been measured in relation to aggressive incidents. The patient anger literature review untangles the construct of anger, which has often been considered as a global characteristic. The importance of emotion in nursing staff has been acknowledged in the management of patient aggression (NICE, 2015); thus, the aim of the nursing staff anger literature review is to examine research that has considered the experience of anger, specifically in the inpatient context. An overarching methods chapter is subsequently presented for the research questions which form the four empirical study chapters (Chapter 5-8) within the thesis. The concluding chapter draws together the entire thesis, summarising the findings of each empirical study, the wider implications of the study findings, and recommendations for future research.

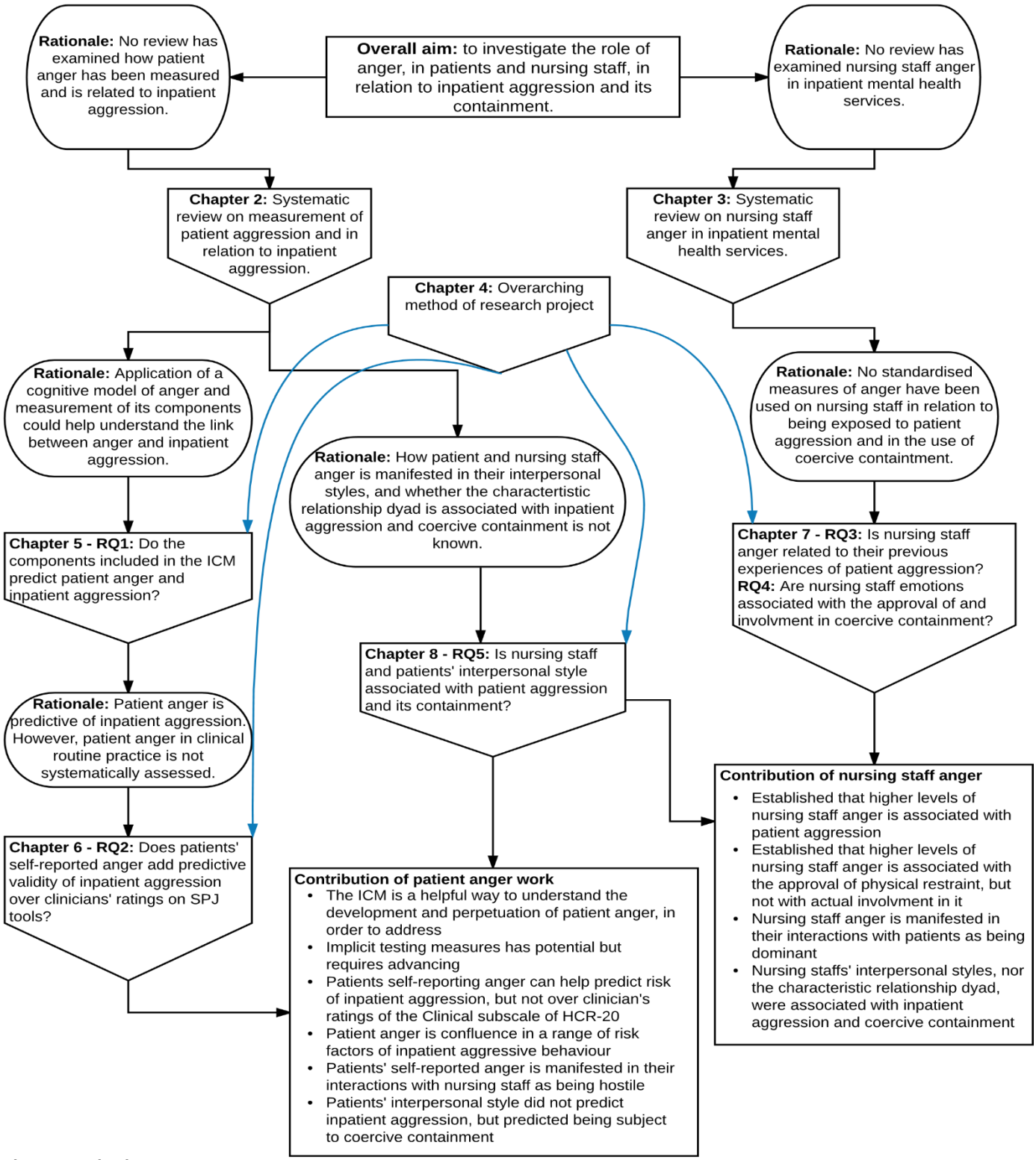

Figure 1.1. Thesis map

Note: The small rectangle represents the overall aim of the thesis. The left-hand side of the diagram contains the studies concerning patients while the right-hand side contains the studies concerning nursing staff. The rounded rectangles represent the rationale for each study. The pentagons represent the chapters of each study aim/research question. The larger rectangles represent the findings. The black arrows illustrate how each study is linked. The blue arrows illustrate the research project method which encompasses the four empirical studies.

2. CHAPTER TWO

2.1. THE ROLE OF ANGER IN INPATIENT AGGRESSION: A SYSTEMATIC REVIEW

This chapter provides an indication of the prevalence of inpatient aggression. Patient risk factors are outlined and a basis for further consideration of anger is discussed. Relevant literature is identified and reviewed on the role of patient anger, in terms of how it has been measured and in relation to inpatient aggression. Recommendations for further research are discussed, which rationalise the subsequent empirical study chapters.

2.1.1. Inpatient aggression in mental health services

Aggressive behaviour exhibited by patients in psychiatric hospitals ('inpatient aggression') has received considerable attention in the recent research literature (Bowers et al., 2011). This is unsurprising because inpatient aggression incidents are frequent e.g., 182.8 incidents per 100 admissions per month; 3.14 incidents per 100 occupied bed days (Bowers et al., 2011), and can pose a significant problem for both staff and patients. Inpatient aggression can range in severity from verbal to physical assault, and may be directed towards the physical environment, self, other patients and staff. The effects of inpatient aggression that threaten the physical and psychological health of staff and other patients (Rippon, 2000; Uppal & McMurran, 2009) may also impact on the therapeutic climate of the wards and treatment provision for patients (Ching, Daffern, Martin & Thomas, 2010).

Given these issues and despite the research efforts in inpatient aggression studies to date, the picture is far from complete in terms of clinicians being able to reliably and accurately identify patients who may be at-risk, and in turn effectively prevent and/or minimise incidents. Therefore, the need for specialised assessment protocols and for the development of empirically informed treatment plans is a priority for psychiatric services, to enhance the quality of care and safety for all. Examination of the factors related to inpatient aggression is necessary for a more complete understanding.

2.1.2. Patient sociodemographic and diagnosis risk factors

A range of risk factors for inpatient aggression have been identified relating to patients' sociodemographic characteristics and diagnosis. Studies have found that sociodemographic risk factors include: youth, male, gender, poor educational achievement, low socioeconomic status, unmarried status and compulsory admission (Biancosino, Delmonte, Grassi, Santone, Preti, Miglio & de Girolamo, 2009; Amore, Menchetti, Tonti, Scarlatti, Lundgren, Esposito & Berardi, 2008). Clinical status associated with inpatient aggression include a diagnosis of schizophrenia or personality disorder, history of substance/alcohol misuse, recent anti-social behaviour and active psychotic symptoms (Daffern, Howells, Ogloff & Lee, 2005).

While these characteristics and diagnoses encompass a large proportion of the mental health inpatient population, not all patients exhibit aggressive behaviour during their hospitalisation. Repeated inpatient aggression is in fact perpetrated by a small percentage of the patient population; in one study (Convit, Isay, Otis, & Volavka, 1990) for example, it was found that 5% of the at-risk patient population accounted for 53% of all incidents. Also, studies report inconsistent findings in relation to psychiatric diagnosis and inpatient aggression (Tenneij, Didden, Stolker & Koot, 2009; Vaaler et al., 2011). Therefore, the identification of patients most at-risk based on these variables will be an inaccurate and inefficient assessment for risk management. Doyle and Dolan (2006) argued risk prediction research should reflect the task of risk management; in clinical practice, there is a need to achieve an understanding of why the patient might be at-risk before prescribing treatment and management interventions to decrease risk. Risk prediction studies which examine the theoretical basis and underlying causes of inpatient aggression are required. This would represent a shift from identifying diagnostic labels to specific symptoms that are associated with inpatient aggression (Bader & Evans, 2015). A specific focus on aggression-relevant variables can help avoid the surfeit of false positives in the prediction of inpatient aggression and help inform evidence-based risk formulations, aid better risk communication, and facilitate formulation-based management (Doyle and Dolan, 2002).

2.1.2.1. Patient anger

The assessment and treatment of patient anger in its own right is neglected in psychiatry (DiGiuseppe & Tafrate, 2007), despite significant advances in understanding of other emotional disturbances such as anxiety and depression (Eckhardt & Deffenbacher, 1995). This is surprising, given research that has examined a range of variables has indicated symptoms of hostility are a stronger predictor of inpatient aggression (Wang & Diamond, 1999; Vitcaco et al., 2009; Cornaggia, Beghi, Pavone & Barole, 2011; Witt, Dorn & Fazel, 2013). These studies highlight that dynamic risk factors such as anger are better predictors of inpatient aggression than static risk factors (e.g., sociodemographic characteristics/clinical diagnosis). In many regards this is encouraging because dynamic risk factors, in principle, are most amenable to intervention. Therefore, anger warrants closer inspection in order to understand the way in which it is manifested in inpatient aggression. This will allow clinicians to effectively tailor the management of incidents by the use of targeted treatment interventions for anger.

The terms 'aggression', 'hostility', and 'anger' are used interchangeably across studies which has consequently detracted from understanding anger as a risk factor and as a treatment need (Novaco, 2011). Consistent with appraisal theories (Ellis, 1973; Lazarus, 1991; Berkowitz & Harmon-Jones, 2004) of emotion and behaviour, Buss and Perry (1992) made a useful distinction between hostility, anger, and (verbal/physical) aggression: they define *hostility* as the *cognitive component, anger* as the *affective component* and *verbal/physical aggression* as the *instrumental or motor components* of behaviour. In other words, hostility is the attitudinal disposition, anger is an emotion, and aggression is the harm-doing behaviour. However, despite Buss and Perry's distinction between terms, confusion stems from the actual assessment of anger and the psychometric adequacy of the existing measurements of anger (Norlander and Eckhardt, 2005). The various self-reporting instruments available for assessment of anger, generally, do consider it to be a multidimensional concept but their respective subscales tend to measure different aspects of the anger experience in terms of its intensity, duration and expression (DiGiuseppe & Tafrate, 2007). Thus, as also recognised by Reagu et al., (2013) the terminology and measurement of anger causes problems when comparing findings across studies on anger which are not necessarily

measuring the same construct. Nonetheless, in order to understand the role of anger in inpatient aggression, and to identify future research priorities, anger as a global characteristic must be explored in relation to its individual constituents. However, terms have been used interchangeably in studies and must be considered with caution when examining the literature for an understanding of the components of anger.

2.1.3. Review aim

The aim of this review is to systematically identify and review published studies that examine the role of anger in adult inpatient aggression. To specify anger's role, it is imperative that an understanding is gained of what and how it has been measured in relation to incidents of inpatient aggression. Reagu et al.'s (2013) review of 11 studies investigated the relationship between angry affect and physical aggression in the context of a psychotic illness; however, the review was not specific to inpatient mental health settings since five of the included studies were conducted in a range of settings. Thus, it is believed that no other review has previously addressed this question. The current review therefore focuses on anger in all forms of aggressive incidents exclusively exhibited in inpatient mental health settings. This offers the opportunity to consolidate studies where participants have undergone a level of supervision during hospitalisation, and thus rates of aggression are likely to be reflective of actual levels of anger.

2.2. Method

A systematic literature review was conducted and reported in accordance with relevant sections of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Moher et al., 2009).

2.2.1. Data sources and search

The purpose of the literature search was to locate all the empirical studies that have examined anger/hostility and its association with incidents of inpatient aggression. All studies published in peer-reviewed journals and 'grey literature' (i.e. Doctoral/Masters dissertations) were considered. The search for articles was considered from inception (the beginning date of electronically available journals) until June 2013 in multiple health-related computerised databases: EMBASE, Medline, PsychINFO and CINAHL. These databases cover a range of disciplines such as biomedicine, psychology, social work, law, and criminology. The search procedure used the following terms: Anger, Hostil*, Aggress*, Violen*, Inpatient, Psychiatric, Hospital, Ward (See Table 2.1.). The terms were kept deliberately broad to ensure there would be relevant articles captured to be screened against the inclusion criteria. Additionally, the relevant articles' reference list which were identified in the previous step were hand-searched for further studies that investigated these terms, and were subsequently located for inclusion screening.

Table 2.1. Example of electronic search strategy – OVID PsychINFO

Search terms	Hits
1) Anger	57,105
2) Hostil*	39,071
3) 1 OR 2	86,942
4) 1 AND 2	10,234
5) Aggress*	159,101
6) Violen*	170,217
7) 5 OR 6	271,013
8) 5 AND 6	58,305
9) Inpatient	83,445
10) Psychiatric	497,647
11) Hospital	314,525
12) Ward	45,911
13) 11 OR 12	346,901
14) 3 AND 7 AND 9 AND 10 AND 13	1,463

2.2.2. Selection criteria

Studies were deemed eligible for inclusion if they investigated: adult patients in psychiatric services and had a diagnosis of a mental disorder as classified by the Diagnostic and Statistical Manual of Mental Disorders (DSM) or the International Classification of Diseases (ICD); and anger/hostility and aggression had been measured in the study distinctively; and aggression exhibited or not exhibited was during the hospitalisation period only. Studies were excluded if patients in the sample had a primary diagnosis of a neurocognitive (e.g., alzheimer's, brain injury, parkinson's and huntington's diseases) or a neurodevelopmental disorder (e.g., autism, intellectual and learning disabilities) as not only can these factors independently contribute to the risk of aggression (Brower & Price, 2001; Sugden, Kile & Hendron, 2006) but the focus of this review is on the most prevalent primary diagnoses in mental disorder pathway services (UK National Statistics, Patients in Mental Health Hospitals and Units, 2012; The Sainsbury Centre for Mental Health, 2007; Coid, Kahtan, Gault, Cook & Jarman, 2001). If the measure of aggression was for incidents before admission and/or after

discharge from hospital, then these studies were also excluded because of other potential factors that may not be specific to the inpatient settings.

Titles and abstracts were reviewed by the author and the full text version of articles that potentially met the inclusion criteria were subsequently obtained for further examination. Eligibility of full-text articles were assessed and a sub-set of these studies (*k* = 10) were also assessed by Nutmeg Hallett (N.H) for consistency and reliability in the consideration for inclusion of studies. Disagreements were resolved through discussion.

2.2.3. Study quality assessment

Guidelines and a checklist provided by the (NICE) (http://www.nice.org.uk/) for the quality appraisal procedure were used. The checklist is specifically designed for quantitative studies reporting on correlations and associations, and it is based on the appraisal step of the 'Graph Appraisal Tool for Epidemiological studies (GATE)' developed by Jackson et al., (2006). This checklist was suitable for the review given the type of research question proposed that aims to establish the factor(s) (e.g., anger/hostility) that are associated or correlated with negative outcomes; that is, in this case inpatient aggression incidents. This checklist enabled the reviewer to appraise each study's internal and external validity after addressing the following key aspects of its study design: characteristics of study participants; definition of independent variables; outcomes assessed and methods of analyses.

The checklist comprises five sections. Section 1 seeks to assess the key population criteria for determining the study's external validity. Sections 2 to 4 assess the key criteria for determining the study's internal validity by ensuring that the study was carried out carefully, and that the identified associations are valid and not due to some other (often unidentified) factor. In section 5, the study is then given an overall score for internal validity and for external validity with the following grading: "++ *all or most"* of the checklist criteria have been fulfilled, where they have not been fulfilled the conclusions are very unlikely to alter; "+ *some"* of the checklist criteria have been fulfilled, where they have not been fulfilled, or not adequately described, the conclusions

are unlikely to alter; "- *few or no"* checklist criteria have been fulfilled and the conclusions are likely or very likely to alter.

All of the studies screened against the inclusion criteria were subsequently reviewed for the quality assessment appraisal procedure and a sub-set (k = 10) of these studies were also reviewed by N.H. to ensure that there was consistency in awarding the grade across all of the studies. Where there were minor differences in grading this was resolved through discussion between the reviewers. Study quality was then synthesised in narrative form (Popay et al., 2006) to provide a qualitative interpretation of the risk bias across the studies reviewed.

2.2.4. Synthesis of study results

A data form was designed to extract information about: i) the demographics of the patients (i.e. age, gender and ethnicity), ii) diagnosis, iii) length of stay, and iv) the type of psychiatric hospital in which the study was conducted. Further information regarding the definitions used (if any) and the constructs of anger under investigation, along with the measure used for anger and aggression, were also extracted from the studies. Studies included in the review used various methods and measures; thus, it was not possible to synthesise the results via meta-analysis. Included studies were synthesised in narrative form (Popay et al., 2006).

Extracted data were subsequently tabulated for easy interpretation of both the reviewer and the reader. The columns represented in the table are the particulars extracted from each study using the data extraction forms. This is to develop an initial description of the included studies and highlight any similarities and differences across the studies.

2.3. Results

2.3.1. Literature search

A total of 2,838 article hits were returned. After removal of duplicates, 2,787 article titles were screened for relevance based on keywords in the titles. Out of these, 2,623 article titles were excluded. This left 164 articles, for which abstracts were screened.

Each article abstract was marked as either: relevant; maybe relevant; or not relevant, based on topic and methodological parameters. Articles (*k* = 118) were excluded based on not meeting inclusion criteria and the reasons for exclusion were: studies did not measure aggression (*k* = 23); no anger and aggression data were collected separately (*k* = 7); anger was not being measured (*k* = 5); studies were conducted on populations and/or in other settings not related to a mental health inpatient sample (*k* = 15); studies were either developing or validating instruments (*k* = 6); studies were not empirical (*k* = 28); and studies involved staff only (*k* = 34). This resulted in 46 articles to be obtained in full copy formats and reviewed for further screening.

Upon assessment for eligibility of full text articles, a more in-depth inspection of the methods sections of studies revealed that additional articles had to be excluded. This was for reasons similar to the abstract-level screening because: there were no observable/recorded incidents of aggression (*k* = 5); aggression was exhibited before admission to hospital (*k* = 3); there was no anger measure used (*k* = 3); studies reporting on institutional aggression were in prison settings (*k* = 3); studies consisted of patients with an organic brain disorder (*k* = 2); or were an outpatient sample (*k* = 2); non-empirical (*k* = 2); no relationship was examined between the variables of interest (*k* = 3); and finally, there was an overlap in samples across studies (*k* = 1).

On handsearching reference lists, five studies were also identified and assessed for eligibility and were subsequently included. This resulted in a total of 24 studies in the review which had met the inclusion criteria (see Figure. 2.1. for this literature search process).

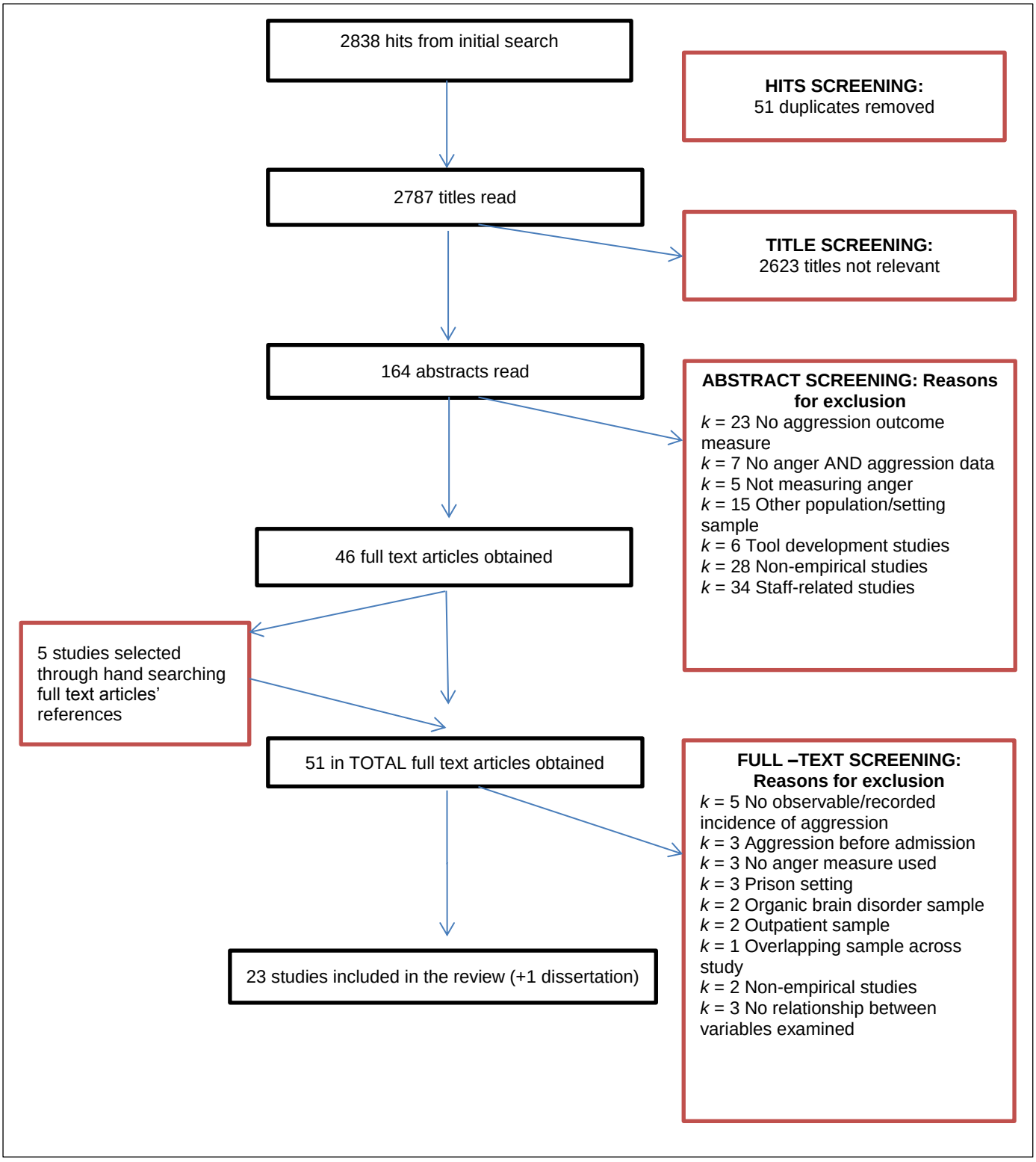

Figure 2.1. Patient anger literature search process

2.3.2. Characteristics of included studies

The study's design, setting, participant demographics, the construct (anger/hostility) being measured with its respective tools, recorded evidence of aggression, the reported relationship between the variables and authors conclusions are tabulated in Table 2.2.

Study design

Across the 24 studies there were three types of design: cross sectional (*k* = 13), prospective (*k* = 8) and retrospective (*k* = 3) cohort studies.

Country and setting

Studies were conducted in six countries: US (*k* = 12), Australia (*k* = 3), Italy (*k* = 3), UK (*k* = 2), Korea (*k* = 2) and Israel (*k* = 1).

Studies were conducted in a range of mental health inpatient settings: psychiatric inpatient unit/hospital (*k* = 7), psychiatric intensive care unit (*k* = 4), acute inpatient unit (*k* = 4), forensic psychiatric hospital (*k* = 3), mental health hospital (*k* = 3), personality disorder unit (*k* = 1), long-term psychiatric hospital (*k* = 1), short-term psychiatric hospital (*k* = 1), and a medical centre (*k* = 1). One study was conducted in two settings: forensic psychiatric unit and acute inpatient unit.

Participant demographics

Across the 24 studies, the total sample consisted of 6,227 participants (55.2% male; 35.7% female; 9.1% unspecified). Caucasians were the most commonly represented in studies. Axis I and Axis II mental disorders were present amongst the samples, most frequently diagnosed with the DSM-IV, and these included: diagnoses from the schizophrenia spectrum, personality disorders, mood disorders and substance disorders.

Table 2.2. Tabulation of data extraction from patient anger studies

Study	Design	Participant demographics	Setting	Anger/hostility measured (and measure used)	Type of aggression (and measure used)	Results: reported relationship	Authors conclusions
Amore et al., (2008)	Cross-sectional	*N*= 303, Gender, Age and Ethnicity not stated	Psychiatric Inpatient Unit, Italy	Hostility-suspiciousness cluster (BPRS)	Verbal or against-object aggression and physical aggression (OAS)	Higher hostility score associated with physical than verbal aggression	Predictive of change in violence pattern
Cookson et al., (2012)	Cross-sectional	*N*=79, 43 Male & 36 Female, Mean Age: 40.8 Ethnicity not stated	Acute Inpatient Unit, Australia	Paranoid-disturbance cluster; Hostility cluster (BPRS) & Hostile, Hostile-Dominant, Hostile-Submissive (IMI)	Physical aggression against staff (OAS)	Aggression towards staff: sig. higher on IMI hostility. IMI: dominance, only scale predictive. BPRS no difference between aggressive and non-aggressive	IMI: Hostile-dominant not more likely to be aggressive towards staff
Craig (1982)	Cross-sectional	*N*=876, 514 Male & 362 Female, Age and Ethnicity not stated	Mental Health Hospital, US	Anger/agitation (PAS)	Assaultiveness (PAS)	Agitation and anger strongly associated with assaultiveness	Confirms earlier findings of the relationship
Daffern & Howells (2009)	Cross-sectional	*N*=45 Male, Mean Age: 33, Almost exclusively White-British	Dangerous and Severe Personality Disorder, UK	Anger expression (ACF)	No tool used; reviewed database for any aggression	Median no. of function in each incident was 3. Most inc. function was: to express anger	Other functions of aggression did not occur in isolation from anger

Table 2.2. Tabulation of data extraction from patient anger studies

Study	Design	Participant demographics	Setting	Anger/hostility measured (and measure used)	Type of aggression (and measure used)	Results: reported relationship	Authors conclusions
Daffern et al., (2005)	Prospective cohort study	*N*=232, 139 Male & 39 Female, Mean Age: 34.2, Ethnicity not stated	Secure Inpatient Mental Health Hospital, Australia	Cognitive, Behavioural & Arousal dimensions of anger (NAS)	Verbal aggression, physical aggression against objects & people; computed as 'aggressive' or 'violent' (OAS)	No sig. difference between aggressive/violent & non-aggressive/non-violent patients on the 3 NAS dimensions	Absence of trait diff. does not indicate anger not relevant as a state factor
Daffern et al., (2010)	Cross-sectional	*N*=152, 88 Male & 67 Female, Mean Age: 38.32, Ethnicity not stated	Acute Inpatient Service & Secure Forensic psychiatric hospital, Australia	Hostility – Paranoid disturbance cluster (BPRS) & Hostile, Hostile-Dominant, Hostile-Submissive (IMI)	Physical aggression against self & people (OAS)	No sig. diff on measures between those who self-harmed. Violent patients scored high on IMI: Dominance & Hostile-Dominance. Latter only sig. scale in regression equation	No support found for IMI and self-harm. Support found for comorbid interpersonal style
Doyle & Dolan (2006)	Prospective cohort study	*N*=94, 86 Male & 8 Female, Mean Age: 38, 83% Caucasian	Forensic Medium Secure Units, UK	Affective-behavioural attributes (WARS). Cognitive, Behavioural & Arousal dimensions of anger (NAS). Hostility-	Physical violence, Physical violence + threats of violence (MOAS)	N's who threatened violence and were physically violent scored higher on WARS, NAS (except cognitive and regulation domain), BPRS Hostility cluster &	Strong support for scales and physical violence inc. threats, which remained the case after controlling for variables

Table 2.2. Tabulation of data extraction from patient anger studies

Study	Design	Participant demographics	Setting	Anger/hostility measured (and measure used)	Type of aggression (and measure used)	Results: reported relationship	Authors conclusions
				suspiciousness cluster (BPRS). Hostile (CIRCLE)		CIRCLE Hostile	
Ferguson et al., (2005)	Cross-sectional	*N*=212, 133 Male & 79 Female, Mean Age: 34.6, Mixed ethnicity sample	Locked Inpatient Acute Psychiatric Care, US	Resistance cluster; hostility (BPRS) & Hostility (BSI)	No tool reported; documented incidents of aggressive behaviour on the unit	Physicians' ratings of hostility at admission correlated with documented aggressive incidents. Self-reported hostility was not a sig. predictor of aggression	Those who are continuously hostile, may also experience sig. depression which may act as a protective factor
Goldberg et al., (2007)	Cross-sectional	*N*=76, 56 Male & 20 Female, Mean Age: 38.64, Ethnicity not stated	Acute-care Psychiatric Hospital, US	Anger/Hostility (PANNS)	Verbal aggression, physical aggression against objects (ROAS)	Both anger & hostility accounted for the variance in verbal & physical aggression	Covert hostility predictive of aggression, overt anger found to be inversely predictive
Konomi (2008)	Retrospective cohort study	*N*=80, 63 Male & 17 Female, Mean Age: 37.99	Adult inpatients, Mental Health Centre, US	State/Trait anger, Anger control (STAXI)	Database of physical violence that resulted in seclusion reviewed	Trait anger correlated with incidents. Two variables retained in the final regression	Two variables that accounted for the variances in the regression

Table 2.2. Tabulation of data extraction from patient anger studies

Study	Design	Participant demographics	Setting	Anger/hostility measured (and measure used)	Type of aggression (and measure used)	Results: reported relationship	Authors conclusions
						model	model, highly correlated with anger
Kim et al., (2010)	Cross-sectional	*N*=165, 96 Male & 69 Female, Mean Age: 38.1, Ethnicity not stated	Mental Hospital, South Korea	State/Trait Anger, Anger reaction, Temperament, Anger in-out expression, Anger control (STAXI)	Patients considered aggressive if they had sig. episodes of violence resulting in repeated confinement at least twice per week in the 2 weeks prior to study (MOAS)	Aggressive patients had sig. higher scores in MOAS and STAXI than the non-aggressive patients	
McDermott et al., (2008)	Prospective cohort study	*N*=238, 204 Male & 33 Female, Mean Age: 46.6, 63% Caucasian sample	Long-term Psychiatric Hospital, California	Cognitive, Arousal & Behavioural dimensions of anger (NAS), hostility (BPRS)	Physical aggression (SIR; 2.52 years)	NAS arousal weakly correlated with impulsive aggression (long term), as did hostility (BPRS). NAS behaviour related to impulsive aggression (short term), and evidenced largest associations with predatory aggression (long/short term)	Anger related to aggression, but only in short term and best at forcasting predatory aggression, not impulsive

Table 2.2. Tabulation of data extraction from patient anger studies

Study	Design	Participant demographics	Setting	Anger/hostility measured (and measure used)	Type of aggression (and measure used)	Results: reported relationship	Authors conclusions
McNeil & Binder (1995)	Retrospective cohort study	*N*=226, 116 Male & 110 Female, Mean Age: 42.4, 70% Caucasian	Locked short-term Psychiatric Inpatient Hospital, US	Hostility-suspiciousness cluster (BPRS)	Physical aggression against other people (OAS)	High levels of hostility associated with clinical judgement that a patient was at high-risk and associated with increased propensity for violence	True-positive predictions more likely to have known correlates such as hostile-suspiciousness
Nolan et al., (2005)	Prospective cohort study	*N*=157, Aged between 18-60, Gender & Ethnicity not stated	Inpatient Psychiatric facilities, US	Hostility (PANSS)	Aggressive or non aggressive (OAS).	Sig. differences between aggressive & non-aggressive patients on PANNS items inc. hostility. After multiplicity correction hostility remained the sig item.	Aggressive behaviour related specifically to the severity of positive symptoms, held true when hostility item omitted
Raja & Azzoni (2005)	Cross-sectional	*N*=2395, 1067 Male & 1328 Female, Mean Age 41.9, 98% Caucasian	Psychiatric Intensive Care Unit, Italy	Hostility-suspiciousness cluster (BPRS)	Rated highest level of violent behaviour (Morisson's scale), combined into 3 categories: no hostility, hostility, violence	BPRS hostility scores higher in hostile and violent cases than in non-hostile cases	Risk factors are in part tautologically related to hostile and violent behaviour

Table 2.2. Tabulation of data extraction from patient anger studies

Study	Design	Participant demographics	Setting	Anger/hostility measured (and measure used)	Type of aggression (and measure used)	Results: reported relationship	Authors conclusions
Ritsner et al., (2003)	Cross-sectional	*N*=40, 38 Male & 2 Female, Mean Age: 38, Ethnicity not stated	Psychiatric Inpatient Unit, Israel	State/Trait anger (STAXI)	Tool not specified; severity of aggressive incidents during 2 months prior to study	Aggressive patients scored sig. higher on levels of hostility, state and trait anger	
Seeman et al., (1985)	Cross-sectional	*N*=20 Male, Age and Ethnicity not stated	Psychiatric Intensive Care Unit, US	Feelings of hostility (self-report), hostility (observer-rated) (CPRS)	No. of days assault against self (Modified Lion Scale)	No sig. correlation between two hostility items with actual assault against self	Only patient-reported hostility appeared to predict staff to be more alarmed and express greater concern by secluding the patient
Song & Min (2009)	Cross-sectional	*N*=105 (25 of these are inpatients), 58 Male & 47xx, Mean Age: 34.35, Ethnicity not stated	Dept of Psychiatry, Medical Centre, Korea	Resentment & Irritability (BDHI)	Verbal aggression, physical aggression against objects, self and others (MOAS)	Aggressive behaviour could be explained directly by anger	Cognitive impairment may affect the stimulant of anger weakening impulse control
Troisi et al., (2003)	Prospective cohort studies	*N*=80xy, Mean Age: 34.11, Ethnicity not	Psychiatric Ward, Italy	Hostility (BPRS)	Verbal aggression, aggression against objects & people (MOAS; not	Hostility during admission had no sig. effect on aggressive status.	Verbal aggression can cause just as much

Table 2.2. Tabulation of data extraction from patient anger studies

Study	Design	Participant demographics	Setting	Anger/hostility measured (and measure used)	Type of aggression (and measure used)	Results: reported relationship	Authors conclusions
		stated			specified how long collected for)	Hostility emerged as sig. predictor of verbal aggression	psychological distress. There is evidence that this could escalate to physical
Vitacco et al., (2008)	Prospective cohort study	*N*=132 Male, Mean Age: 38.30, 63% European American & 26.3% African American	Forensic Inpatient Mental Health Facility, US	correlates of anger i.e., irritability (WARS Part B) & Resistance cluster; Hostile (BPRS)	Frequency: Verbal and physical aggression against others (OAS) & instrumental and reactive scoring for physical aggression	BPRS differentiated groups on reactive & instrumental aggression. Part B WARS stronger predictor of reactive aggression	Anger is a verified predictor. WARS predicted reactive aggression, Part B predicted instrumental
Waldheter et al., (2005)	Prospective cohort study	*N*=29, 25 Male & 4 Female, Mean Age: 33.1, 86% African American	State Psychiatric Hospital, US	Hostility bias (AIHQ) & affect cluster of hostility (BPRS)	Verbal aggression, aggression against self & people (MOAS)	Greater frequency & severity post-test violence sig. associated with a greater hostile attributional bias. Severity; hostility bias contributed 4% of variance to the regression model	Social cognitive variables add incremental predictive utility when predicting violence severity

Table 2.2. Tabulation of data extraction from patient anger studies

Study	Design	Participant demographics	Setting	Anger/hostility measured (and measure used)	Type of aggression (and measure used)	Results: reported relationship	Authors conclusions
Wang & Diamond (1999)	Prospective cohort study	*N*=385xy, Mean Age: 33, 60% Caucasian & 29% African-American	Male Psychiatric Prison Hospital, US	Anger & Hostility (BPAQ)	No tool: Records of physical aggression for two months post-assessment	Anger strongly related to verbal aggression (self-report) and physical aggression (self-report and observable incidents)	Highly interrelated and useful to distinguish terms. Support for the strong and direct link
Yesavage (1983)	Cross-sectional	*N*=80 Male, Mean Age: 32, 80% White	Psychiatric Intensive Care Unit, US	Intra: Hostility (overt & covert) (Buss-Durke) (BPRS)	Suicide attempts & attempts to harm oneself (Modified Student & Lion Scale; 8days post admission)	Overt hostility (direct) correlated with suicidal acts	Self-reports of hostility correlated better with self-destructive acts
Yesavage et al., (1981)	Cross-sectional	*N*=26 Male, Mean Age: 31.04, Majority were White	Psychiatric Intensive Care Unit, US	Intra: not clear how hostility was computed (BPRS)	Assault against others (Lion Scale; 7 days post admission)	BPRS hostility measures did not yield significant correlations with assaultiveness measures	Violent outbursts may occur in the context of low overt hostility

2.3.3. Anger/hostility assessment measures

In total, 13 different measures of at least one aspect of anger were employed. Below is a breakdown of each anger/hostility measure with its description and how it was computed for analyses. Self-reported measures are presented first, followed by observer-rated measures.

2.3.3.1. Self-reported anger/hostility

Six self-report measures were used across 11 studies:

Novaco Anger Scale (NAS; Novaco, 1994)

The NAS is a 60-item self-report measure, which yields five scores: cognitive, arousal, behavioural, anger regulation and a total score. The NAS was used in three studies and considered the three aspects (i.e., cognitive, arousal and behavioural) of anger in the analyses, as well as the total score.

State-Trait Anger Expression Inventory (STAXI; Spielberger, 1988)

The STAXI is a 57-item self-report measure which consists of five subscales: state anger, trait anger, anger expression, anger control and an anger expression index. The STAXI was used in three studies. One study considered all the subscales of anger in its analyses; two studies only considered trait and state anger, and one of these studies also considered anger control.

Buss-Durke Hostility Inventory (BDHI, Buss & Durke, 1957)

The BDHI is a 75-item self-report measure of hostility. The BDHI was conceptualised to include eight subscales of hostility: assault, indirect hostility, irritability, negativism, resentment, suspicion, verbal hostility, and guilt. Two studies used the BDHI. In one study, only two out of the eight subscales were used and these were resentment and irritability, to represent an overall anger score. In the other study, after conducting principle components analysis on all the scales in the measure, two factors were loaded and were translated as either direct hostility or indirect hostility which were computed in the analyses.

Buss-Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992)

The BPAQ is a 29-item self-report measure and represents a revision of the BDHI. Item-level analysis confirmed the presence of only four factors in the measure: physical aggression, verbal aggression, anger and hostility. The BPAQ was used in one study, and only two of the subscales measuring both hostility and anger were used in the analyses.

Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983)

The BSI is a 53-item self-report symptom inventory designed to assess psychological symptoms. It covers nine primary symptom dimensions: somatisation, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism. The brief definition for the hostility construct is organised around three categories: thoughts, feelings and actions. Typical experiences cover feelings of annoyance and irritability, urges to break things, frequent arguments and uncontrollable outbursts of temper. This BSI was used in one study. Only the hostility dimension score was considered for analyses.

Ambiguous Intentions Hostility Questionnaire (AIHQ; Combs, Penn, Wicher & Waldheter, 2007)

The AIHQ is a 15-vignette-item measure for hostile social-cognitive bias. The vignettes reflect negative outcomes which vary in intentionality (i.e., intentional, accidental, and ambiguous intentions). Respondents are required to read the vignette and then write their reasons why they think the event occurred. Two independent raters code the responses for the purpose of computing a hostility index. The respondents also respond on a Likert scale for whether the person in the vignette performed the action on purpose (1 “definitely no” to 6 “definitely yes”), how angry it would make them feel (1 “not at all angry” to 5 “very angry”), and how much they would blame the other person (1 “not at all” to 5 “very much”). Finally, the respondent is then asked to write down how they would respond to the situation described in the vignette. This was also coded by two independent raters to compute an aggression index. The AIHQ was used in one study and a score for hostility bias is derived for the ambiguous, intentional and accidental items in the questionnaire.

2.3.3.2. Clinician/observer-rated anger/hostility

Brief Psychiatric Rating Symptom scale (BPRS; Overall & Gorham, 1962)

The BPRS assesses the level of 18 symptom constructs including hostility. It is clinician-rated based on interviews with, and previous observations of, the patient. To score hostility, evaluators consider patients' feelings of animosity, belligerence, contempt, or hatred towards people outside the interview situation. When attempting to evaluate the severity of pathology in this symptom area the rater may attend to the sincerity and affect that has been present. The BPRS was used in 13 studies. However, the computed score for hostility was calculated in five different ways for data analysis purposes. These studies grouped related items from the BPRS, which included the item rating for hostility, into clusters in either of the following way: Hostility (only) (k = 4), Hostility-Suspiciousness (k = 4), Paranoid-disturbance (k = 2), Resistance (k = 2), Affect (k = 1).

Ward Anger Rating Scale (WARS; Novaco, 1995)

The WARS is observer-rated and has two parts to the measure: Part A comprises 18 verbal and physical behaviours relating to anger and aggression. These items are rated based on the behaviour of the target person over the previous week and are used to generate seven indices: (1) antagonistic behaviour, (2) verbal aggression, (3) physical aggression, (4) emotional and behavioural lability, (5) paranoid attitude, (6) psychotic symptoms, and (7) self-aggression. Part B of the measure comprises seven affective-behavioural attributes semantically related to anger. The WARS was used in two studies. For Part B, a total score for the frequency of this aspect of anger is computed for analyses.

*The Positive and Negative Syndrome Scale (*PANSS*;* Kay, Fiszbein & Opler, 1987)

The PANSS is a 30-item clinician-rated instrument. Of the 30 psychiatric parameters assessed on the PANSS, seven were chosen a priori to constitute a Positive Scale which includes the hostility item, seven items in the Negative Scale and the remaining 16 items is the General Psychopathology Scale. The PANSS was used in two studies. This single hostility item score was computed for analyses in both of the studies.

Assessment Classification of Function (ACF; Daffern, Howells & Ogloff, 2007)

The ACF was developed by the authors in attempt to assist in the discrimination of differently motivated forms of aggression amongst inpatients to identify the aggression's function. Frameworks that explain aggressive behaviour were considered in the development of the tool. The functions included in the ACF are: demand avoidance, to force compliance, to express anger, to reduce tension, to obtain tangibles, social distance reduction, to enhance status, compliance with instruction, to observe suffering. Each function is recognised through its characteristic antecedents and consequences of an aggressive incident. The ACF was used in one study.

Comprehensive Psychopathological Rating Scale (CPRS; Montgomery, Perris, Schalling & Sedvall, 1978)

The CRPS is a 66-item clinician-rated measure which covers a range of psychiatric signs and symptoms. It is based on a flexible clinical interview with the target person. The scale contains two items for hostility: one item is a self-report of feelings of hostility and the other item is an observer-rating of hostility. Hostile feelings in the measure are defined as: representing anger, hostility and aggressive feelings regardless of whether they are acted or not. Observed hostility in the measure is defined as: representing irritability, angry looks, words, or actions. The scale was used in one study, and both self-report and observed hostility items were analysed independently in the study.

Problem Appraisal Scale (PAS; Serban & Grdynski, 1975)

The PAS is a checklist of 38 problems areas covering symptoms, social functioning and behaviours to record its presence. The presence of anger (as one of the problem behaviours) in patients was considered in the analyses. The PAS was used in one study.

Impact Message Inventory-Circumplex (IMI-C; Kiesler & Schmidt, 2006)

The IMI-C is a 56-item transactional measure. The interpersonal style of a target person is defined by measuring the reactions of the respondent whom he or she interacts with. The IMI-C includes three subscales of hostility (Hostile; Hostile-Dominance; Hostile-Submissive), with seven items respectively which concerns direct

feelings, action tendencies, and perceived evoking messages. Each subscale was computed for analyses. The IMI-C was used in two studies.

The Chart of Interpersonal Reactions in Closed Environments (CIRCLE; Blackburn & Glasgow, 1996)

The CIRCLE is a 51-item observer-rated interpersonal style measure which comprises eight subscales, including a hostile interpersonal style, and is based on ward observations. The score on the hostile interpersonal scale was computed for analyses. The CIRCLE was used in one study.

2.3.3.3. Summary of anger/hostility measures

It is apparent from the wide-ranging tools used across studies they have either measured anger as a global characteristic or have considered the various aspects that are hypothesised to underlie the construct. In particular, in terms of self-report measures, the NAS and STAXI consist of more than one aspect of anger which covers: cognitive, behavioural, arousal, state, trait and expression dimensions of the construct. Whereas, the other self-report measures (i.e., BPAQ, BSI and BDHI) use a global rating of the anger construct. Further, only in one study the AIHQ which measures for hostility-biases was used and has premise in social-cognition to further (indirectly) measure and understand the anger construct.

The observer/clinician-rated tools (i.e., BPRS, WARS, PANNS, ACF and CPRS) are considered in the analyses as a singular anger or hostile characteristic aspect, which are often based on the level of severity for that particular symptomatology. Across the studies where the BPRS has been utilised to measure hostility as a variable, this has often been clustered with other related items in the assessment measure. Also with the WARS, Part B of this measure has a mixture of affective and behavioural items of anger in the scale which is computed to provide an overall score, and not separate scores for each aspect of anger. The use of the ACF is to understand what was supposedly achieved for the patient by being aggressive in a particular incident e.g. expressing their anger, after reviewing the antecedent and consequence of the behaviour exhibited (from case notes) but, again, only provides one aspect of anger which is its ‘expression’.

2.3.4. Assessment of aggression outcomes measures

Six different tools were used to measure aggressive behaviour across 18 studies. The remaining six studies did not state which tools were used; however, it was reported that institutional databases were checked for records of incidents.

Out of the 24 studies, 13 studies used the Overt Aggression Scale (OAS; Yudofski, Silver & Jackson, 1986) (*k* = 7) or versions of the tool: Modified Overt Aggression Scale (MOAS; Sorgi, Ratey, Knoedler, Markert & Reichman, 1991) (*k* = 5) and the Retrospective Overt Aggression Scale (Sorgi et al., 1991) (*k* = 1). Other tools included The Morrisons Scale (Morrison, 1992) (*k* = 1) and modified versions of the Student & Lion Scale (Lion, 1972) (*k* = 3).

Further variation in outcome emerges from how studies consider each of the behaviour(s) measured (i.e., verbal aggression, physical aggression against objects, physical aggression against self, physical aggression against others) using the tool in the analyses. Eleven studies did not specify the form of aggression exhibited in the analyses and instead used a weighted sum of the behaviours from the measure. Studies that summed the outcome in this way were either based on a dichotomous aggression exhibited/not exhibited outcome, frequency of aggression or severity of aggression. In the other 12 studies, the forms of aggression were analysed separately, however, not all of these studies measured all forms of aggression exhibited: physical aggression (*k* = 9), verbal aggression (*k* = 5), physical aggression against objects (*k* = 3) and physical aggression against self (*k* = 3), exclusively.

Aggressive incident data were collected retrospectively (*k* = 12) and prospectively (*k* = 12). The average length of follow-up was 69.82 days (range = 7-365).

2.3.5. Relationship between anger/hostility and aggression across studies

Table 2.3. provides information about the associations between the particular aspects, or a global indication, of the anger/hostility measure and the forms of aggression exhibited. Only significant associations, by each study, between variables are presented.

Firstly, it is notable that nearly half (*k* = 11) of the studies did not specify the form of aggression exhibited. The following is a breakdown of groupings by form of aggression and the aspect(s) of anger which were found to be significant by association, followed by studies which did not report statistical significance (See Appendix B for non-significant. associations). In studies which did not specify form of aggression in the analyses, the significant anger variables that are associated with this outcome can be seen in Table 2.3.

2.3.5.1. Anger and verbal aggression

Six studies of anger/hostility found a significant relationship with verbal aggression. When hostility as a single item from the BPRS score was computed for analyses, Troisi et al., (2003) found this to be a significant predictor of verbal aggression. However, when hostility was clustered with other related items (i.e., uncooperativeness and suspiciousness) from the BPRS to form a score labelled as 'hostility-suspiciousness', Amore et al., (2008) and Raja and Azzoni (2005) also found significantly higher scores in this variable and those exhibiting verbal aggression. Moreover, in another study by Vitacco et al., (2008), the same items from the BPRS (hostility, uncooperativeness and suspiciousness) were named as 'resistance' and the analyses revealed significant differences in scores between those who were verbally aggressive and those who were not. In their study, the authors also found higher scores on the WARS (Part B), which contains correlates of affective-behavioural items of anger in those who were verbally aggressive. Goldberg et al., (2007) used the PANNS instrument in their study and found that the single item ratings for anger and hostility accounted for variances in the prediction model for verbal aggression. Further, with the use of a self-report measure, such as the STAXI used in Konomi's (2008) study, it was found that trait anger and anger control-out was correlated with verbal aggression i.e. threats of violence.

Non-significant associations between anger/hostility variables and verbal aggression were found in two studies that used the single item rating of hostility in the BPRS (Yesavage et al., 1981) and cognitive, behavioural and arousal aspects of anger in the NAS (Daffern et al., 2005).

Thus, from these observations it seems that the use of clinician-rated tools which measure hostility as a global construct, or clusters of related-items, and the overall scores for affective-behavioural correlates of anger are associated with verbal aggression. Also, there appears to be some indication of a self-report measure (i.e., STAXI) that measures more than one aspect of anger and has been found to be correlated with verbal aggression.

2.3.5.2. Anger and physical aggression against objects

Two studies considered physical aggression against objects in their analyses, but not in isolation from verbal aggression. Although Amore et al., (2008) and Raja and Azzoni (2005) found higher scores in the hostility-suspiciousness cluster of the BPRS amongst those who were verbally aggressive, this outcome variable also included physical aggression against objects in their analyses. Therefore, it is difficult to know to what degree this cluster variable of hostility was associated with verbal aggression and physical aggression against objects. Nonetheless, it appears that this combination or cluster of items from the scale is associated with either or both verbal and physical aggression against objects. However, in Troisi et al.'s (2003) study, no association was reported between the single item rating of hostility and physical aggression against objects.

2.3.5.3. Anger and physical aggression toward self

Only in one study (Yesavage, 1981) using two measures of hostility - one clinician-rated and one self-report - a significant association was found with physical aggression toward self. The clinician-rated measure was the single item rating of hostility from the BPRS and the self-report measure was the Buss-Durke scales of expressed (overt) hostility which was found to be associated with self-destructive acts within the first week of admission to hospital. Self-destructive acts included suicide attempts and attempts to harm oneself.

In Daffern et al.'s (2005) study, not only was hostility measured and clustered with other items in the BPRS and then computed in the analysis as 'paranoid disturbance', but also two sub-scales within the IMI-C measuring hostile and hostile-

submissive interpersonal style revealed no significant differences between those that did self-harm and those that did not.

2.3.5.4. Anger and physical aggression toward others

Most studies in the review considered physical aggression. In terms of the interpersonal style measures, two studies (Doyle & Dolan 2006; Daffern et al., 2010) found a significant prediction in physical aggression. Doyle & Dolan (2006) found that a hostile interpersonal style, using the CIRCLE scale, predicted physical aggression. Although Daffern et al., (2010) used a different interpersonal measure, they did not find a significant relationship with the hostile interpersonal scale; however, the hostile-dominance interpersonal style was a significant predictor.

Six studies that used the BPRS for a measure of hostility found an association with physical aggression. Amore et al., (2008), Raja & Azzoni (2005), Doyle & Dolan (2006), McNeil & Binder (1995) and Vitacco et al., (2008) that used the cluster of 'hostility-suspiciousness' or 'resistance' found a significant relationship with physical aggression. McDermott et al., (2008) which only used hostility as a single item in the analyses also found this to be a significant predictor of physical aggression. Other single items of anger/hostility that were a predictor of physical aggression came from Goldberg et al.'s (2007) study with the use of the PANNS.

Two studies which used the NAS revealed an interesting pattern of results in its relation to physical aggression. Both studies (Doyle & Dolan, 2006; McDermott et al., 2008) found all subscales of anger to be a predictor of physical aggression apart from the cognitive aspect in McDermott et al.'s study. The affective-behavioural correlates of anger in the WARS were also found to be predictive of physical aggression in two studies (Doyle & Dolan, 2006; Vitacco et al., 2008). Also, Konomi (2008) found that trait anger and control-in measured with the STAXI was correlated with physical aggression.

Non-significant findings in relation to aspects of anger and physical aggression have been reported. The two studies (Yesavage et al., 1981; Troisi et al., 2003) that only used hostility as a single item rating from the BPRS revealed no significant association with physical aggression. Also, similarly within the range of global ratings of

hostility, both clinician-rated and self-report using the CPRS (Seeman et al., 1985), no significant association with physical aggression was found. Daffern et al., (2005) found no significant findings with either cognitive, behavioural or arousal aspects of anger with physical aggression, neither was there any significance for a rating of indirect hostility using the BDHI (Yesavage et al., 1981).

Table 2.3. Studies revealing statistically significant association between aspects of anger and form of aggression

Scale	Verbal aggression	Physical aggression against objects	Physical aggression against self	Physical aggression against others	Not specified
Interpersonal hostility (IMI)					Aggressive (Cookson et al., 2012)
Interpersonal hostility-dominance (IMI)				Daffern et al., 2010	
Interpersonal hostile (CIRCLE)				Doyle & Dolan, 2006	
Hostility-suspiciousness (BPRS)	Amore et al., 2008; Raja & Azzoni, 2005	Amore et al., 2008; Raja & Azzoni, 2005		Amore et al., 2008 Doyle & Dolan, 2006; McNeil & Binder, 1995; Raja & Azzoni, 2005	
Resistance cluster (BPRS)	Vitacco et al., 2008			Vitacco et al., 2008	Aggressive (Ferguson et al., 2005)
Hostile (BPRS)	Troisi, 2003		Yesavage, 1981	McDermott et al., 2008	
Affect cluster (BPRS)					Violence (Waldheter et al., 2012)
Cognitive dimension (NAS)				McDermott et al., 2008	
Behavioural dimension (NAS)				Doyle & Dolan, 2006; McDermott et al., 2008	
Arousal dimension (NAS)				Doyle & Dolan, 2006; McDermott et al., 2008	
Total anger (NAS)				Doyle & Dolan, 2006; McDermott et al., 2008	
Affective-behavioural (WARS)	Vitacco et al., 2008			Doyle & Dolan, 2006; Vitacco et al., 2008	

Hostility bias (AIHQ)				Violence (Waldheter et al., 2005)
Anger/hostility (BPAQ)			Wang & Diamond, 1999	
Anger (PAS)				Assaultiveness (Craig, 1982)
Anger expression (ACF)				Aggressive (Daffern & Howells, 2008)
Anger (PANNS)	Goldberg et al., 2007		Goldberg et al., 2007	
Hostile (PANSS)	Goldberg et al., 2007		Goldberg et al., 2007	Aggressive (Nolan et al., 2005)
Resentment (BDHI)				Aggressive (Song & Min, 2009)
Irritability (BDHI)				Aggressive (Song & Min, 2009)
Overt Hostility (BDHI)		Yesavage, 1981		
State (STAXI)				Aggressive (Kim et al., 2010; Ritsner et al., 2003)
Trait (STAXI)	Konomi (2008)		Konomi (2008)	Aggressive (Kim et al., 2010; Ritsner et al., 2003)
Reaction (STAXI)				Aggressive (Kim et al., 2010
Temperament (STAXI)				Aggressive (Kim et al., 2010)
In expression (STAXI)			Konomi (2008)	Aggressive (Kim et al, 2010)
Out expression (STAXI)	Konomi (2008)			Aggressive (Kim et al., 2010)

Control (STAXI)	Aggressive (Kim et al., 2010)

2.3.5.5. Anger and reactive/instrumental aggression

While some studies attempt to specify the links between anger and different forms of aggressive behaviour (i.e., verbal, physical aggression object/self/person-directed), a few studies also distinguish between the underlying intentionality-related types of aggression (reactive/impulsive versus instrumental). Out of the 24 studies, only two considered these types of aggression in relation to anger. McDermott et al., (2008) found that all the aspects of anger included in the NAS were predictive of instrumental aggression, from baseline assessment to over a period of six months or less. The NAS was also associated with reactive aggression but the cognitive aspect did not reach significance. In Vitacco et al.'s (2009) study, it was found that the Part B of the WARS was the strongest predictor of reactive aggression, while the strongest predictor for instrumental aggression was the interpersonal facet from the Psychopathy Checklist: Screening version (PCL:SV).

2.3.6. Methodological quality

In terms of internal validity (risk of bias), most of the studies (*k* = 19) were awarded with an overall "+" and the five studies were graded as an overall "++" (See Appendix A). No studies included in the review were graded with an overall "-".

In examining the 19 studies that were awarded with a "+", common themes emerged which were persisting as a risk of bias:

- *Profiles of participants and non-participants*

Studies which report on the source population fail to either state any further information about the patients who did not provide consent and subsequently were not in the study, or no comparisons were made between these two groups of eligible and included participants.

- *Studies which selected participants for the study based on consecutive admissions did not indicate or specify the time period for reviewing aggressive incidents.*

In studies that considered patients upon hospital admission to be included in the study, it was often the case that the time frame over which the admissions were considered, and also for reviewing aggressive incidents for each participant, was unclear or not reported.

- *Length of stay of patients in the study neither stated nor controlled for in analyses.*

In studies where the patient's length of stay was not reported nor controlled for in the analyses, this may have otherwise impacted on the conclusions.

- *Studies focusing exclusively on certain diagnostic groups.*

The focus of studies exclusively on a specific diagnostic group provides limited generalisability of findings to the inpatient setting.

- *No inclusion/exclusion criteria specified in studies.*

Conversely, where the inclusion and exclusion criteria were not made explicit in studies this made the generalisability of results difficult to ascertain.

- *Outcome measures: not clear how aggressive incidents were recorded; no information on how long data was collected; recorders not blind to anger measures.*

The way in which studies describe how aggressive incidents were captured and recorded on measures was not always clear. Studies which used a valid and reliable tool to record the types of aggression (i.e., verbal aggression, physical aggression against objects, self, or others) or utilised other sources of information have either done this retrospectively or prospectively.

- *Analysis: correlations/chi square testing reported for variables – not cause and effect.*

The studies report on means and standard deviations, and also conduct tests for relationships between variables such as chi-square and correlations.

In examining the five studies which were graded as "++" it appeared that the same themes as described above were also present; however, on balance more items in the checklist were satisfied on the following:

- *Outcome measures scored on the basis of multiple information sources relating to aggression, or scored by those blind to the anger/hostility assessments.*

Studies which recorded aggressive incidents retrospectively and prospectively used more than one data source of information to score the outcome measure. This

allowed for a more comprehensive and valid representation of aggressive incidents. Also, where nursing staff recorded the incidents of aggression they were blind to the measures of anger and to the hypothesis of the study.

- *Inferential analysis; regression and confidence intervals reported*.

The methods of statistical analyses used in studies were appropriate for the stated research question and hypothesis of the study. They used regression analyses for the prediction of aggression as the outcome variable. Also, confidence intervals were also reported therefore providing an indication of the reliability estimate.

- *Specific inclusion criteria stated.*

Studies explicitly reported the inclusion criteria of participants in the study. This allowed for the findings to be generalised to a similar population.

- *Allowing everyone who is able to provide informed consent as eligible to participate thus not limiting generalisability.*

Where studies allowed for all the patients in the source population to participate in the study, providing they were able to give informed consent, this possibly addressed the heterogeneous factors of demographic and clinical information that is typical of any hospital ward. Therefore generalisations of findings are applicable more widely to the inpatient setting. However, where patients were not able to provide informed consent it is questionable whether they are responsible for more of the aggressive incidents.

- *Comparisons made between selected participants on demographic information.*

Studies made statistical comparisons with those patients who for whatever reason did not participate in the study with those who did. It was found that there were no significant differences based on demographic information, and therefore findings could also be applicable to the non-participants to some extent.

2.4. Discussion

As with many topics in the behavioural sciences that are presumed to be commonly understood, when viewed critically, the topic is often characterised by complex causes, manifestations and consequences (DiGiuseppe & Tafrate, 2007). The topic of anger and aggression is no exception. This systematic review aimed to further understand this link by reviewing how anger has been measured and in relation to inpatient aggression. Given the confinements of a hospital setting where there are limited variability factors, which will be impossible to methodologically control for in the community, studies have indeed provided empirical support for a relationship between these two variables. Although this is useful for risk assessment purposes within the range of risk factor variables, not every patient will experience and/or express their anger in the same way, nor is anger a requisite for aggression (Kennedy, 1992). Thus, knowing which aspects of anger are related to aggression can improve assessment; treatments can also be tailored to target those aspects to minimise associated incidents.

This review considered all aspects in which anger/hostility has been measured in a patient sample and its relationship to aggressive behaviour. Given the various types of tool used to measure anger, and the methods used in analysing this variable, pooling these results in a statistical way was not viable. The synthesis in this review must therefore be considered exploratory. Patterns in the way which the aspects of anger have been considered, and the way studies have investigated its association with aggression, can be observed and thus conclusions can be drawn.

The most commonly used measure across the studies was the Brief Psychiatric Rating Symptom (BPRS) scale. This clinician-rated tool measures hostility as both a clustered and a single-item variable. Evaluators are advised to consider expression of hostile attitudes or actions when scoring the hostility item in the BPRS. This would perhaps be consistent with Buss & Perry's (1992) definition that hostility is the cognitive component of the construct. Thus, as found in this review, a cognitive aspect is prevalent and associated with inpatient aggression, particularly physical aggression. However, this assertion cannot be considered conclusive as it rests on the assumption that all evaluators rated the BPRS hostility item according to its definition. The items clustered with hostility in the analyses were suspiciousness and uncooperativeness.

Here, the former is a cognitive aspect and the latter is a behavioural observation, supposedly. This weighted cluster score with the defining features of a cognitive aspect, which is externally judged by an evaluator, has been found to play a role based on the reported results in studies.

It follows, given that a large proportion of studies in the review that found a cognitive aspect to be associated with aggression, a scale that directly measures this aspect would perhaps reveal consistent findings. Interestingly, however, Doyle and Dolan (2006) and Daffern et al., (2005) did not find this to be case with the administration of the Novaco Anger Scale (NAS) but McDermott et al., (2008) reported significant findings. Thus, there is mixed findings with respect to the cognitive aspect, without discounting potential issues surrounding self-report with the NAS. Another study which explores the cognitive aspect is Waldheter et al.'s (2005) study, which found that hostility biases significantly contributed to the regression model in predicting the severity of aggression. This possibly suggests that an implicit-indicator measure could overcome social-desirability responding in self-reports and provide a more accurate picture of the cognitive aspect. Further, Novaco (2011) argues that to broaden the theoretical framework, cognitive processes such as rumination substantially bears on anger and has high relevance for forensic populations, yet this remains almost unstudied in those populations. Therefore, it seems that cognitive aspects merit further research attention in order to understand how they may play a role in aggression. This will consequently allow researchers and clinicians to pinpoint viable treatment targets, such as hostility biases and rumination, within the cognitive aspects in relation to anger.

Three studies (Doyle & Dolan, 2006; McDermott et al., 2008; Vitacco et al., 2008) in the review have found affective/arousal and behavioural aspects of anger to be predictive of physical aggression. This was evident from both observer-rated and self-report measures. It therefore seems that these aspects, perhaps unsurprisingly, play a role in aggression. However, further research will be required to properly ascertain how such aspects are manifested in aggression i.e. what and which mechanisms are involved; levels of that aspect which then translate into the aggressive behaviour; and which form of aggression is more likely. Too few studies (Kim et al., 2010; Ritsner et al., 2003) use tools that consider anger to be a multidimensional concept, such as the State-Trait Anger Expression Inventory (STAXI), yet only conducted descriptive

analyses on these aspects of anger with aggression. This limits any formative conclusions about aspects of anger, such as state and trait. As Daffern et al., (2005) point out, the lack of association between anger and aggression in their study may have been due to the use of a particular anger scale, which only measured for trait anger rather than state. They argued that the absence of a trait difference does not indicate that anger was not relevant as a state factor or an antecedent to aggressive behaviour. However, this does not appear to be the case in the Konomi (2008) study in which the STAXI was used to measure trait and state anger. In fact, trait anger correlated with both verbal and physical aggression. In light of these mixed findings, not only between studies but also between scales, further studies ought to consider using more than one multidimensional anger measure simultaneously, to validate which aspect (i.e. trait or state) is influencing the association more between anger and inpatient aggression.

Although studies in this review were conducted in various countries, it is possible that there is an overlap in the type of care provided in each categorical but not necessarily in universally-named hospital settings. Thus, the findings represent a mixture of inpatient acute and forensic mental health services. However, the measures used consist of subscales of anger, or else only a global rating of the construct was considered. As expected, these differ in definitions, measurement and scoring/analyses across the studies. Also, nearly half of the studies did not specify the form of aggression exhibited. This may have been in part due to the study design and for data analysis purposes to amalgamate aggressive behaviours as a singular variable to represent aggression. Nevertheless, this still demonstrates a relationship between the various interrelated variables of anger under investigation with aggression. The difficulty, however, is ascertaining how much of this 'aggressive' behaviour is attributed to each form of aggression, and therefore knowing which particular aspect of anger was related within, or to, all of these behaviours. The reverse is also true for the global scoring of anger in studies where it is difficult to identify which aspect is manifested in each of the aggressive behaviours.

The appraisal of the methodological quality of studies offers further insight of the association between anger and inpatient aggression. Based on the grading divide with majority of the studies achieving '+', rather than '++', there is some methodological soundness overall, but not completely without biases. Common reasons were studies

did not specify participant inclusion criteria or studies focussed on specific diagnostic groups, which could limit generalisations. Also, there was no information on the profiles of participants and non-participants; thus, it is possible that only healthy and compliant patients were investigated. Where patients were recruited into the study on their admission to hospital, the time period covered for aggressive incidents for each patient was unclear. Therefore, it is possible that some patients would have had a longer or shorter period in the study to aggress compared to other patients. The way in which aggressive incidents were recorded also varied. Where recording has been completed retrospectively using case notes or interviews with staff members for example, this may be subject to biases such as recall and interpretation of what happened during the incident. In studies where nursing staff completed the aggressive outcome measures, they were not always blind to the anger measures or to the hypothesis of the study. Therefore, this may have an unintended bias in the recording of aggressive incidents. Finally, the analyses performed between the variables do not imply a cause and effect relationship.

The procedure conducted throughout this review from the inclusion of studies, data extraction, quality appraisal and synthesis was completed by the author independently due to time constraints and resource availability. However, in effort to minimise bias of the review, a second independent reviewer checked a sub-sample of the studies to ensure they were being judged equally throughout each of the steps. Discrepancies that had occurred between reviewers were possible to resolve through discussion. None of the studies scored a minus on the NICE checklist. The included studies therefore did not have major significant flaws that were persisting as a risk of bias, where the conclusions drawn by the respective authors are likely to alter. This is not to claim, however, that the included studies were absent of any bias, but rather such biases were not major to the extent that the conclusions drawn carried no weight at all. Based on these steps taken to ensure the review was not biased, and the extent of the methodological soundness of individual studies, it is believed that the review has modest strength so that an overall conclusion for the measurement of anger to determine its role in inpatient aggression is derivable.

Further research that can clarify the association between the construct of anger and inpatient aggression is needed. The cognitive aspect of anger has been mentioned

in this review; a focus on measuring this aspect specifically could improve our understanding of why some angry patients are aggressive while others are not. Chapter 5 introduces Wilkowski & Robinson's (2008) *Integrative Cognitive Model* (ICM) of trait anger and reactive aggression. This consists of three components: hostility, rumination and effortful control. It depicts pathways for how each of these can be related to anger and consequent aggression. Using the ICM as a framework means that aspects of anger in the manifestation of inpatient aggressive behaviour can be better understood. This could be one method of ascertaining the role of anger in patient aggression, and helping to inform evidence-based risk formulations, and resulting in formulation-based treatment (Doyle & Dolan, 2002). Chapter 6 demonstrates the value of patient's self-reporting levels of anger as part of routine violence risk assessments in terms of its predictive validity of inpatient aggression.

Only a few studies to date have focussed on the measurement of interpersonal style and they reveal that a hostile or hostile-dominant style characteristic of the patient is predictive of aggression. This provides contextual support for the findings in Papadopoulous et al.'s (2012) meta-analysis, which finds that 39% of all incidents involve staff-patient interactions after reviewing the types and proportions of antecedents of aggression. However, it is noteworthy that non-clinical workers, who may not know the patients very well compared to the staff working directly with them on a day-to-day basis, completed the interpersonal style measure based on the interactions during the interview session. This may not accurately reflect how the patient interacts on the ward especially with people with whom they are more familiar. Therefore, future studies should ensure members of the ward team complete this measure for a more accurate representation of each patient's characteristic interpersonal style. Equally, staff's characteristic interpersonal style should be rated by the patient for a more complete understanding of what is happening in these interactions in terms of anger. In knowing whether patients perceive the actions of staff as hostile and controlling, and whether patients are unsettled and angered by these behaviours of staff, and also whether their aggressive behaviour in this state is anger-mediated, will provide implications for training and practice. Thus, whether an association exists between self-reported anger and reciprocally-rated interpersonal styles between patients and staff will be examined in Chapter 8.

2.4.1. Conclusion

Based on this review, anger should be considered an important and prevalent risk factor for inpatient aggression. Whilst this much is clear, the review also demonstrates the complexity of measuring anger and its role in inpatient aggression. The lack of consistency in definition, measurement and analysis shown in previous studies has hindered an understanding of anger as a multidimensional concept. The finding from this review, however, suggests that cognitive aspects of anger are important. This lends support for the use of the ICM in future studies to further understand the relationship between cognitive aspects (i.e., hostility, rumination and effortful control) of anger and inpatient aggression. Use of the ICM has the potential to inform evidence-based risk formulation and treatment avenues for inpatient aggression.

3. CHAPTER THREE

3.1. NURSING STAFF ANGER: A SYSTEMATIC REVIEW

This chapter highlights the problem of patient aggression for nursing staff as a group of professionals in inpatient mental health services. The management of patient aggression and the relevance of nursing staff's emotions are discussed. Relevant literature is reviewed to identify the extent, range and nature of research that has focussed specifically on nursing staff anger in inpatient mental health services. In the Safewards Model (Bowers, 2014), it is noted within the staff team domain that the experience of staff frustration can be a modifier in the rates of conflict and containment. Given that Novaco (2010) considers frustration and rage on polar opposite of an anger intensity continuum, it is important to further understand this particular emotion in nursing staff.

3.1.1. Staff in mental health services

The Centre for Workforce Intelligence (CfWI; 2012) reported that there are 48,234 qualified mental health nurses of all grades working across the UK. The CfWI also reported that although the Nursing and Midwifery Council (NMC) has seen an increasing trend in the registration of mental health nurses, the number of nurses in the mental health NHS workforce has not reflected this trend but has remained consistent since 2006. Mental health nurses may be working outside of the NHS and in the independent and third sectors. As a result, quantifying the number of nurses working in inpatient mental health settings has been difficult because of the lack of workforce data across sectors. Amongst the various professions in the mental health workforce however, mental health nurses are by far the largest group (Humphreys, 2005).

Nursing staff are the most frequently assaulted group of professionals in inpatient mental health care settings (Royal College of Psychiatrists, 2007). Because nursing staff are on the frontline of patient care, they also have to make decisions about the management of patient aggression, including the use of and involvement in coercive interventions such as physical restraint and seclusion. Use of such interventions is a potential source of conflict, which might be a trigger for further patient aggression (Bowers, 2014). The consequences of patient aggression can be significant, not least for those directly involved: staff absenteeism due to perceived risk of further assault (Ito

et al., 2001). Staff injuries may increase the need for bank/temporary nursing staff, and this financially and operationally disrupts clinical routine within services. It is therefore important to focus research on improving mental health services not only in terms of patient needs, but equally to promote the safety of staff in their place of work. This will aid the delivery of an effective therapeutic environment for patients and a safer workforce.

3.1.2. Management of patient aggression

The management of patient aggression is a contentious and emotive issue (Bowers et al., 2011). Although staff realise that their professional duty is to contain aggressive incidents and minimise further risk, which may require the use of coercive interventions, they also report discomfort with physically restraining patients (Bigwood & Crowe, 2008). Nurses' decision to use physical restraint is often experienced as a dilemma because of the unsuccessful search for alternatives and the after-effects (Marangos-Frost & Wells, 2000; Lee et al., 2003). NICE (2015) guidelines state that coercive interventions should be used as a last resort and not to punish, inflict pain, suffering or humiliation, or establish dominance. Surprisingly, 18.6% of respondents in a sample of 168 nurses indicated that good alternatives to physical restraint exist (Suen et al., 2006). Physical restraint can cause severe distress and at worst can lead to injury and even death. For instance, the case of David 'Rocky' Bennett who died in 1998: an independent inquiry revealed that this was a direct result of prolonged face-down physical restraint, and the amount of force used by members of staff during the incident (MIND, 2013).

Training courses are recommended by NICE (2015) to be implemented in inpatient services for the management of patient aggression. Key recommendations include training in psychosocial methods to avoid or minimise the use of physical restraint and seclusion. The concerns of patient aggression in terms of its impact led to the development and implementation of training programmes such as the Prevention and Management of Violence and Aggression (PMVA) and Management of Actual or Potential Aggression (MAPA). The concept of these courses originated within the UK prison system, before they were implemented with modifications in general and forensic mental health services (Wright, 1999). Such training programmes consist of theoretical

content on factors influencing aggression, teaching skills to assess why behaviour is likely to become aggressive, as well as methods and techniques to reduce and defuse aggression when it arises (e.g., verbal de-escalation). The training also enables staff to become skilled in methods and techniques to undertake coercive interventions safely when they are required.

The evaluation of training courses to manage patient aggression have not been rigorous; for instance, there are no randomised control trials to establish that aggressive incidents are prevented or better managed following such training. In fact, Bowers et al., (2006) found a positive correlation between course attendance and aggressive incidents, despite other studies (Beech & Leather, 2004; Collins, 1994) which have found that trained staff reported feeling safer and more confident in the management of patient aggression. Price, Baker, Bee & Lovell (2015) conducted a review of 38 studies on the outcomes of de-escalation techniques training. De-escalation-related knowledge, confidence to manage aggression, and de-escalation performance that was limited to fictional scenarios, were revealed as the strongest outcomes of training. Therefore, it is not clear whether existing training courses lead, or do not lead, to successful prevention and management of patient aggression.

3.1.2.1. Nursing staff's emotional regulation

In Bowers' (2014) Safewards Model, the staff team is one of six domains that is hypothesised to influence rates of conflict (i.e., patient aggression) and containment (i.e., coercive interventions). It is suggested that staff characteristics are modifiers in the sense that the way staff act in managing patients or their environment, initiating or responding to interactions with patients, can have the capacity to influence the frequency of conflict and/or containment. Emotional regulation, along with a positive appreciation of patients and providing an effective structure of rules and routine for patients, are the underpinning factors (Bowers et al., 2011). Bowers et al., (2014) argue that nurses' emotional regulation can impact upon their implementation of ward routine and rules of patient conduct, and in the management of aggressive behaviour. It is proposed that staff emotion accentuates patient emotion and self-control ability, thereby hindering nurses' ability to respond in the most effective and socially skilled way.

Indeed, this is supported by a study that indicated nurses' anxiety and fear increased their propensity to use seclusion (Parkes, 2003).

The emotional and psychological effects of patient aggression on nursing staff are notable. Needham, Abderhalden, Halfens, Fischer and Dassen's (2005) conducted a systematic review of 25 studies from eight countries. The rationale of the review was motivated by the prevailing view among nursing staff themselves, and the literature publication bias, that anything other than physical injury is insufficiently serious to warrant further investigation. It was found that anger, fear, guilt and shame were the most frequently reported effects. Whittington and Wykes (1991) found that staff felt irritable immediately following an assault. Deans (2004) conducted in-depth interviews with nurses about how they responded to such incidents. Professional incompetency, an expectation to cope and emotional confusion emerged as three overarching themes that conveyed the meaning of being victims of patient aggression. The 'professional incompetency' theme represented doubts, confusion and conflict about the ability to function as a competent professional nurse. The theme of 'expectation to cope' described the participants' perception that colleagues, especially senior members of staff, believed that nurses should be able to cope with being a victim of patient aggression because it is an expected part of the job. A wide range of emotions experienced by nurses including fear, anger, guilt, humiliation and embarrassment, formed the 'emotional confusion' theme. The emotions were intensified by non-supportive responses from senior staff and/or colleagues about being a victim of patient aggression. Despite the apparent importance of anger that is a sequelae of patient aggression, little is known about the subsequent impact on work productivity and quality of care.

Engin and Cam (2006) explored whether there is a relationship between nursing staff anger and job motivation. The study found that nurses who can appropriately verbalise difficult feelings such as anger have a higher level of job motivation compared to nurses who suppress their anger. Also, nurses who reported better organisational support as a result of being exposed to patient aggression reported higher levels of self-esteem (Nolan et al., 2001). Cutcliffe (1999) suggests that a formal support system for staff mediates the relationship between the exposure to patient aggression and staff's ability to deal with incidents therapeutically. However, for nursing staff who experience

long term strain following an incident, it was found that support is mostly offered on an informal basis by colleagues in public or by family/friends at home (Whittington & Wykes, 1992). With nurses working in such pressurised environments and the risk of being or having been a victim of patient aggression, it is appropriate to question how this affects nurses' wellbeing and subsequently the quality of patient care delivery.

Arnetz and Arnetz (2001) aimed to address the question of whether there is any measurable effect on staff's reaction to being a victim of aggression. They propose that aggression exhibited by patients has a negative effect on staff, causing more negative attitudes towards work tasks and patients. Staff reported previous experiences of the nature of patient aggression and their reaction to it. Patients reported how satisfied they were with the quality of care provided by the members of staff in the study. It was found that aggression experienced by staff resulted in them feeling angry, sad, disappointed and fearful; staff's feelings were associated with lower patient ratings in the quality of care received. Although this study was conducted in a general hospital and not in a mental health care setting, these findings could perhaps extend to nurses working in psychiatric hospitals given the prevalence of inpatient aggression (Bowers et al., 2011), and would therefore have implications for the quality of care provided.

Bowers et al., (2011) argued that if nursing staff become victims of patient aggression, their ability to effectively regulate emotional states and carry out work as effectively as possible may become compromised. The authors explain that this may be because of the struggle to attain positive moral commitments, engage in effective team work, and may even have their psychiatric philosophy impaired temporarily or even permanently. Paterson et al., (2011) discussed the effects of exposure to patient aggression over a long period on staff. It was suggested that repeated exposure could lead to frustration and anger in staff which may subsequently be displaced on patients. In such instances staff would be unlikely to recognise how their own emotional arousal has impacted on how they think, which can impair their ability to recognise and respond appropriately to the early signs of distress in patients. This process is synonymous with the *Cyclical Model of Burnout and Vulnerability to Aggression* proposed by Whittington and Wykes (1994): stress induced by patient aggression leads to impaired staff performance and adoption of subsequent staff behaviours makes the re-occurrence of patient aggression more likely. Patterson et al., (2011) recommend nurses to openly

acknowledge and disclose their emotions, and for these to be managed in debriefing sessions and clinical supervision.

3.1.3. Review aim

In this context, nursing staffs' emotional regulation requires further research attention, given that inpatient aggression is frequent and therefore can be distressing for nurses providing frontline care for patients. The aim is to conduct a review of empirical studies on nursing staff anger in order to understand its role in inpatient psychiatric settings.

3.2. Method

A systematic literature review was conducted and reported in accordance with relevant sections of the PRISMA (Moher et al., 2009).

3.2.1. Data sources and search

The purpose of the literature search was to locate all empirical studies that have investigated nursing staff anger in inpatient mental health services. The search procedure had involved using multiple computerised databases (i.e., EMBASE, Medline, PsychINFO and CINAHL) with the following terms: Anger, Hostil*, Aggress*, Violen*, Inpatient, Psychiatric, Hospital, Ward. The search was supplemented by scanning the relevant articles' reference list for further studies to be considered against the inclusion criteria.

3.2.2. Selection criteria

Studies were deemed eligible for inclusion if they investigated or reported on: anger in nurses who work specifically in psychiatric inpatient settings. The inclusion criteria were not limited by study design, as the purpose of the review was to map the relevant literature on nursing staff anger in inpatient psychiatric settings. Studies were excluded if they were non-empirical; anger was not investigated or not reported on, the study sample comprised staff other than nurse professionals, and articles written in non-English due to limited resources. Titles and abstracts were reviewed by the author. Full-text version of articles that potentially met the inclusion criteria were subsequently obtained for further examination.

3.2.3. Study quality assessment

The quality of quantitative and qualitative studies were assessed with guidelines and checklists provided by NICE (http://www.nice.org.uk/). The checklist based on the appraisal step of GATE (Jackson et al., 2006), as described in Chapter 2, was used to assess the quantitative studies. For qualitative studies, the checklist used is based on two sources (Spencer et al., 2003; Public Health Resource Unit England, 2006); which comprises six sections: theoretical approach, study design, data collection, validity,

analysis and ethics. There were 12 items in total across the six sections which have a 3-point rating option.

3.2.4. Synthesis of study results

Extracted data were collated and charted in tabular form. The columns represented in Table 3.1. were the particulars extracted from each study, allowing for an overview description of the included studies. Studies included in the review used various methods and measures thus it was not possible to synthesise the results via meta-analysis. Included studies were thus synthesised in narrative form (Popay et al., 2006). Descriptive statistics were employed to explore the extent, nature, geographic distribution of studies, and the research methods adopted. The way in which studies investigate or report on nursing staff anger was identified and organised thematically, according to study aims, measures used, results and author conclusions.

3.3. Results

3.3.1. Literature search

Figure 3.1. shows the literature search screening process. Thirty-four studies were identified at the title level; however, 17 studies did not meet inclusion criteria at the abstract screening level. Seventeen full-text articles were obtained to assess eligibility and subsequently a further ten studies were excluded at the full-text screening level. The reasons for excluding articles at each screening level are provided in Figure 3.1. The remaining seven studies fulfilled the eligibility criteria, as well as three relevant studies which were identified through hand searching reference lists of articles. In total, ten studies were included in the review.

3.3.2. Characteristics of included studies

Seven of the ten included studies were published after the year 2000. Seven are quantitative studies and three are qualitative studies. Studies were conducted in seven countries: US (*k* = 3), UK (*k* = 2), China (*k* = 1), Canada (*k* = 1), South Africa (*k* = 1), Sweden (*k* = 1) and Turkey (*k* = 1). All studies but one had recruited nurses from a psychiatric hospital setting; one study recruited nurses from a university setting who had been exposed to psychiatric inpatient services as part of their training. Across the ten studies, the total sample consisted of 1,062 participants; job titles of the nursing role varied and were a combination of psychiatric nurse, student psychiatric nurse, rehabilitation instructors and nurse's aides. Out of the 1,062 participants, 91 are female and 59 are male; gender was not reported in the studies for the remaining 912 participants. Other staff information such as age, ethnicity and years of experience were either not reported consistently or not reported at all across the included studies.

Based on the studies' aims, nursing staff anger was investigated or reported on in relation to their *reaction to patient aggression* and/or *containment of patient aggression*. The following section will summarise the studies according to these identified two main themes.

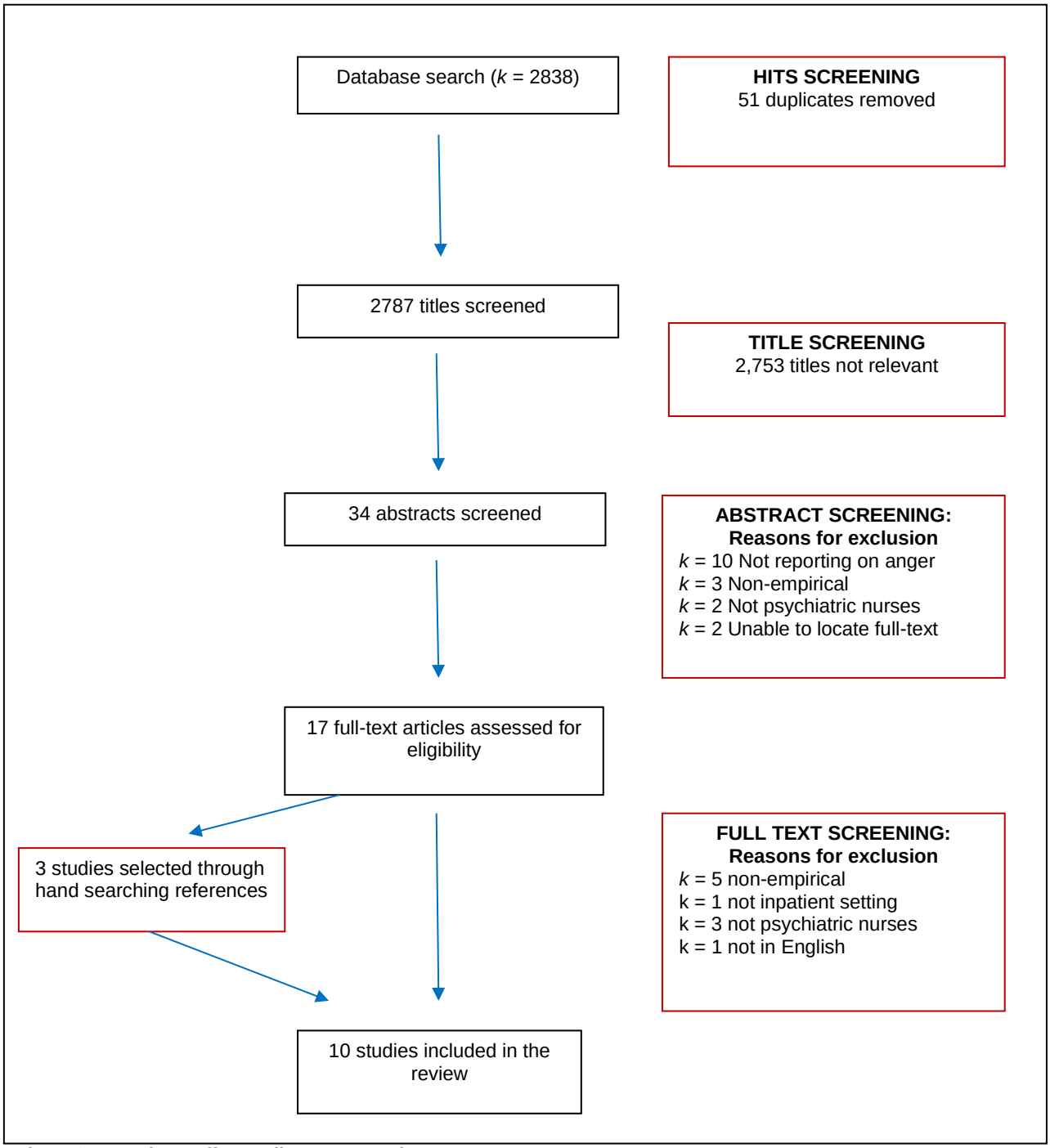

Figure 3.1. Nursing staff anger literature search process

3.3.2.1. Reaction to patient aggression

The majority of studies (*k* = 7) focussed on exploring nursing staff anger in reaction to patient aggression. It is apparent that nursing staff anger is experienced along with anxiety, fear, frustration, despair, helplessness and sadness when nurses are assaulted by patients (Engqvist et al., 2009; Murray & Snyder, 1991; Bimenyima et al., 2006). However, Lu et al., (2007) and Ryan and Poster (1989) found that the most common reaction was anger. In addition, Lanza (1983) and Murray and Snyder (1991)

report that nursing staff anger as an emotional reaction to patient assault was generally a short-term, but also in some cases can be a long–term, response. The effects of nurses being or becoming angry are notable since Engin and Cam (2006) found a correlation between job motivation and anger in nurses. It was concluded that patients' aggressive behaviours interfere with nurses doing their routine tasks and cause the most anger. Invariably, study authors emphasised that nursing staff must recognise how their emotions can impact on their wellbeing and ability to perform work-related tasks. Further, it has been suggested that relevant support mechanisms from colleagues and the organisation could help ease nurse's reactions to patient assault.

3.3.2.2. Containment of patient aggression

Three studies which investigated containment of patient aggression (i.e., physical restraint and/or seclusion) reported on nursing staff anger. Of the two quantitative studies, one investigated nurses' attitude towards containment (Bowers et al., 2006) and the other measured nurses' involvement in incidents of containment (De Benedictis et al., 2011). Both studies revealed a positive association between levels of nursing staff anger and greater use of containment. Neither study, however, used a standardised measure of anger. Thus, inferences are based on anger proxy measures. Bowers et al (2006) used a measure, namely Attitude to Personality Disorder Questionnaire (APDQ), which contains five factors within the scale; one of the factors is termed 'acceptance' which implies that anger is absent. De Benedictis et al., (2011) used a measure for team climate (Group Environment Scale (GES): Moos et al., 1973) and thus respondents were reporting on their perceived anger amongst team members, rather than their own levels of anger. A qualitative study (Sequeira & Halstead, 2004) provides further understanding of the association between nursing staff anger and use of containment. Nursing staff report discomfort with, and a disliking of, physical restraint and seclusion; nursing staff referred to the experience of anger during the physical restraint process and associated this with the risk of patients hurting themselves and colleagues, or because patients not responding to less coercive methods of containment. The study authors suggested that intense feelings toward patients have implications for the quality of the therapeutic relationship between nurses and patients. Appropriate support for nursing staff to process intense feelings arising from their work

with patients is emphasised, to ensure hospitals are therapeutic for patients and safe for nursing staff.

3.3.3. Methodological quality

In terms of internal validity (risk of bias), all studies (*k* = 7) were awarded with an overall "+" (See Appendix A), which translates as: some of the checklist criteria have been fulfilled, where they have not been fulfilled or not adequately described the conclusions are unlikely to alter. In examining the seven studies, common themes which were persisting as a risk of bias, and thus did not warrant "++" grade, included:

- *Population*

The source population was only briefly described in terms of the type of hospital (i.e., inpatient psychiatric) and the country in which it is located. Population demographics were not reported. Further, in relation to the eligible population, inclusion criteria were not explicit and thus there was no indication of whether all eligible nursing staff participated or how many agreed to participate. Two studies used clinical records to identify assaulted staff members to determine eligibility.

- *Measures and completion rates*

In four studies, there were no indications of the psychometric properties of the measures used. All the studies, however, report a good completion rate of the measures. Items within the measures about the reactions of nursing staff in relation to previous patient assaults were based on recall.

- *Analyses*

Power calculations were not reported in any of the seven studies. Sample sizes in each of the studies varied from 18 to 378 participants. Multiple variables were considered in statistical tests; two studies only reported descriptive statistics (i.e., percentages). Three studies did not report confidence intervals and thus it is difficult to gauge reliability estimates.

The NICE quality appraisal checklist for qualitative studies is primarily concerned with the validity and adequate reporting of key factors that affect the quality of research

studies. A qualitative methodology was deemed appropriate for all of the qualitative studies (*k* = 3) included in the review. The context was clearly described in all three studies; characteristics of the participants were reported such as age, gender and length of service. Study authors had stated the qualitative procedures which were used in collecting, analysing and theming the data; however, it is unclear in two of the studies whether multiple authors were involved in the analyses stages. There were however clear links between data and authors' interpretation. Further, two studies had included little discussion on the limitations of the research study and the role of the researcher was not clearly described. Only one study reported that it was approved by an ethics committee.

Table 3.1. Tabulation of data extraction from nursing staff anger studies

Study	Design	Participant demographics	Setting	Study aim	Measures	Results	Authors conclusions
Bimenyima et al., (2006)	Qualitative	10 psychiatric nurses (5 male), aged between 20 and 40, at least 2 years' experience	Psychiatric hospital, South Africa	Explore the lived experiences by psychiatric nurses of aggression from patients	One-to-one interview: "how is aggression for you in this hospital?"	Nurses faced with aggression experience negative feelings of fear, anger, frustration, despair, hopelessness and helplessness	Caught between their vocation and what they perceive as the ingratitude of some patients
Bowers et al., (2006)	Quantitative	114 Student psychiatric nurses (44 male), aged under 30 years, 72% Black; 13% White; 15% Other	University (with exposure to psychiatric practice), UK	Explore the relationship between approval of containment measures, perception of aggression and attitude to personality disorder	Attitude to containment (ACMQ), Aggression is unacceptable/aggression is normal (POAS), affective statements; acceptance (absence of anger) being one of five factors in the scale (APDQ)	POAS factor 1 (aggression is unacceptable) was inversely related to APDQ acceptance and APDQ total	Positive judgements of containment measures indicates a willingness to use them based upon angry feelings towards patients
Lu et al., (2007)	Quantitative	106 psychiatric nurses , mean age 29, mean years of	Two psychiatric hospitals, Taiwan	Evaluate the reaction of psychiatric nursing staff to assaults by patients and to	Assault response questionnaire (emotional, social and bio physiological scale)	Body soreness most common bio physiological reaction, anger most common emotional reaction,	Essential to assure that nurses' feelings were satisfactorily addressed

		experience 5.2,		examine factors relevant to the nurses' reactions and perceptions		fear of the patient most common social reaction. Nurses expressed discomfort in caring for patients who assaulted them	with adequate empathy and the availability of sufficient support from staff
De Benedictis et al., (2011)	Quantitative	309 staff (nurses, rehabilitation instructors and nurse's aides)	Eight general and forensic psychiatric hospitals, Quebec	Examined whether staff perceptions of factors related to the care team and violence on the ward predicted use of seclusion and restraint	Quebec Social and Health Survey (sociodemographic variables), Group Environment Scale (Team climate), Perception of Aggression Scale (Perception of aggression and frequency of incidents), organisational factors, measures of seclusion and restraint	Greater expression of anger and aggression among staff members and perception of a higher level of physical aggression against the self among patients were significant predictors of greater use of seclusion and restraint	Appropriate management of anger and aggression by team members creates a sense of security and can help reconcile the balance between therapeutic interventions and the need to control patients
Engin & Cam (2006)	Quantitative	378 psychiatric nurses, mean age 35, 14 year experience	Nine psychiatric hospitals, Turkey	Determine the correlation between the level of anger and the job motivation of	Nurses' descriptive characteristics questionnaire, Trait anger-anger expression scale, Nurses' job	Negative correlation between job motivation and suppressed anger (r=0.17)	Behaviours that interfere the most with nurses doing their jobs and that cause the

				nurses	motivation questionnaire		most anger, inadequate resources and conditions, unclear team relationships and roles, and patients' aggressive behaviours were identified
Engqvist et al., (2009)	Qualitative	Nine psychiatric nurses (one male), mean age 53, 18 year experience	Three psychiatric hospitals, Sweden	Explore nurses' responses to women with postpartum psychosis when providing care	Semi-structured interviews discussing nurses responses to the women presenting with symptoms	Responses included sadness, sympathy, empathy, compassion, discomfort, anger, anxiety, and happiness	Nurses must be prepared to recognise when they have negative responses toward patients and have systems in place to assist them
Sequeria & Halstead (2004)	Qualitative	17 psychiatric nurses (nine men), aged 18 to 50, between less than 1 and 15 year experience	One psychiatric hospital, UK	Examine the experiences of physical restraint procedures reported by nursing staff	Semi-structured interviews ; participants were asked to describe their experiences before, during, and after restraint events	Nurses reported discomfort with and dislike of the use of restraint and seclusion. Staff referred to the response of anger during restraint process and associated this	Staff's intense feelings towards patients has implications for the quality of the therapeutic relationship between them

						with patients hurting them	
Lanza (1983)	Quantitative	40 nurses (23 nursing assistants), aged 38, 6 year experience	Psychiatric wards, US	Determine the type of emotional, cognitive, social, and biophysiological reactions that nursing staff experience as a result of being physically assaulted	108 possible responses in the emotional, social, biophysiological categories on a 5-point scale.	50% indicated no response on the 65% of the questions about emotional reactions. Anger as a emotional reaction was a short and long term response	High number of no response answers due to an actual lack of reaction or to the fact that were unable to admit to the reaction themselves. Suppression is one possibility
Murray & Snyder (1991)	Quantitative	18 nurses	Psychiatric hospital, US	Determine if staff experienced post-traumatic stress disorder-like symptoms 6 weeks or more after the assault	Likert scale questions: 1) Many staff experience physical, emotional, and social/family reactions immediately after being assaulted. To what extent was that true in your case? 2) Did you continue to experience these reactions for more than 6 weeks after	83% responded that they had experienced reactions. Reactions included physical pain, frustration, anger, self-criticism, disbelief, and sadness. 11% reported reactions beyond the 6 weeks.	Staff feel supported by a consultation service for their reactions following an assault.

					the assault?		
Ryan & Poster (1989)	Quantitative	61 nurses, 63% over 5 year experience	Neuropsychiatric hospital, US	Describe the emotional, cognitive, social, and biophysiological short-and long-term reactions of nursing staff to physical assaults	Assault response questionnaire. Perceived stress scale. Attitudes toward patient physical assault questionnaire.	The highest number of moderate to severe responses were reported for emotional and biophysiological categories. Most common reaction emotional response was anger, which was experienced by 40% to 50% of sample	Discussion should be provided to noninjured staff who are participants in or observers of an assault incident

3.4. Discussion

The aim of this review was to develop an understanding of nursing staff anger in inpatient psychiatric settings. The review examined the extent, range and nature of existing empirical research. Limited empirical research has been conducted on nursing staff anger. Although ten studies were included in this review, the exploration of nursing staff anger as a primary aim was limited to only Engin and Cam's (2006) study; which focussed on levels of anger and job motivation. In the majority of the reviewed studies however, anger was either investigated in broader terms amongst other emotions or was reported on in relation to the phenomenon explored.

The aim of the studies included in the review have been organised to reveal two main themes: reaction to patient aggression and containment of patient aggression. Nursing staff anger is therefore not only relevant to being assaulted by patients, but also relevant to nursing staff's use of physical restraint and/or seclusion as methods of containment. As found in a previous review (Needham et al., 2005), which included nursing staff in psychiatric and non-psychiatric settings, anger was experienced along with other emotions as a consequence of inpatient aggression. Deans' (2004) study, which also included nurses in non-psychiatric settings, found that anger was co-embedded in a state of emotional confusion that is experienced by nurses. Irrespective of the setting in which nurses are working in, these findings collectively suggest that anger is not the only emotion experienced as a result of inpatient aggression.

Although nursing staff report that other emotions are experienced, anger has been found to be the most common (Lu et al., 2007; Ryan & Poster, 1989) emotional reaction to patient aggression. Further, it is not uncommon for nursing staff to experience anger beyond one week and up to six weeks from when the incident occurred (Lanza, 1983; Murray & Snyder, 1991). This is of concern for nursing staff's wellbeing and for the care organisation in terms of the care quality provided by nurses. How nursing staff anger is subsequently manifested in, or impacts on, their work is difficult to ascertain. The issue of therapeutic alliance between nurse and patient is however highlighted (Sequeira & Halstead, 2004). The intense feelings nurses may hold toward patients as a result of being assaulted by patients can affect the relationship and the way in which nurses then work with patients. In particular, the use of physical

restraint and/or seclusion is an indicator of care quality (Sacks & Walton, 2014) and nurses report discomfort with the use of these methods because of the risk of being assaulted. This issue of care quality is consistent with Arnetz and Arnetz's (2001) findings which found patients reported poorer care quality was received by previously assaulted nurses.

For both themes *reaction to patient aggression* and *containment of aggression*, it is evident that study authors felt that support from colleagues and the organisation could perhaps prevent or even minimise the experience of nursing staff anger. Murray and Snyder (1991) found that a consultation service was helpful for nursing staffs' reactions to patient assault. Such support made available by an organisation may address issues concerning nurses' perceptions of professional incompetency, expectation to cope and emotional confusion that may arise as a result of patient aggression (Deans, 2004). Not only can this form of support address nursing staff wellbeing, it may also have a positive effect on job motivation (Engin & Cam, 2006) and thus benefit the organisation on a service level; in terms of attitude toward patients and work tasks (Arnetz & Arnetz, 2001). Further, the reduced levels of anger amongst staff could enhance team climate to create a sense of security, as well as help reconcile the balance between the use of less coercive containment methods for patients and the need for physical restraint/seclusion (De Benedictis et al., 2011).

In attempt to establish the role of nursing staff anger, the reviewed studies highlight that a standardised measure of anger has not been previously used other than in Engin and Cam's (2006) study. This may be in part due to studies not aiming to primarily investigate nursing staff anger per se. It is thus difficult to ascertain the association between nursing staff anger and incidents of patient aggression and how this relates to the use of coercive containment methods. This reinforces Needham et al.'s (2006) suggestion that standardised questionnaires could help improve estimations of the prevalence of specific effects of patient aggression on staff, and also how this may then be related to use of physical restraint and/or seclusion.

The methodological quality of studies indicates that they were descriptive and limited to a range of qualitative interviews or quantitative, self-report, cross-sectional survey designs. High completion rates of measures were reported, however,

psychometric properties of measures are not known and there were little consistency across studies in the type of measure used for anger. This makes it difficult to establish any association with nursing staff anger. Also, the outcome measures required nursing staff to recall incidents which may have been subject to inaccuracies. In other studies nursing staff were recruited into the study on the basis of recorded assault incidents. However, it is possible that unrecorded assault incidents may be have excluded nursing staff who would have otherwise been eligible to participate.

A limitation of this review is that studies were screened, data were extracted, collated and rated, by a single author. Nonetheless, the review has enabled the identification of the wide range of methods used to study nursing staff anger and in what context it is an issue (i.e., reaction to patient aggression and containment of patient aggression). Studies in the review, however, do not report consistently or analyse the demographic characteristics of nurses; thus, it is difficult to know whether there are any patterns in the role of anger within the nursing population. Only four studies reported on the number of male and female nurses included in the study, whilst six studies in the review did not differentiate genders. It is thus important that future studies are demographically representative of the nursing population and standardised anger measures are used, rather than proxy measures. Chapter 7 describes a study on nursing staff that uses a standardised measure of anger and actual involvement in incidents of coercive containment. This will allow us to ascertain whether nursing staff anger is related to attitudes and use of the (suboptimal) practice of coercive containment to manage patient aggression. Also, how nursing staff anger is manifested in their interactions as perceived by patients is examined in a study in Chapter 8.

3.4.1. Conclusion

Further research is required to establish the relationship between nursing staff anger, patient aggression and use of coercive containment methods. Nurses experience anger but there is a lack of studies which use standardised anger measures to allow them to infer with confidence that an association exists. Given that experiences of anger can affect wellbeing and subsequent care quality provided by nurses, it is important to determine whether the use of coercive containment methods is predicted by nursing

staff anger. Further, it is also important to understand whether the type of relationship between nurses and patients is predictive of aggressive incidents.

4. CHAPTER FOUR

4.1. RESEARCH QUESTIONS AND METHODS

This chapter begins by outlining the rationale for the empirical studies in the context of the patient and nursing staff anger literature reviews (in Chapter 2 and 3). It then presents the research questions and hypotheses. The overall research approach to the project, including ethical considerations, is subsequently outlined. Method details that relate specifically to each empirical study are presented in the respective chapters within the thesis.

4.1.1. Empirical study rationale

Previous studies report a significant relationship between anger and inpatient aggression in mental health settings (for a related review see: Witt, Dorn & Fazel, 2013; for empirical studies see: Doyle & Dolan, 2006; McDermott et al., 2008; Vitacco et al., 2009; Wang & Diamond, 1999). However, these variables have often been considered as a global characteristic, rather than as specific anger components and forms of aggression. As identified in Chapter 2, the most frequently used tool was the BPRS which is clinician-rated and included a hostility item. Consequently, our understanding of how identifiable cognitive aspects of anger may be manifested in aggressive behaviours is limited. Further, since it is commonly reported in the literature that anger is neither a necessary nor sufficient explanation for aggressive behaviour (Kassinove & Sukhodolsky, 1995), it is imperative to advance the knowledge base in the understanding of which aspects of anger, where it is present, that drives the aggressive behaviour. Until then, prevalence of inpatient aggression may continue to persist as current treatment and intervention efforts for anger may be untargeted and ineffective.

Risk assessments are conducted by clinicians to evaluate a patients' level of violence-risk. The assessments can subsequently help to inform and implement a risk management plan to reduce the level of risk (Doyle & Logan, 2012). A risk management plan, for example, may include an anger treatment intervention if anger is evaluated by clinicians to be a key risk factor in the occurrence of aggression. Determining whether patients' self-reported anger can predict inpatient aggression, better than clinicians' evaluation of risk factors, would support the notion of including self-reports in risk

assessments (Monahan & Skeem, 2014). Moreover, risk management plans would therefore be informed through a collaborative effort between clinicians and patients in the evaluation of the level of risk.

Given the recent shift in focus in studies - from investigating intrapersonal to interpersonal characteristics - it is important that both types of assessment measure are required to fully ascertain the role of anger in inpatient aggression (Daffern et al., 2010). Most aggressive incidents are the result of an interaction between nursing staff and patients (Papadopoulous et al., 2012). Therefore, it is important to measure patients' anger disposition, as well as gaining an understanding of the characteristic way in which patients interact with others, particularly nursing staff, which may contribute to the occurrence of aggression. Similarly, it is necessary to also understand the characteristic way in which nursing staff interact with patients. Determining whether interpersonal style is characterised by levels of self-reported anger could provide strengthened empirical support for the development of assessment and treatment plans, and training implications for staff to prevent and manage patient aggression more effectively. Thus, the use of containment, such as physical restraint and seclusion, is a contentious issue (Bowers et al., 2011) and determining whether it is associated with nursing staff emotion is imperative for reduction initiatives.

4.1.2. Research questions

4.1.2.1. Study One (Chapter 5)

RQ1: Do the components (hostility, rumination and effortful control) included in the Integrative Cognitive Model (ICM; Wilkowski & Robinson, 2010) predict both patients' self-reported anger and inpatient aggression?

H1: A higher level of patient anger is related to its cognitive components.

- Patient anger is positively related to hostility (Anderson et al., 2004).
- Patient anger is positively related to rumination (Smith & Waterman, 2003).
- Patient anger is negatively related to effortful control (White & Turner, 2014).

H2: Patient aggression is positively associated with anger (Doyle & Dolan, 2006; McDermott et al., 2008; Vitacco et al., 2009) and its cognitive components (hostility and rumination but negatively associated with effortful control).

4.1.2.2. Study Two (Chapter 6)

RQ2: Does patients' self-reported anger add incremental predictive validity of inpatient aggression over clinicians' ratings on structured professional judgement (SPJ) risk assessment tools?

H1: There will be a positive relationship between patients' self-reported (Skeem, Manchak, Lidz & Mulvey, 2013; Monahan & Skeem, 2014) anger and clinicians' rating on items in the SPJ tools that incorporate anger: HCR-20 Lack of Insight, HCR-20 Impulsivity, HCR-20 Unresponsive to Treatment, START Emotional State (vulnerability) and START Attitudes (vulnerability).

H2: Patients' self-reported anger will have incremental predictive validity (Skeem, Manchak, Lidz & Mulvey, 2013; Monahan & Skeem, 2014) over the clinician-rated dynamic risk factor subscales in the prediction of inpatient aggression.

4.1.2.3. Study Three (Chapter 7)

RQ3: Is nursing staff anger related to their previous experiences of patient aggression?

H1: Greater exposure to patient aggression is related to higher levels of nursing staff anger (Needham, Abderhalden, Halfens, Fischer & Dassen, 2005).

RQ4: Are nursing staff emotions associated with the approval of and involvement in coercive containment?

H1: Higher levels of nursing staff emotion (anger, fear, sadness, guilt and fatigue) are positively associated with: i) greater approval of physical restraint and seclusion and ii) actual involvement in the use of these coercive containment methods (Bowers, Alexander, Simpson, Ryan & Carr-Walker, 2007; De Benedictis et al., 2011; Larue, Dumais, Ahern, Bernheim & Mailhot, 2009).

4.1.2.4. Study Four (Chapter 8)

RQ5: Is nursing staff and patients' interpersonal styles associated with the incidents of patient aggression and its containment?

H1: Self-reported anger will be positively related to a nurse-rated/patient-rated hostile-dominant interpersonal style (Doyle & Dolan, 2006).

H2: Higher levels of an hostile-dominant interpersonal style of the patient will be positively associated with incidents of i) inpatient aggression and ii) being to subjected containment (Daffern et al., 2010; Cookson, Daffern & Foley, 2012; Anestis et al., 2013).

H3: Higher levels of an hostile-dominant interpersonal style of the nurse will be positively associated with involvement in incidents of containment.

H4: A relationship dyad between a member of nursing staff and patient that is characterised as deviating from complementarity will be positively associated with incidents of i) inpatient aggression and ii) containment (Daffern et al., 2010; Papadopoulos et al., 2012).

To answer the research questions and test the hypotheses presented above, it was necessary to sample two groups: patients and nursing staff.

4.2. Research setting and participants

4.2.1. St Andrew's Healthcare

St Andrew's Healthcare is a charity that provides specialist and secure mental health care for the National Health Service (NHS) in four locations across England: Northampton, Birmingham, Essex and Nottingham. St Andrew's services include: inpatient care, criminal justice in-reach and clinical consultancy, vocational rehabilitation and outpatient care. St Andrew's is an employer of over 4,000 people. Within the inpatient service there are over 800 beds, across gendered care pathway wards for mental disorder, learning disability, autistic spectrum disorders, and neuropsychiatry, for people throughout the life-span. Clinical teams are multidisciplinary, comprising: psychiatry, psychology, social work, occupational therapy and nursing. The research project was conceived and carried out within the mental disorder care pathway which is made up of 32 wards (474 beds in total), ranging from medium secure, low secure, locked and open. St Andrew's medium and low secure wards meet the secure standards set out by the DH, and patients admitted into these wards would be under a Section of the Mental Health Act (2008).

4.2.2. Patient participants

Patients were recruited from 14 adult mental disorder wards. A Responsible Clinician (RC) in each ward identified eligible patients from their caseload for research participation, on the basis of inclusion criteria that patients were over the age of 18 years and diagnosed with a mental disorder (ICD-10, WHO, 2011). The wards at St Andrew's Healthcare were defined by diagnostic groups. Patients were not eligible if they had a neurocognitive or a neurodevelopmental disorder, which reduced heterogeneity within the sample. Patients were also not eligible if they lacked the capacity to consent, or were not fluent in English. A total of 170 eligible patients were approached to elicit interest in research participation between April 2013 and June 2014; 77 (45%) patients declined. Of the 93 patients who were recruited into the research project, five patients decided that they did not want to continue after completing some of the assessment battery, and three patients withdrew their consent. Thirty-nine (43%) patients did not have any criminal proceedings against them and were

thus on Section 3 (treatment order), ten patients were on a Section 37 (hospital order), 28 patients were on a Section 37/41 (hospital order with restriction), seven patients were on a Section 47 (transfer from prison to hospital), and six patients were on a Section 47/49 (transfer from prison to hospital with restrictions) of the Mental Health Act (2008).

4.2.3. Nursing staff participants

There were on average 299 qualified nursing staff (62% female) deployed on the adult mental disorder care pathway during the study period; however, not all of these members of nursing staff were eligible for research participation. Nursing staff were recruited from the same adult mental disorder wards as the patient participants. Sixty-eight qualified nurses (71% female) were invited to take part as a designated keyworker for the patient(s) who have consented to research participation for the project. Keyworkers are healthcare professionals who have undergone vocational training to become qualified members of nursing staff. Keyworkers were considered for the research project as they are members of the ward team who work closely with the multidisciplinary clinical team and with the patient during their stay; keyworkers would therefore be in a more informed position to part with information regarding the patient.

4.3. Design

All studies presented within the research project adopted a correlational and pseudo-prospective cohort design. Douglas, Otto and Borum (2003) suggest that pseudo-prospective designs are a reasonable alternative to true prospective designs. This is because they are less resource intensive, which does not require researchers to follow participants for an extended period before gathering information of the predictive potential of certain factors. The design was therefore considered appropriate to ascertain the relationship between variables, which are further described in the respective study chapters. Given that each study in the research project was to essentially determine the relationship for the occurrence of inpatient aggression and/or coercive containment, the design enabled for this investigation in the naturalistic, routine clinical settings during the follow-up period post assessment. Incident data for aggression and coercive containment reported in electronic case notes during the

follow-up period were collated and coded. Thus, unobtrusive, observational methods provided a more accurate picture of the clinical reality. The design does not however allow for the identification of cause and effect between variables in the same way that an experimental design would (Field & Hole, 2003). Nonetheless, the use of the design would be the first step to determine the relationship between variables from the systematic observations, which could provide hypotheses about cause and effect that can then be tested more directly with experimental methods.

4.4. Measures

The measures included in the assessment battery for patients and nursing staff are listed in Table 4.1. As well as an assessment battery, routinely collected data were utilised. At St Andrew's Healthcare these include: clinicians' risk assessment ratings/scores, incidents of inpatient aggression, and incidents of containment. Measures which were used in more than one empirical study within the thesis are described in this section, that is: NAS-PI, PANAS-X, demographic and clinical information, incidents of aggression using the OAS, and incidents of containment (physical restraint with and without seclusion). Other measures which were used in each empirical study exclusively are described therein.

Table 4.1. Assessment battery for, and routinely collected data concerning, patient and nursing staff participants

Patient assessment battery	Nursing staff assessment battery
Novaco Anger Scale-Provocation Inventory (NAS-PI)	Novaco Anger Scale-Provocation Inventory (NAS-PI)
Impact Message Inventory-Circumplex (IMI-C)	Impact Message Inventory-Circumplex (IMI-C)
Word Completion Task (WCT)	Attitude to Containment Measures Questionnaire (ACMQ)
Anger Rumination Scale (ARS)	Perceptions of Prevalence of Aggression Scale (POPAS)
Positive and Negative Affect Scale – Expanded (PANAS-X)	Positive and Negative Affect Scale – Expanded (PANAS-X)
Emotional Stroop Task (EST)	**Routine collected data**
Cognitive Emotion Regulation Questionnaire (CERQ)	Incidents of containment – physical restraint and seclusion
Wisconin Card Sorting Task (WCST)	
Routine collected data	
Demographic and clinical information	
Historical, Clinical, Risk-20 (HCR-20)	
Short Term Assessment of Risk and Treatability (START)	
Incidents of inpatient aggression – Overt Aggression Scale (OAS)	
Incidents of containment – physical restraint and seclusion	

Novaco Anger Scale – Provocation Inventory (NAS-PI; Novaco, 2003)

The NAS is a 60-item measure of anger which consists of four subscales of anger disposition: Cognitive (COG), Arousal (ARO), Behavioural (BEH) and Regulation (REG); and a NAS total score is the sum of all the components (COG+ARO+BEH), excluding the regulation subscale score. The response format is a visual analogue rating scale of 1-3 with options to indicate 1 = *Never true*, 2 = *Sometimes true*, and 3 =

Always true. The Provocation Inventory (PI) contains 25 items which focus on five different experiences: disrespectful treatment, unfairness, frustration, annoying traits of others, and irritations. The response scale is a rating ranging from 1 = *not at all angry* to 4 = *very angry* for level of anger experienced in a particular situation. These items that cover the content areas produce a single PI total score. The NAS-PI has consistently been found to have good reliability across many different samples, including forensic samples. The instrument was developed for use with both normal and clinical samples. Internal reliability estimates in the standardization sample was .94 for the NAS total score and .95 for the PI total score. The NAS-PI includes an Inconsistent Responding Index (INC). The index is based on 16 selected item pairs from the NAS-PI. When responses are given randomly or are not based on the intended meaning of the items, dissimilar responses may be observed for a larger number of these item-pairs. The item-pairs should not be answered inconsistently if they are considered to be measuring anger reliably (Novaco, 2003). Construct and concurrent validity of the NAS-PI is also reported to be excellent as scores have substantial correlations in expected directions with other measures of anger and hostility, observers' rating of angry behaviours, and the occurrence of violent behaviour (Novaco, 2003).

Positive and Negative Affect Schedule – Expanded Form (PANAS-X; Watson & Clark, 1994)

The PANAS-X consists of 60 items that measure mood on two levels: the higher level reflects the *valence* of the mood descriptors (i.e., whether they represent negative or positive affective states); and the lower levels reflect their specific *content*. Thus, in addition to the higher order scales, Positive and Negative affect, the PANAS-X also measures 11 specific affects: Fear, Sadness, Guilt, Hostility, Shyness, Fatigue, Surprise, Joviality, Self-Assurance, Attentiveness, and Serenity. The measure consists of a list of words or phrases that reflect the 11 specific affects. Respondents are required to indicate to what extent they have felt this way for each item over a specified time period using a 5-point scale with options ranging from: 1 = *Very slightly or not at all*, 2 = *A little*, 3 = *Moderately*, 4 = *Quite a bit*, 5 = *Extremely*. The PANAS-X has been previously used with eight different specified time period instructions (see Watson & Clark, 1994) for respondents to rate the extent to which they have experienced the particular affect; the time instruction: "in general, that is, on the average" was used for

studies within this research project. The authors also note that the reliabilities of the scales are unaffected by the different time instructions or by the type of participant population (student, adult, or patient) that is assessed. The internal reliabilities are high, ranging from .83 to .90 for Positive Affect, and from .85 to .90 for Negative affect. The scales also have significant convergent, discriminant and concurrent validity.

Overt Aggression Scale (OAS; Yudofsky et al., 1986)

The OAS (Silver & Yudofsky, 1991) is a widely used measure of inpatient aggression. The OAS has four categories of aggression: verbal, physical either towards objects, self or people. The OAS was used to rate incidents which are recorded on RiO, an electronic recording system. Clinical members of staff are expected to make at least one narrative entry regarding the patient on RiO per shift, as dictated by the hospital policy directive. Before the note can be verified, the staff member is prompted to add one or more 'flags' to the entry. Thus the entire notes regarding the patient can be searched by filters such as flags, dates, times, etc. Case notes that were electronically flagged as: 'Aggression – Physical', 'Aggression – Verbal', 'Fire setting', 'Hostage Taking', 'Intimidation/Bullying', 'Self-Harm/Suicide', and "Sexual Offending" and had occurred in the follow-up period were obtained for all patient participants. Each incident was coded against the categories in the OAS by the author and a graduate psychology research assistant who received training in rating. Inter-rater reliability was tested on all identified incidents (n = 590). Agreement was in the substantial range; categorical agreement on aggression type K = 0.74.

Demographic and clinical measures

Information relating to patients' gender, age, self-reported ethnicity, admission/discharge date (length of stay), ward security level and ICD-10 (WHO, 2011) diagnoses were extracted from clinical records. Also, a registered psychologist from each clinical team completed the Clinical Global Inventory-Severity (CGI-S; Busner & Targum, 2007). The CGI-S provides an overall clinician-determined summary measure of mental illness that takes into account all available information, including knowledge of the patient's history, psychosocial circumstances, symptoms, behaviour, and the impact of the symptoms on the patient's ability to function. In practice, the CGI-S captures the

overall clinical impression of the patient. It is a 1-item measure that asks the respondent the following question: “Considering your total clinical experience with this particular population, how mentally ill is the patient at this time?”. Ratings for the severity of the patients’ presenting illness is indicated on a 7-point scale: 1 = *Normal, not at all ill*, 2 = *Borderline mentally ill*, 3 = *Mildly ill*, 4 = *Moderately ill*, 5 = *Markedly ill*, 6 = *Severely ill*, 7 = *Among the most extremely ill patients*. As symptoms can fluctuate over a week; the score is to reflect the average severity level across the previous seven days.

Incidents of containment

It is St Andrew’s policy directive that an incident form must be completed for all adverse events concerning a patient within two hours. The form must be completed by a member of staff who has witnessed the incident. The electronic nature of this form (called Datix) requires all sections to be fully completed and validated by a line manager within 48 hours. The form is designed to capture comprehensive information about the incident relating to the time, date, location, type of incident and a description of facts about what happened and the immediate action that was taken. Information about physical restraint incident includes: start and end time of restraint, position of restraint (prone and/or supine), duration in minutes, patient behaviour during restraint, the named staff members involved and their role within the procedure. Information about seclusion incident includes: name of observing staff, reason for seclusion, start and end time/date of seclusion and reason for termination of seclusion. Patients and nursing staff were categorised as either having been or not been subjected to/involved in i) physical restraint and ii) physical restraint followed by seclusion incidents over the follow-up period for each study.

4.5. Ethical considerations

The empirical studies within the research project were reviewed and approved by two independent research ethics committee (See Appendix C): NHS National Research Ethics Service (NRES) Committee East Midlands - Northampton (Ref: 13/EM/0020); and The University of Northampton’s Research Ethics Committee (REC). The ethical considerations and how they were addressed are described below.

Recruitment and Informed Consent

Patients were recruited into the research project through the recommendation of their RC. Letters were sent to RCs detailing the project's aims and objectives, and for advice regarding their patients' eligibility for research participation: i.e., met inclusion/exclusion criteria and had capacity to consent to participate. All patients, that were deemed eligible to participate, were given a brief description of the study and the option to meet with the researcher for a full verbal and written description of the purpose of the research project. Only the RC was involved in directly identifying and approaching eligible patients to initially discuss the research project. Researchers did not have access to any personal data without prior consent from the patient.

Eligible patients had a minimum of 24 hours after receiving the research project information to decide whether to participate or not. Patients were encouraged to take time to consider the information and discuss this with the clinical/ward team. Due to the nature of some of the measures in the assessment battery (e.g., verbal fluency and logical memory tests), which have been standardised and validated in English, patients were required to be fluent in this language.

Patients' capacity to provide informed consent was initially advised by the RC. However, the researcher subsequently also explained the study in more detail, ensuring patients understood what the research project was about and what their participation would entail. Patients had the opportunity to ask questions before written informed consent was sought (See Appendix D). During the administration of the assessment battery, the researcher ensured that the patient understood what was required of them for each assessment in the battery. In the event of patients' loss of capacity to consent or the desire to discontinue, data collected up to that point was retained (i.e. already collected identifiable data was kept and anonymised at the earliest opportunity with a participant number). This was explained on the participant information sheet. The option for comfort breaks and/or to rearrange the interview session on another day was offered, to facilitate the completion of the assessment battery.

Confidentiality and Anonymity

The researcher gained access to patients' clinical records only after written informed consent was obtained. Information from clinical records and from the assessment battery were given a participant code by the researcher at the earliest opportunity, to preserve anonymity of participants in the research project. Consent forms were stored separately from participant data in secure cabinet files. Data were stored securely in locked cabinet files on the hospital site and on a password protected St Andrew's Healthcare encrypted laptop computer, to which only the researcher only had access. St Andrew's Healthcare network servers are secure and fully comply with NHS regulations. Electronic data transfers were used only for non-identifiable data and took place on the secure networks and between secure email accounts. Data were always encrypted before transfer. Although it was endeavoured not to transfer data electronically, this was occasionally necessary as named researchers were based at different sites.

The following policies guided any decisions regarding confidentiality: Data Protection Act (1998); BPS Code of Ethics and Conduct; NHS Confidentiality Code of Practice; and St Andrew's Healthcare Confidentiality Policy.

Disclosures

The population under study included patients with a forensic profile. It was not anticipated that the researcher would need to breach confidentiality. Patients were informed that confidentiality would be breached only in the event that he/she discloses information that could directly put themselves or another person at risk. However, should this disclosure occur, the issue was to be discussed with the PhD supervisor (former Research Manager at St Andrew's Healthcare) who would judge whether the clinical team will need to be informed. This was also detailed on the participant information sheet.

Potential risks to researcher

The researcher liaised with clinical and ward teams for each patient throughout the data collection period. This involved being informed about the patient's current risk assessment and mental state, including risk to the researcher with regard to the timing and location of administering the assessment battery. The researcher did not see any patients outside of the hospital environment at any time. The researcher was trained in breakaway and in using keys in the secure setting, and equipped with a hospital-wide alarm, should assistance be required.

Publication and Dissemination

A summary sheet of the study results was produced at the end of the research project. Participants were therefore able to request feedback on the results of the research project upon its completion. Information on how to request this was included on the participant information sheet. It was also noted on the information sheet that the research studies are intended for publication.

4.6. Procedure

The recruitment of both patients and nursing staff into the research project involved a co-ordination between the two samples because of the reciprocal manner of the data required.

For the patient sample, the RC for each ward were approached initially via a postal letter, followed up by email and telephone calls, to arrange attendance at a clinical team meeting to discuss the research project further. They were informed of the research project and were also advised of the intended recruitment plan involving the RC to consider their caseload for eligible patients, screened against the inclusion/exclusion criteria, for research participation. Ward managers were subsequently contacted for the identification of key workers of each eligible patient, which also formed the list of eligible nursing staff. All eligible patients had the opportunity to meet with the researcher to be given a full verbal and written description of the study. A two-hour interview was arranged around the ward and patient schedule

for interested patients to complete the assessment battery. Patients who expressed a lack of interest in participating were advised that they could still take part should they wish to change their decision during the data collection period.

Patients were required to fully understand their involvement in the research project before providing written informed consent to participate. The assessment battery was administered by the researcher, which comprised six paper-pen based measures and two laptop based tasks. A brief introduction about each measure in terms of what it is and what it involves for them was provided upon commencing. A verbal debrief was also provided following completion of the assessment battery. Patients who completed the entire assessment battery were paid £15 into their hospital accounts to compensate for their time given to the research project.

Following the interview, the measures contained in the assessment battery were scored, stored and analysed. For each patient, flagged case notes from RiO (an electronic patient record system which provides administration functionalities and information) were retrieved for incidents of aggression and were rated using the OAS. Containment incident data were also retrieved and patients were identified as whether they were or were not subjected to physical restraint-only and physical restraint followed by seclusion. Ratings from the structured professional judgment risk assessment tools (HCR-20 and START) were also obtained from clinical records.

For the nursing staff sample, patients' keyworkers were informed of the research project through the use of a participant information sheet and were invited to participate. Each keyworker was approached within a maximum of two weeks from when their patient provided informed consent to participate in the research project. The interviews were arranged and conducted during the nurses working shift, whether that was during the day (0730 – 1945) or night (1930 – 0745) hours, but at a time which did not disrupt the clinical routine. Written informed consent (See Appendix D) was obtained before administering the assessment battery. Upon completion, nursing staff were provided with a verbal debrief about the research project. Following the interview, the measures contained in the assessment battery were scored, stored and analysed. Containment incident data were retrieved and nursing staff were identified as whether they were or were not involved in physical restraint-only and physical restraint followed by seclusion.

4.7. Data analysis

4.7.1. Sample size calculation

The sample size for the research project was primarily based on the research question in Study One (Chapter 5), which was to model the prediction of inpatient aggression. Peduzzi et al., (1996) concluded that there should be at least ten cases of the least likely outcome events per parameter in a logistic regression model, which is endorsed by Hosmer and Lemeshow (2000). Based on a previous study that measured aggressive incidents at St Andrew's Healthcare, Northampton (Dickens, Picchioni, & Long, 2013), it was revealed that 47.2% (127/269) patients were involved in an incident in the 16 month period. Therefore, as there were four predictor variables and each values of the binary outcome variable (i.e., aggression) is approximately equally likely, the sample size was determined as 80 patients to be recruited into the research project.

4.7.2. Preliminary analysis

Inconsistent Responding Index (INC)

The author of the NAS-PI suggests that the INC index is a useful way to identify cases where responses to the measure may have given without adequate regard to the meaning of the items. There is an 84% likelihood if the INC index score is at least 4 that responses were given without due regard to item content (Novaco, 2003). As measures were scored following the interview with participants, it was not possible to ascertain the reason for the discrepancy between item responses. Therefore, to minimise potential bias in responding to measures, seven cases which scored 4 or more on the INC index were not included in the analyses.

Missing data

Any missing data in cases due to incompletion of study questionnaires/tasks within the assessment battery and/or unavailability of routinely collected data, the listwise deletion technique (Kang, 2013) was employed. Listwise deletion is the most frequently used method in handling missing data. It involves removing respective cases

prior to statistical analysis (Kang, 2013). Although listwise deletion reduces the sample size and affects statistical power, it is preferable to other methods for handling missing data (Allison, 2001).

Normality assessment

Variables in each study were tested for normality to subsequently determine the use of relevant and appropriate tests on the data. Inspection of graphs, figures and values were collectively considered for this purpose. Histograms were visually inspected for any cases that appear to substantially deviate from the normal bell shaped curve of the distribution. Skewness and Kurtosis figures for the variable also assisted with the inspection of the histogram. These figures should be within the -1. to 1. range (Field, 2013). Further, values produced by the Shapiro-Wilk *W* test and the Kolmogorov-Smirnov test indicate whether the deviation from normality is statistically significant or not. However, there is inconsistent agreement as to which of these tests is the most reliable. Shapiro-Wilk is suggested to be most reliable for samples of up to 50 cases (Rahman & Govindarajulu, 1997). D'Agostino and Stephens (1986) claim uncertainty about using the Kolmogorov statistic but advocate the use Shaprio-Wilk to assess normality. Field (2013), however, argues that it useful to inspect the histogram together with any statistical test in assessing normality. Given that there is a diversity of recommendations, normality was assessed and therefore the decision on normality was based upon using the above-mentioned graphs, figures and values.

Bootstrapping

Howell (2007) advances an argument against the use of data transformation when variables do not meet normality assumptions. It is argued that if variances are reasonably homogenous there is nothing to be gained by applying a transformation. Tabachnick and Fidell (2013) also point out that, although data transformations are recommended to correct for bias, it is not universally recommended because the analysis of tests are interpreted from the variables that are involved, and transformed variables are sometimes harder to interpret. An alternative to correct for bias is bootstrapping (Efron & Tibshirani, 1998), which is a robust method that produces more accurate analyses.

Bootstrapping can be used when traditional assumptions of normality are violated (Field, 2013). Bootstrapping essentially creates thousands of alternate versions of the existing sampling data for a more accurate view of what is likely to represent the population. This method reduces the impact of outliers and anomalies that helps to ensure the reliability of parameters in a model. It provides estimates of the standard errors and confidence intervals of a population parameter including the mean, odds ratio, and correlation and regression coefficients (Field, 2013). Thus, in instances across each study where variables did not meet normality assumptions, the data were bootstrapped and were reported using the corrected bias values.

4.7.3. Descriptive and inferential analysis

Descriptive analysis across each study involved calculating means and standard deviations for scale variables and frequencies/percentages for categorical variables. Inferential analyses varied between each study and are therefore presented within the respective chapter; however, these included tests of relationship between variables such as correlation and regression models. Analyses were conducted using IBM SPSS Statistics version 22 for Windows (SPSS Inc., Version 22).

5. CHAPTER FIVE: STUDY ONE

5.1. IMPLICIT AND EXPLICIT COGNITIVE PROCESSING IN RELATION TO ANGER AND REACTIVE AGGRESSION: A STUDY OF PATIENTS IN SECURE MENTAL HEALTH SETTINGS

The literature review on patient anger in Chapter 2 showed that the cognitive aspects of anger are important and related to inpatient aggression. The study in this chapter defines anger and considers the implicit and explicit assessments of the cognitive aspects of anger and aggression. The application of the ICM (Wilkowski & Robinson, 2010) as a framework, using implicit and explicit measures for each of the cognitive components to further understand the link between anger and inpatient aggression, are presented and discussed.

5.1.1. Defining anger as a multidimensional concept

Anger is predictive of inpatient aggression (Doyle & Dolan, 2006). Although this finding may seem axiomatic, it is important to note that anger may not always be expressed in the form of observable aggressive behaviour (Kennedy, 1992). Thus, the experience of anger without the incidents of aggressive behaviour may still be problematic for the individual in the surrounding therapeutic environment. Patients who experience anger may be reluctant to fully engage with staff and in the ward activities that are designed as part of their recovery programme (Evershed et al., 2003). Anger on the wards, with or without aggression, therefore requires research attention.

Numerous definitions of anger have been proposed (Kassinove & Sukholdolsky, 1995; Kennedy, 1992; Novaco, 1994) that share the description of the phenomenon as multidimensional. However, these multidimensional definitions differ in terms of the constituent components, or on the relative importance of these components. DiGuiseppe and Tafrate (2007) attempt to integrate previous proposed definitions and offer the following:

> *"Anger is a subjectively experienced emotional state with high sympathetic autonomic arousal. It is initially elicited by a perception of a threat (to one's physical well-being, property, present or future resources, self-image, social status or projected image to one's group, maintenance of social rules that regulate daily life or comfort), although it may persist even after the threat has*

> *passed. Anger is associated with attributional, informational, and evaluative cognitions that emphasize the misdeeds of others and motivate a response of antagonism to thwart, drive off, retaliate against, or attack the source of the perceived threat. Anger is communicated through facial or postural gestures or vocal inflections, aversive verbalizations, and aggressive behavior. One's choice of strategies to communicate anger varies with social roles, learning history, and environmental contingencies*" (DiGuiseppe & Tafrate, 2007, p.21).

DiGuiseppe and Tafrate's (2007) proposed definition includes the physiological, cognitive and behavioural dimensions that may characterise as a state or trait manifestation, and which could be influenced and reinforced by social factors. It is thus clear from this definition that anger is complex and not one dimensional, and aggression may or may not result. Anchoring defined terms and measurement on one or more of the dimensions included in DiGuiseppe and Tafrate's (2007) definition in research studies would provide further insight into the anatomy of anger, and the relationship between anger and aggression.

Although reactive aggression is the most frequent type of aggression in inpatient settings, as opposed to instrumental [proactive] aggression (Quanbeck et al., 2007), it is not yet known which aspects of anger (e.g., within the cognitive dimension) drive this behaviour. Determining which aspects of anger are related to inpatient aggression would not only provide evidence for addressing anger as a treatment need, but could provide clinicians with a broader understanding of the development and perpetuation of anger within individuals. Targeting the specific aspects of anger which drive aggression could potentially reduce both experiences of anger and associated incidents of aggression.

5.1.2. Explicit vs. implicit methods of assessment of anger and aggression

The vast amount of empirical literature on the relationship between anger and aggression has accumulated using self- and observer-rated explicit testing methods (Eckhardt, Norlander & Deffenbacher, 2004). In such studies, participants reflect on their anger/aggressive tendencies and respond to questionnaire items accordingly. Typically, dichotomous or Likert-rating scales are used. Inferences in relation to aggression are subsequently drawn from the obtained data. Although the use of explicit testing methods has advanced our understanding of aggressive propensity, research findings are limited by this deliberation of reporting (Bluemke & Zumbach, 2007), due to

issues such as social desirability and recall biases, and difficulties of capturing various aspects including automatic cognitive processes. As a consequence, this method of testing may hinder further understandings valuable to researchers and clinicians working in the fields of anger and aggression.

In contrast to explicit testing, implicit testing methods in aggression research show promise but have seldom been used in empirical studies to date. Moors and DeHouwer (2006) describe implicit testing as a spontaneous process not requiring deliberation on the part of the respondent and which operates in the absence of conscious supervision and intention. The automatic processing of information cannot be readily self-reported because respondents lack awareness of these processes. Thus, research on socially sensitive topics, like anger and aggression, can benefit from such methods of testing to examine the influence of automatic processing. Ireland (2011) argued that by using the more automatic systems in research it would address the more implicit and thus unconscious cognition, which has, to date, been neglected in aggression assessment and therapy.

5.1.3. Models of implicit cognition

Given the premise that social-cognitive models consider automatic processing it is surprising that implicit testing has been neglected in empirical research. The following section outlines four models which relate to the way in which information is processed and the consequent behaviours.

5.1.3.1. The Integrated Model of Social Information Processing

Huesmann's (1998) *Integrated Model of Social Information Processing* (SIP) focusses on cognitive scripts, beliefs and observational learning. The model assumes that people use a heuristic search process to retrieve a script that is relevant for the situation; aggressive individuals are presumed to have encoded a larger number of aggressive scripts through observational learning and by conditioning, and it is thus more readily available to them to enact. The model identifies four processes: (1) cue attention and interpretation, (2) script retrieval, (3) script evaluation and selection, and (4) evaluation of society's response to one's behaviour. Huesmann (1998) argues that

these processes may first require cognitive control in the developing child but they eventually operate as relatively automatic cognitive processes**.**

5.1.3.2. The Social Information Processing model

Crick and Dodge's (1994) *Social Information Processing Model* (SIP) focusses on perceptions and attributions and outlines six steps in which information in environmental stimuli is processed by an individual. Step 1 involves attention to and encoding of information; step 2 involves interpretation of that information; step 3 is the clarification of personal goals; in steps 4 and 5, possible responses to the information are generated and evaluated in terms of their anticipated outcomes, and self-efficacy for enacting the behaviour; and finally, in step 6 the selected response to the information is enacted. At each step, information is processed using implicit and explicit cognitive processes. It is suggested that the former steps in the model are determined by more automatic processes, which influence the latter steps that then require more conscious effort (Arsenio, 2010; Wilkowski & Robinson, 2008). However, as previously noted, there has been an over-reliance on measures that arguably only 'tap into' conscious, controlled and reflective cognitive processes. As a result, little is known about how individuals differ in the automatic cognitive processing in the earlier steps outlined in the SIP model. Linder et al., (2010) suggest that the automatic processes in each of these steps may play a role in the development and maintenance of aggressive behaviour patterns.

5.1.3.3. General Aggression Model

The *General Aggression Model* (GAM: Anderson & Bushman, 2002) is a social cognitive script theory which suggests that aggression is largely based on the activation and application of aggression-related knowledge structures stored in memory (e.g., scripts, schemas). The GAM makes a distinction between impulsive and thoughtful action. Although the model does not specify how to predict either action, it suggests that impulsive action is based on automaticity principles. Bluemke and Zumbach (2007) propose that automatic appraisals determine impulsive action, but the deliberate and resource-consuming decision making processes result in controllable, thoughtful action. Thus, like the SIP models, the GAM also suggests cognitive processes can either be

implicit or explicit and may influence aggressive behaviour in different ways. This reinforces the need to consider the use, and influence, of automatic processing in aggression research and practice.

5.1.3.4. Reflective-Impulsive Model

The *Reflective-Impulsive Model* (RIM; Strack & Deutch, 2004) is a dual-working model that specifically identifies the role for implicit cognition. The model comprises two systems that are believed to co-exist: a reflective system and an impulsive system. The former is more consistent with explicit methods for assessing aggression which, involve conscious deliberation and appraisal (Hoffman, Friese & Wiers, 2008). The reflective system generates behavioural decisions that are based on factual and value-based knowledge, while the impulsive system elicits behaviour through associative links and motivational orientations. In other words, in the reflective system, the elicited behaviour is the consequence of a decision process that activates the appropriate behavioural schemata. By contrast, the impulsive system activates behavioural schemata through spreading activation i.e., a search process for associative or semantic networks, which may originate from perceptual input or from reflective processes. Here, behaviour may be elicited without the person's intention or goal. Ireland and Adams (2015) argued that this model has not yet been applied to aggression research even though it has valuable components, with clear utility for further understanding of distinct cognitive processing for aggressive behaviour.

The social-cognition models outlined above present a case for the empirical investigation of implicit processing in aggression since it is a relatively neglected phenomenon. In particular, this applies to the RIM since it proposes distinct cognitive processes which are thought to occur concurrently. Thus, the use of both implicit and explicit testing methods will allow for the theoretical consideration of the RIM to further understand the role of cognitive processes, in both reflective and impulsive systems in relation to anger, and its relationship with aggression.

5.1.4. A framework to measure the cognitive dimensions of anger in reactive aggression

Examining the implicit and explicit cognitive processes in relation to anger and in the context of inpatient aggression is of current interest. Previous studies that have identified anger as a predictor of inpatient aggression (e.g., Doyle & Dolan, 2006) have not only used explicit testing methods, but have rarely defined and measured anger as a construct distinct from hostility, or from aggression (for a review see: Reagu, Jones, Kumari & Taylor, 2013). Thus, the term anger has often been used synonymously with the terms hostility and even aggression. As a result, these individual elements of anger have been treated as a global phenomenon.

A model which identifies the mechanisms involved in the relationship between anger and aggression from a cognitive perspective dimension is Wilkowski and Robinson's (2010) Integrative Cognitive Model (ICM) (Figure 5.1.). The ICM specifies three cognitive components with hypothesised relationships between each, and in relation to anger and aggression. The model also considers the contribution of both automatic and controlled cognitive processes. The ICM is proposed to be influenced by relevant prior models, including the GAM (Anderson & Bushman, 2002) and SIP (Crick & Dodge, 1994), but attempts to represent the mechanisms that are involved in more specific cognitive terms. Namely, the cognitive components within the ICM are: *hostility*, *rumination* and *effortful control*. The authors describe how each component is linked and provide empirical support for each, sourced from evidence using implicit testing methods.

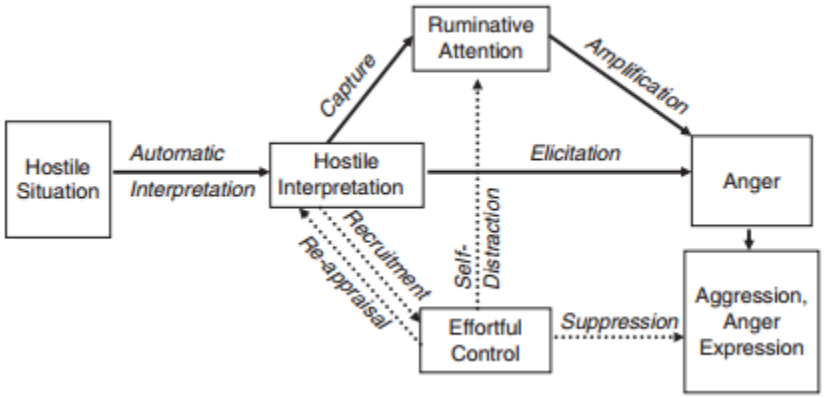

Figure 5.1. The Integrative Cognitive Model of trait anger and reactive aggression. (Wilkowski & Robinson, 2010).
Note: Solid lines depict pathways by which anger and aggression are increased, whereas dotted lines depict pathways by which anger and reactive aggression are decreased.

The model depicts an individual's habitual cognitive processing tendencies as intervening between hostile situational input and resultant tendencies toward anger and reactive aggression. In the first cognitive process, the model specifically suggests that certain individuals are automatically biased toward hostile interpretations of situational stimuli, and this, in turn, leads to the more frequent elicitations of anger. Next, it is suggested that ruminative aspects reinforce interpretation-related biases that amplify anger and increase the likelihood of reactive aggression. Finally, the model postulates that effortful control processes are effective in counteracting the incipient tendencies (i.e., hostility bias, rumination) toward anger and reactive aggression (Wilkowski & Robinson, 2010). Three specific pathways are described by which effortful control would be useful for an individual: to enable reappraisal of situational stimuli in favour of a non-hostile interpretation; to interrupt ruminative attention processes, thus enabling a person to distract themselves from hostile thoughts; and to suppress tendencies toward expressive behaviour indicative of anger arousal and aggressive behaviour.

The ICM clarifies and delineates the constituent construct, for which terms have previously been used interchangeably, and has the potential to illuminate aspects of the relationship between anger and inpatient aggression. Use of the model as a framework to aid understanding of the components of anger in inpatient aggression will allow for inferences about which of its cognitive components are most relevant including in associated incidents of aggression. Also, consistent with the RIM, the use of both implicit and explicit methods of testing for each of the cognitive components will aid further understanding in terms of the type of cognitive processing. The relevance of these cognitive components could potentially inform measurement, risk assessments and targeted treatment interventions.

Research studies involving the use of implicit cognitive measures of each of the cognitive components of anger (i.e., hostility, rumination and effortful control) included in the ICM do, however, provide mixed findings and are reviewed in the following sections.

5.1.4.1. Implicit cognitive processing: hostility

Measurement of hostile interpretations, an arguably automatic process, as identified in the ICM, has been assessed in different ways. Linder, Werner and Lyle (2010) administered vignettes which contained an ambiguous sentence describing a harmful act in which the intent of the perpetrator was unclear, and a target sentence which the victim in the ambiguous sentence retaliates with an act of aggression. Respondents indicated on a 4-point scale the extent to which they believed the perpetrator in the ambiguous sentence intended to do harm, and whether the actions were justified in the target sentence. Because of the poor (Cronbach's alpha) internal reliability of these variables they were not included in analyses. However, a reading time response across the vignettes for the target sentence was subsequently used to measure automaticity; whereby faster reading times were predicted to be associated with aggression. This implicit measure was not associated with a cognitive controlled (explicit) measure, which was the assessment for the belief about the acceptability of aggression (Werner & Nixon, 2005), but both variables independently predicted aggression. This suggests that, despite the incongruence between implicit and explicit measures, they do demonstrate predictive utility for the outcome of interest. These findings could be understood as the distinct information processing patterns, as outlined in the previously mentioned models, such as the concept of concurrent cognitive systems in the RIM.

Crouch et al., (2012) found support for the utility of a word game as a procedure for assessing implicit information processes; win/loss experience was differentially related to schema accessibility in parents with either low or high risk of committing child physical abuse. The results revealed that parents who were grouped as high risk responded faster to negative words and slower to positive words after losing (compared to winning) rounds in the game. These findings were interpreted by the study authors such that, following a negative interpersonal experience, the negative schemata of those at high risk of committing abuse becomes more accessible as opposed to positive schemata. In the same vein of schema accessibility, it was found that exposure to songs with violent lyrics (Anderson, Canagey & Eubanks, 2003) and violent video games (Anderson et al., 2004) increased aggressive thoughts. This was demonstrated by more aggressive interpretations of ambiguously aggressive words, an increase in the

relative speed in which participants read aggressive (vs. non aggressive) words, and an increase in the proportion of aggressive word completions. More specifically, Lobbestael, Cima and Arntz (2013) used a clinical sample to examine the predictive values of antisocial personality disorder and of hostile interpretation bias for aggression. Vignettes and pictorial stimuli depicting provocative ambiguous situations were used to measure interpretative bias where participants provided open and closed responses. These responses were coded in mutually exclusive categories as hostile, negative, positive and neutral. The negative responses differed from hostile responses, as the category included a heterogeneous mix of non-hostile themes such as social exclusion and illness. It was found that the relationship between reactive aggression and hostile interpretation bias was specific, meaning that other interpretation indices did not correlate with reactive aggression. Collectively, these studies indicate that access to cognitive schemata can be examined with the use of an implicit measure; however, its relation to observable aggression remains inconclusive. The evidenced link between implicit information processing, in particular hostility, and the reliance on recall of incidents of aggression or laboratory-based aggression questions the ecological validity of these studies.

5.1.4.2. Implicit cognitive processing: rumination

Sukhodolsky, Golub and Cromwell (2001) define anger rumination as an unintentional and recurrent cognitive process that emerges during, and continues after, an episode of anger. This is the tendency to dwell on and mentally rehearse one's angry moods and experiences, and on the causes and consequences of these experiences. Wilkowski and Robinson (2010) incorporate this ruminative aspect in the ICM by suggesting that individuals high in trait anger should display selective attention processes, by favouring hostile information that results in related rumination. In a study that used the emotional stroop test, which requires respondents to name the colour of the stimuli whilst attempting to discount its affective meaning, Smith and Waterman (2003) found a processing bias for aggression-themed words. The emotional stroop test which contained: aggression-themed words, positive emotion words, negative emotion words, neutral words and colour words were administered on forensic and non-forensic samples. The results confirmed that aggressive individuals, either defined by a violent and non-violent index offence (offender participants) or high levels of self-reported

anger (amongst undergraduate participants), show substantive differences in their patterns of response to such stimuli. Longer response times were found for these individuals for aggression-themed words which indicated a processing bias i.e., rumination in individuals who are prone to engage in aggressive behaviour due to the salience of such material. This study provides empirical support for the implicit cognitive measure of rumination, and its relationship with anger and aggression-related offending behaviour, across forensic and non-forensic samples.

5.1.4.3. Implicit cognitive processing: effortful control

Effortful control is a limited capacity resource that reflects the efficiency of executive functions which can be used to override tendencies deemed problematic to the wider goals of the individual (Posner & Rothbart, 2000). Davis and Nolen-Hoeksema (2000) investigated whether rumination would be related to a cognitive style marked by perseveration and inflexibility i.e. lack of effortful control. An explicit measure was used for the former and an implicit measure, the Winsconsin Card Sorting Task (WCST; Heaton, 1990), for the latter. Participants grouped as ruminators in this study committed more perseverative (i.e., task switching) errors on the WCST than non-ruminators. In another study by White and Turner (2014), support was found for the relationship between rumination and effortful control that had mediation effects on reactive aggression. Rumination was positively related to reactive aggression and negatively correlated with effortful control. Further, the mediation analyses revealed that rumination was associated with reactive aggression, and this relationship was partially mediated by effortful control. This study finding is congruent with the ICM view in suggesting that effortful control can be used to interrupt ruminative attention processes and suppress tendencies toward aggressive behaviour. However, although this study usefully evidences relationships between variables of interest, it only used explicit (i.e., self-report) measures, and on an undergraduate sample. A study that used a patient clinical sample to measure effortful control using an implicit cognitive indicator and its relationship to aggression was conducted by Serper, Beech, Harvey and Dill (2008). The results from this study revealed that a lack of effortful control directly influenced patients' aggressive behaviour and indirectly influenced aggressive behaviour when mediated by acute psychopathology.

5.1.4.4. Implicit cognitive processing: limitations and summary

The studies presented thus far provide evidence for the utility of implicit cognitive measures for each of the components in the ICM. However, it is to be noted that a study by Bluemke and Zumbach (2007) found no support that implicit cognitive measures are more sensitive than explicit cognitive measures in predicting aggression. Also, the above-mentioned studies are compounded by both conceptual and methodological limitations which make the generalisation of implicit processing difficult. Most of these studies have used a non-clinical sample and thus it is unclear whether findings are applicable to the inpatient context. Also, studies have focussed on only one of the cognitive components included in the ICM rather than taking a more comprehensive approach. Consequently, there is a paucity of evidence about the potentially multiple simultaneous relationships between the cognitive components in the ICM. Further, where implicit measurement has been used in studies there is, as with explicit measurement, an inherent definitional confusion that prevails between the cognitive components and anger and aggression. For example, Ireland and Adam (2014) used a puzzle test as an implicit measurement indicative of aggression, whereas other studies have used similar methods to be indicative of schema accessibility i.e., hostility (Anderson, Canagey & Eubanks, 2003). Krieglmeyer, Wittstadt and Strack (2009) use an attention processing and recall task of words to be indicative of anger, whereas Smith and Waterman (2003) use a similar paradigm and Wilkowski and Robinson (2010) suggest this to be a measurement of rumination. Greater consistency in definition, measurement and assessment across these studies would overcome what has previously (and arguably) been seen as a global characteristic in aggression research.

5.1.5. Present study aim

The aim of the present study is to apply the ICM to the study of inpatient aggression to disentangle definitional overlaps and illuminate component elements of anger and its relationship with reactive aggression. This has the potential to highlight what has previously been considered a self-evident link between anger and inpatient aggression. Further, the use of both implicit and explicit testing methods for each cognitive component in the ICM will not only provide evidence for the utility of each

measure, but will also have implications for effective and targeted cognitive-based treatment. It is, therefore, predicted that all three cognitive components (i.e., hostility, rumination and effortful control) will be interrelated and all will be related to anger and reactive aggression. These relationships will be demonstrated with both implicit and explicit measures, respectively.

Study hypotheses:

H1: A higher level of patient anger is related to its cognitive components

- Patient anger is positively related to hostility
- Patient anger is positively related to rumination
- Patient anger is negatively related to effortful control

H2: Patient aggression is positively associated with anger and its cognitive components (hostility and rumination but negatively associated with effortful control).

5.2. Method

5.2.1. Participants and setting

The sample was drawn from inpatients at St Andrew's Healthcare. Patients were sampled from the men's and women's adult mental disorder pathway wards across three of St Andrew's Healthcare sites: Northampton, Birmingham and Essex.

Eighty-three patients (52% male) were recruited into this study on the basis of the inclusion criteria that they are over the age of 18 years and diagnosed with a mental disorder (ICD-10, WHO, 2011). Patients were not eligible if they had a neurocognitive or a neurodevelopmental disorder, lacked the capacity to consent, or were not fluent in English.

5.2.2. Design

A correlational design was used to explore the hypothesised relationship between hostility, rumination, effortful control, using implicit and explicit measures respectively, with self-reported anger and recorded incidents of inpatient aggression.

5.2.3. Measures

Two sets of measures were used for hostility, rumination and effortful control. These were implicit and explicit measures. A measure for anger and aggression was used across both sets to model the relationship between variables.

5.2.3.1. Implicit measures

Hostility: Word Completion Task (WCT; Anderson, Carnagey & Eubanks, 2003)

The WCT is a novel implicit cognitive assessment for the measure of a hostility bias. The WCT comprises a list of 98 words with one or more letters missing, and requires the respondent to fill in the missing letters to form a completed word. The missing letters are strategically presented so that for each item in the list more than one

word can be formed. For example, one item is presented as: “explo_e” which may be completed as “explore” or “explode”. Participants were advised not to spend too long on any one item and complete as many words in the list as they can. Participants’ responses were then coded into the following categories: aggressive words, neutral words, ambiguous words, and non-words. A hostile bias score was then derived by dividing the number of aggressive word completions by the total number of completions. Forty-nine of the items in the list can yield an aggressive word when completed.

Rumination: Emotional Stroop Task

Several relevant studies have used variants of the emotional Stroop task, in which individuals are required to name the colour of stimuli rather than paying attention to its affective meaning (Williams, Mathews & MacLeod, 1996). It is believed that rumination involves selective attention processes that favour a particular type of affective input. As such, difficulties in disengaging from this particular attention is inferred from slower colour-naming latencies for a given type of affective stimulus, for instance, one with a hostile meaning. A study that has used a task of this type found that individuals higher in trait anger displayed a delayed colour-naming performance when the stimulus was a hostile word (Smith & Waterman, 2005).

Development of an emotional Stroop task for this study involved selection, assessment and ordering of the words to be included. Thirty anger-related words which represent the emotional stimulus words and 30 neutral-related words in the task were taken from John (1998). These words have norms established by ratings of emotional content. Emotionality ratings ranged from 1 to 7; the higher rating number indicated an increased emotion invoking word. All 30 angry words had an average rating from 6.51 (e.g., hate) to 3.74 (e.g., friction). All 30 neutral words had average rating from 1.20 (e.g., tray) to 1.52 (e.g., indirect). These words were arranged in 5 blocks, with 6 emotional words and 6 neutral words in each block (See Figure 5.2.). Each block was tested using analysis of variance for word length, emotional intensity and frequency to ensure they were all equal. Four colours were used (Blue, Green, Red and Yellow) and assigned to each word, whilst, ensuring that a different colour in the previous trial was not the same when the new block of words followed in the sequence of the task. All blocks were balanced to ensure that an equal amount of each colours were used. In

addition to the emotional words and neutral words, 18 congruent (the word presented in a matching colour) and 18 incongruent (the word presented in a non-matching colour) trials were included in the Stroop paradigm.

Block 1	Block 2	Block 3	Block 4	Block 5
Green	Violent	Yellow	Angry	Vicious
Red	Bitter	Blue	Evil	Cruel
Blue	Attack	Green	Assault	Spite
Yellow	Annoy	Red	Enemy	Critical
Red	Stubborn	Yellow	Ranting	Mean
Blue	Fist	Green	Bold	Rebel
Green	Margin	Killing	Lens	Salad
Blue	Wrist	Cross	Whatever	Porch
Red	Weekly	Quarrel	Juice	Jacket
Yellow	Bag	Provoke	Wagon	Pen
Blue	Butter	Awkward	Zone	Somehow
Red	Bread	Stern	Total	Resident
Hate		Lock		Red
Hostile		Maple		Blue
Rage		Sandwich		Yellow
Mad		Quarter		Green
Inflict		Library		Red
Friction		Replace		Blue
Tray		Yellow		Red
Context		Green		Blue
Zero		Red		Yellow
Vitamin		Blue		Green
Heel		Yellow		Blue
Indirect		Green		Green

Figure 5.2. Emotional Stroop task

The design of the task was arranged in the following order: Block 1 – Congruent, Incongruent, Emotional and Neutral. Block 2: Emotional and Neutral. Block 3: Incongruent, Emotional, Neutral and Congruent. Block 4: Emotional and Neutral. Block 5: Emotional, Neutral, Congruent and Incongruent. In total, this arrangement consisted of 96 trials within the task.

The Emotional Stroop task was administered via a laptop computer using a purpose designed Microsoft Windows program. The program generated and presented the trials in the task, and recorded the audible responses and the response time for

each trial. All words appeared in one of four colours on a black background for 700ms for each trial. Participants were instructed to name the colour of the word as quickly as possible, rather than reading the word. Response time recordings were defined at the onset of speech. Recordings of correct and incorrect trials were also retrieved. A rumination score was derived by the average emotional word response time minus the average neutral word response time (Larsen, Mercer & Balota, 2006; Wentura, Rothermund & Bak, 2000).

Effortful Control: Wisconsin Card Sorting Test-64: Computer Version 4 (WCST; Heaton, 1990)

The WCST is primarily used to assess for perseveration and abstract thinking, but it is also considered as a measure of executive function because of its reported sensitivity to frontal lobe dysfunction. The use of the WCST in this study to measure the concept of effortful control required the respondent to develop and maintain an appropriate problem-solving strategy, across changing stimulus conditions in order to achieve a future goal. The WCST provides objective measures for overall success and identifies particular sources of difficulty on the task such as: inefficient initial conceptualisation, perseveration, failure to maintain a cognitive set, and inefficient learning across stages of the test.

The test was structured with four stimulus cards that incorporate three stimulus parameters: colour, form, and number. Respondents were required to sort cards according to different principles and to alter their approach during test administration. In order to complete the task, it was ensured that respondents had normal or corrected vision and hearing, to be able to comprehend the instructions and to visually discriminate the stimulus parameters.

The administration of the test was conducted on a laptop computer. Respondents were advised that their task was to match each of the cards that appear on screen to either one of the four key cards. The software automatically informed the respondent whether the choice they made in matching the card was correct or incorrect on each trial. There were 128 cards/trials in total. Completion time of the test usually varies between individuals. A report of the respondents' performance of the test was produced

with raw score to normalised standard, percentile and T-score conversions. Perseveration scores were used to indicate patient's effortful control in this study (Serper et al, 2008).

5.2.3.2. Explicit measures

Hostility: Positive and Negative Affect Schedule – Expanded Form (PANAS-X; Watson & Clark, 1994)

A full description of the PANAS-X is presented in Chapter 4. The hostility subscale score of the PANAS-X was used in the analyses to represent the cognitive component of hostility that is included in the ICM. The reliability (Cronbach's Alpha) was .84 for the hostility subscale for this sample.

Rumination: Anger Rumination Scale (ARS; Sukhodolsky et al., 2001)

The ARS was used to measure for the cognitive processes that unfold after the emotion has been triggered or generated. The scale was constructed to measure the tendency to focus attention on angry moods, recall past anger episodes, and think over the causes and consequences of anger episodes. The authors' conceptualisation of anger rumination suggests that it is related to the duration of anger experience as well as the tendency to dwell on one's anger experience. The construct of anger rumination distinguishes the duration of the physiological arousal during the state-anger experience from the duration of cognitive activity related to a particular anger episode. The ARS consists of 19 -items which are statements hypothesised to be related to the anger rumination construct. Respondents were asked to rate on a 4-point scale how well the item corresponds to their beliefs about themselves, with options ranging from: 1 = *Almost never*, 2 = *Sometimes*, 3 = *Often*, 4 = *Almost always*. All items are phrased so that higher scores are indicative of a greater level of anger rumination when summed. The ARS has adequate internal reliability and test-retest reliability. The reliability (Cronbach's Alpha) was .95 for the ARS for this sample. Convergent and discriminant validity was also demonstrated in the pattern of correlations between rumination factors and measures of related characteristics (see Sukholdolsky et al., 2001).

Effortful control: The Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski, Kraaij & Spinhoven, 2002)

The CERQ was developed in order to identify the cognitive coping strategies that an individual uses subsequent to experiencing negative incidents or situations. The CERQ consists of 36 -items covering nine cognitive emotion regulation coping strategies:

- Self-blame – thoughts of blaming yourself for what you have experienced.
- Other-blame – thoughts of putting the blame for what you have experienced on others.
- Rumination or focus on thought – thinking all the time about the feelings and thoughts associated with the negative event.
- Catastrophising – explicitly emphasising the terror of the experience.
- Putting into perspective – refers to playing down the seriousness of the event when compared to other events.
- Positive reappraisal – refers to attaching a positive meaning to the event in terms of personal growth.
- Positive refocusing – refers to thinking of other pleasant matters instead of the actual event.
- Acceptance – refers to thoughts of resigning to what has happened.
- Refocus on planning – refers to thinking about what steps to take in order to deal with the event.

Respondents were asked to indicate on a 5-point scale to what extent the item reflects how they think and feel with options ranging from: 1 = *Never*, 2 = *Sometimes*, 3 = *Regularly*, 4 = *Often*, 5 = *Always*. The CERQ can be completed within 10 minutes. The reliability of the subscales of the CERQ with psychiatric patients is good to very good. Coefficients are between .72 and .85. The reliability (Cronbach's Alpha) was .76 for the Positive reappraisal subscale for this sample. Test-retest correlations of 14 months vary between .38 and .75. Construct validity with the CERQ and other similar scales have revealed significant moderate to strong correlations. The positive reappraisal subscale score of the CERQ was used in the analyses to represent the cognitive component of effortful control that is included in the ICM.

5.2.3.3. Anger: Novaco Anger Scale (NAS; Novaco, 2003).

A full description of the NAS is presented in Chapter 4 (the reliability (Cronbach's Alpha) was .94 for the NAS for this sample). The NAS total score was used in the analyses to represent level of anger.

5.2.3.4. Aggression: Overt Aggression Scale (OAS; Yudofsky et al., 1986).

A full description of the OAS is presented in Chapter 4. The OAS was used to rate flagged incidents[1] which had occurred in the three months pre- and post-participation for each patient. To reduce the number of aggression types analysed, aggressive outcomes were amalgamated into dichotomised categories for the presence or absence of aggression.

5.2.3.5. Demographic and clinical measures

Information relating to patients' gender, age, self-reported ethnicity, admission/discharge date (length of stay), ward security level and ICD-10 (WHO, 2011) diagnoses were extracted from clinical records. A registered psychologist from the clinical teams completed the CGI. A full description of the CGI is presented in Chapter 4.

5.2.4. Procedure

A more detailed outline of the procedure for the research project can be found in Chapter 4. However, a brief overview for the current study is provided here.

All eligible patients were given the study information brief detailing what their participation would entail. Interested patients provided written informed consent. Subsequently, a one-to-one interview took place in a quiet room on the ward to complete study questionnaires/tasks. The battery of paper-pen measures (WCT, NAS, CERQ, ARS, PANAS-X) were completed first. Patients were assisted by the researcher in reading the items if they had any difficulties. Following the paper-pen measures, the

[1] Case notes that were electronically flagged as: 'Aggression – Physical', 'Aggression – Verbal', 'Fire setting', 'Hostage taking', 'Intimidation/Bullying', 'Self-Harm/Suicide' and 'Sexual Offending' on RiO.

computer-based tasks (Emotional Stroop task and WCST) were subsequently completed. Patient aggression incident data were collated and rated using the OAS.

5.2.5. Data analysis

Means and standard deviations for scale variables and frequencies/percentages for categorical variables measured in the study were calculated. Pearson's correlation was used to examine the relationship between anger and i) implicit cognitive measures and ii) explicit cognitive measures, for each cognitive component. A multiple linear regression was used to model the relationship for anger based on the correlation tests. Independent *t*-tests were used to ascertain any differences in anger and implicit and explicit cognitive scale scores between aggressive and non-aggressive patients. The magnitude of difference in scores was denoted by the *t*-value converted into an *r*-value (Rosnow & Rosenthal, 2005) for an effect size, with the following thresholds: small (.20), medium (.30) and large (.50). A model that predicts aggression was tested with a logistic regression, with predictor variables informed by the independent t-tests. Analyses were conducted using IBM SPSS Statistics version 22 for Windows (SPSS Inc., Version 22).

5.3. Results

The mean age of patients was 34 years (*SD* = 11.5). Most of the patients were of Caucasian descent (*n* = 59; 71.1%), while others were either of Black (*n* = 16; 19.3%) or Asian (*n* = 8; 9.6%) descent. Patients had a primary diagnosis of either a schizophrenia spectrum disorder (*n* = 37; 44.6%), personality disorder (*n* = 41; 49.4%) or bipolar and related disorder (*n* = 5; 6%). Patients were moderately ill (*M* = 3.8, *SD* = 1.4) in terms of severity of their presenting problems as indicated on the CGI. At the time of recruitment and administration of tests, 54 patients were residing on low secure (65.1%) and 29 patients were on medium secure (34.9%) mental disorder wards; mean length of hospitalisation at this point was 2.8 years (Range = 32-8144 days). There were 463 recorded aggressive incidents. Forty nine (59% male) of these 83 (59%) patients were aggressive over the six months follow-up period.

Correlations between implicit cognitive measures and self-reported anger are presented in Table 5.1, and correlations between explicit cognitive measures are presented in Table 5.2.

Table 5.1. Pearson's *r* correlation between implicit measures and self-reported anger

***n* = 77**	**1**	**2**	**3**	**Anger: Novaco Anger Scale**
1 Hostility: Word Completion test		.06 [-.12, .20]	.00 [-.15, .21]	.05 [-.11, .25]
2 Rumination: Emotional Stroop			-.10 [-.25, .16]	-.21 [-.36, -.04]
3 (Lack of) Effortful Control: Winsconin Card Sorting Task				.19 [-.09, .42]

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples

Table 5.1. shows that, hostility and (lack of) effortful control were not related to self- reported anger. Rumination, however, was unexpectedly negatively correlated with self-reported anger. As there was a lack of normality in some of the variables, the bootstrap bias-corrected confidence intervals provide estimates that are unaffected by the distribution of scores; unlike the *p* value significance which is affected by distribution of scores (Field, 2013). Thus, given that p-values are less important in correlation analyses as the coefficient provides more useful information (Field, 2013), the negative correlation between rumination and self-reported anger is supported by the bootstrap bias corrected confidence intervals as both being in the negative value range.

Table 5.2. Pearson's r correlation between explicit measures and self-reported anger

***n* = 77**	**1**	**2**	**3**	**Anger: Novaco Anger Scale**
1 Hostility: PANAS-H		.66** [.51, .78]	-.29** [-.52, -.06]	.52** [.32, .68]
2 Rumination: ARS			-.27* [-.49, -.03]	.54** [.31, .74]
3 Effortful Control: CERQ-Positive Reappraisal				-.29* [-.48, -.09]

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples

*p<.05 **p<.01

Table 5.2. shows that hostility is positively correlated with rumination and self-reported anger. Rumination is positively correlated with self-reported anger. The negative relationship between rumination and effortful control is observed to be in the same direction of the predicted relationship. Effortful control is negatively correlated with self-reported anger.

Given that the explicit cognitive processing measures were observed in the same direction as the predicted relationships as illustrated by the ICM (Wilkowski & Robinson, 2010), this set of associated variables were subject to regression analyses. Table 5.3. presents a multiple linear regression which was conducted to model the prediction of self-reported anger.

Table 5.3. Linear model of predictors of anger

	b	***SE b***	**β**	***p***
Constant	69.93 [56.32, 86.43]	8.24		
PANAS-Hostility	0.81 [0.04, 1.52]	0.39	.27	.05
Anger Rumination	0.41 [0.12, 0.74]	0.15	.33	.01
CERQ-Positive reappraisal	-0.48 [-1.14, 0.22]	0.38	-.12	.18
F (3, 73) = 13.4 p<.00				

BCa Bootstrap 95% confidence intervals reported in parenthesis and standard error are based 1000 samples
Note. R^2 = .37 for step 1,
n = 77

Regression model 1 (Table 5.3.) examined the prediction of anger in patients hostility, rumination and effortful control. The model was significant overall, with $r^2 = .37$ explained variance. However, only hostility and rumination contributed to the prediction of anger in patients. The bootstrap confidence intervals and significance values do not rely on the assumption of normality or homoscedasticity (Field, 2013), thus an accurate estimate of the true population value of *b* for each predictor is provided. Collinearity diagnostics confirm that there were no concerns with multicollinearity in the variables used in this model: the Variance Inflation Factor (VIF) values are below 10, and Tolerance values are above .20, for each predictor.

Implicit and explicit cognitive scale scores for aggressive and non-aggressive patients are presented in Table 5.4.

Table 5.4. Implicit and explicit scale scores for aggressive and non-aggressive patients

Measures	Aggressive *n*=49		Non Aggressive *n*=33		*r*
	Mean	SD	Mean	SD	
*Novaco Anger Scale – Total score *n* = 83	95.52 [90.82, 100.83]	16.75	84.90 [80.54, 89.84]	12.49	0.28
Anger Rumination Scale *n* = 79	42.81 [39.22, 46.64]	12.60	41.42 [36.65, 45.93]	13.56	0.02
Emotional Stroop-Rumination *n* = 77	23.72 [1.13, 45.14]	75.43	29.71 [10.44, 48.32]	56.25	0.04
Word-Completion Hostility bias *n* = 78	0.21 [0.20, 0.21],	0.05	0.18 [0.20, .021]	0.06	0.19
Positive Affect Negative Affect Scale – Hostility *n* = 78	12.40 [10.93, 14.02]	5.35	12.09 [10.53, 13.92]	4.98	0.02
Wisconin Card Sorting Task – Perseverance *n* = 77	21.79 [17.13, 27.53]	17.66	19.84 [15.33, 25.62]	14.99	0.06
Cognitive-Emotional Regulation Questionnaire – Positive reappraisal *n* = 77	13.45 [12.41, 14.52]	3.77	12.30 [10.72, 13.83]	4.36	0.14

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based 1000 samples

*p<.05

Table 5.4 shows that aggressive and non-aggressive patients differed in mean scores on anger. There was a statistically significant difference in mean score on the NAS Total, with aggressive patients scoring higher than non-aggressive patients. These differences in scores have a small effect size. There were no differences in scores on either implicit or explicit cognitive measures for hostility, rumination and effortful control between aggressive and non-aggressive patients.

Table 5.5. Logistic model predicting patients were aggressive

	b	95% CI for Odds Ratio		
		Lower	**Odds**	**Upper**
Constant	-3.17 [-6.88, -0.66]			
NAS Total	0.04** [0.01, 0.07]	1.00	1.04	1.10

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based 1000 samples

Note. R^2= .08 (Cox & Snell) .11 (Nagelkerke). Model $\chi^2(2) = 6.87$, $p<.01$,

**$p<.01$
$n = 83$

A logistic regression (Table 5.5.) was performed to ascertain the effects of self-reported anger on the likelihood that patients are aggressive. The logistic regression model was statistically significant, $\chi^2(1) = 6.87$, $p<.05$. The model explained 11% of the variance in aggression and correctly classified 62.7% of cases. Sensitivity was 75.5%, specificity was 44.1%, positive predictive value was 33.9% and negative predictive value was 55.5%. The predictor variable was statistically significant. Self-reported anger was associated with an increased likelihood of being aggressive. Linearity of the logit was also tested which revealed that interaction terms were not significant p>.05, and thus did not violate the assumption.

5.4. Discussion

5.4.1. Summary of findings

The combination of implicit cognitive processing measures used in this study for hostility, rumination and effortful control did not correlate with each of the cognitive components, nor did they correlate with anger in the expected direction. By contrast, the combination of explicit cognitive processing measures revealed correlations in the expected directions amongst the cognitive components and with anger. Explicit measures of both hostility and rumination predicted anger.

Neither implicit nor explicit measures for hostility, rumination and effortful control differentiated aggressive from non-aggressive patients, other than self-reported anger. Inpatient aggression was predicted by self-reported anger.

5.4.2. Findings in the context of previous research

It is possible that the implicit measures used in this study for each cognitive component did not adequately assess the automaticity of information processing. For example, when using the Word Completion Test (WCT) as a measure for hostility, which requires the respondent to fill in the blank spaces with letters to form a word, the initial automatic response of writing a hostile word may have actually come into conscious awareness. Thus, before writing down the letters, a cognitive deliberation process may have already been occurring in participants. This finding lends support to Ireland and Adams' (2015) conclusion that viewing implicit processing along a continuum of automatic to reflective would actually be more helpful and realistic, as it would allow for more detailed examination of individual gradient variations and how these link to anger and aggression. Similar to the current study, the implicit cognitive measure used in Ireland and Adams' (2015) study required more controlled (i.e., reflective) processes and did not contribute to their measure of aggression disposition. However, these findings are important because of the lack of research using implicit measures on a clinical sample. As suggested by Ireland and Adams' (2015) such measures can add value for intervention efforts in considering the efficiency of implicit

processing in patients, whereby the cognitive capacity and ability to control or implicitly regulate their implicit processing may be represented.

The Emotional Stroop test, as an implicit cognitive processing measure for rumination, interestingly revealed an inverse correlation with scores of anger. This finding contradicts previous studies that have used the Emotional Stroop test with forensic samples. In the current study, the finding in relation to this measure was that there was no processing bias (i.e., longer response times) apparent with the anger-themed words indicating ruminative thought. Whereas, Smith and Waterman (2003) did, however, find rumination of such stimuli to be the case in forensic and non-forensic samples. It is difficult to explain this pattern of result, but it may be related to the awareness that participants had about the aim of the current study. Knowing that the study was about anger and aggression it is possible that this had resulted in participants being more vigilant to the anger-themed words, and thus responded quicker rather than in an uncontrolled delayed manner which diminished the otherwise ruminative impact. This is not to say the Emotional Stroop task does not have any utility in assessing implicit cognitive processing and with forensic samples, but studies using this measure must ensure that factors that could influence the Stroop interference effects are minimised. Further, Price, Beech, Mitchell and Humphreys (2012) argue that because of the wide variation in how this tool can be developed in terms of choice of word stimulus and how it is used across studies, this impedes firm conclusions from being drawn about its utility. Standardisation of words, in particular the anger-themed words, across studies would advance research on information processing using implicit cognitive measures with a clinical sample.

The implicit cognitive measure for effortful control in this study was the Winconsin Card Sorting Task (WSCT). The WCST provides various indices of results for the assessment task. As with previous studies, the current study only used perseveration error scores to be indicative of participants' (lack of) effortful control. However, in line with the ICM, three associations of effortful control (with hostility, rumination and aggression) were expected but the current study data did not provide evidence for this. This pattern of results may have occurred because of the aforementioned concerns with the implicit cognitive measures of hostility and rumination. The WCST is simply a card sorting test and could be considered more ambiguous, in comparison to WCT and

Emotional Stroop Task, and in relation to the study's aims and objectives. Thus, it is possible that patients were unable to cognitively control their responses but only respond in a manner that is reflective of their cognitive abilities.

The implicit and explicit set of cognitive processing measures used in this study for each component in the ICM were incongruent, in terms of the revealed association between variables. This appears not to be uncommon which has also been the case in previous studies where both type of measures were used for the same construct. Bluemke and Zumbach (2007) did not find stronger effect sizes in their analyses for when an implicit cognitive measure was used as opposed to an explicit cognitive measure. It is unknown whether this incongruence reflects the reliability of implicit cognitive measures that are not yet optimal, or whether the hypothesis of automaticity in the role of anger and inpatient aggression does not hold, as it cannot be determined by the current data. In relation to the reliability of implicit cognitive measures; however, Linder, Werner and Lyle (2010) noted in their study the poor reliability values and subsequently used an alternative paradigm (speed of reading times) of automaticity in the same measure for their analyses. Implicit cognitive processing is still a developing area of research and is an important avenue to further understand the role of automaticity, in problematic emotion and behaviour regulation. Only then will it be possible for advancing treatment efforts to be able to 'tap into' the unconscious states and intervene accordingly.

Equally, the explicit cognitive processing measures do not discount anything in identifying the relevant cognitive components of the role of anger and inpatient aggression by using the ICM. Building on previous studies (Doyle & Dolan, 2006; McDermott et al., 2008; Vitacco et al., 2009) that have identified anger as being predictive of inpatient aggression, the current findings explored this relationship a step further by studying what the authors of the ICM call the anatomy of anger. Indeed, although anger and its cognitive components (hostility, rumination and effortful control) were associated, it was actually anger that was the significant predictor in the model of inpatient aggression. Counter-intuitively, however, the absence of an association between effortful control and aggression suggests that incidents were perhaps not due to patients' inability to positively reappraise. Instead, it is possible that patient aggression in this study may have occurred for other reasons such as a function to

force compliance or to enhance social status on the ward, as well as to express anger (Daffern & Howells, 2009). It is noteworthy, however, that effortful control as described in the ICM is a broad construct, and the explicit measure used in this study is indicative of that but not in its entirety. Specifically, within this concept of effortful control, positive reappraisal was measured and this may only be one feature of effortful control. Thus, anger and its relative cognitive counterparts are particularly salient, as demonstrated by the correlations, and this therefore warrants emphasis in cognitive-based treatment intervention.

5.4.3. Limitations

The relatively small, sample of males and females and the large range in the length of hospitalisation of patients in this study limits the generalisability of the findings. Although anger is one of the primary emotions within the human experience, dysregulated anger may take different forms amongst clinical populations with various pathologies. Thus, more research on the components of anger across a wide range of diagnosed mental health patients i.e., neurodevelopmental and neurocognitive disorders, is required to further understand the relationship between cognitive components and the nature of its processing, in order to risk assess and provide tailored group and individual-based treatments. The study specifically focussed on implicit cognitive processing. The measures used could potentially have triggered a physiological response (i.e., increased heart rate and blood pressure, tensed muscles, etc.) which then dictated the responses (Ireland & Adams, 2015), thus it is not known whether implicit emotional systems were impacted.

Future studies which take the anger components into account will need to consider the of use implicit processing measures. There is plenty of scope for progress in determining the role of automaticity in anger and associated aggressive behaviours. Developing optimal tools for this endeavour is a vital step forward in this direction. Administration of such measures must also be carefully considered to avoid or minimise confounding effects.

5.4.4. Implications

The use of the ICM in research studies of inpatient aggression can highlight the mechanisms involved in experiences of anger. It would also encourage researchers to distinguish definitions and to select relevant assessment measures, which would help overcome conceptual and measurement overlap between anger and aggression - a problem in previous studies. Further, the use of the ICM provides a more comprehensive account of the development and maintenance of levels of anger in patients. The current findings, therefore, have implications in terms of the importance of considering the specific cognitive components in functional analysis formulation, treatment and care plans to address experiences of anger. In doing so, any reduction in associated incidents of inpatient aggression would need to be demonstrated by an experimental study.

5.4.5. Conclusion

This study has extended knowledge of the relevance of using the ICM to understand the role of anger in inpatient aggression. It is acknowledged that causes of such incidents are multi-factorial, and anger and the respective cognitive components are only one part of the equation. However, this study has shown that the relationship between anger and inpatient aggression is not as simple as it may seem: there are several cognitive mechanisms that could shape the resulting behaviour. The measurement of the individual level of automaticity of these cognitive mechanisms is yet to be determined. The importance of targeted cognitive-based treatment interventions could help reduce incidents of inpatient aggression by increasing the ability of patients to reappraise cognitive thinking marked by hostility, ruminative tendencies and anger experiences.

6. CHAPTER SIX: STUDY TWO

6.1. DOES PATIENTS' SELF-REPORTED ANGER ADD TO THE PREDICTIVE VALIDITY OF STRUCTURED PROFESSIONAL JUDGEMENT IN INPATIENT AGGRESSION?

The literature review on patient anger in Chapter 2 showed that anger is often a global assessment completed by clinicians using the BPRS, and Study One in Chapter 5 showed that a standardised measure of self-reporting anger is predictive of inpatient aggression. The study in this chapter outlines the violence risk assessment and its use in inpatient settings. The findings of predictive validity of inpatient aggression of patients' self-reporting anger and the violence risk assessments are presented and discussed.

6.1.1. Violence risk assessments

Clinicians working in inpatient mental health care settings are tasked with conducting violence risk assessments to aid the management and treatment delivery for the duration of patients' hospitalisation, as well as to ascertain the level of risk posed after discharge. Violence risk assessments can have detrimental consequences if completed without careful consideration (Rogers, 2000; Miller & Brodsky, 2011). For instance, violence risk assessments could have implications for patients' continued detention in hospital and the conditions of that detention (i.e., physical, procedural and relational) (Collins & Davies, 2005) because of being deemed at higher risk. Or if patients are deemed as lower risk, they may be prematurely discharged back into the community, without the appropriate provisions in place to prevent avoidable relapses in offending behaviour.

Historically, the assessments for violence-risk were carried out unaided, purely based on clinical judgment (Egisdottir et al., 2006; Ogloff & Daffern, 2006). Unaided clinical judgement is problematic because of the inherent subjectivity and the difficulty to determine the extent in which the judgment was informed, guided or structured by the literature (Hart & Logan, 2011). However, epidemiological research (Monahan, 1992) has identified risk factors of violence (Scott & Resnick, 2006). There are now more objective and systematic ways to assess violence-risk with empirically developed and

tested tools (Singh, Grann & Fazel, 2011; Large & Nielssen, 2017); some tools also allow for clinicians to incorporate their clinical judgement within the structured assessment.

6.1.2. Actuarial and structured professional judgement tools

There are two evidence-based approaches to violence-risk assessment which reflect current views of best practice: discretionary and non-discretionary (Hart & Logan, 2011). The terms are used to describe the procedure through which a final decision or judgment about risk is derived. In the discretionary approach, the procedure allows the evaluator to exercise judgement in the decision making process. Empirically developed guidelines/tools are used as aide memoirs by the evaluator to assist in the process. These are flexible to individual differences, and thus the decision regarding level of risk is derived in a systematic and structured manner. This is known as Structured Professional Judgement (SPJ). By contrast, in the non-discretionary approach, also known as actuarial or statistical approach, the procedure involves the evaluator arriving at a decision according to fixed and explicit rules based on the available information within the tool (Hart & Logan, 2011).

Both actuarial and SPJ tools consist of items that are empirically related to violence for trained evaluators to rate the relevance in terms of absence/presence for the person in question. Within actuarial tools, the level of risk is based on a predetermined algorithm of rated items. The algorithm, which is a calculation of weighted items, produces a score that has fixed cut off points by which individuals would be deemed at relatively increased or decreased risk on the basis of the validation sample of the tool. The SPJ approach does not use a statistical algorithm, but instead requires the evaluator to determine the level of risk in light of the presence of identified risk factors of violence. Actuarial and SPJ procedures have advantages and disadvantages; there is no consensus in the academic literature regarding which approach works best in the prediction of violence (Singh et al., 2011; Monahan & Skeem, 2014; Large & Nielssen, 2017). However, an important aspect of SPJ is that idiosyncratic risk factors are incorporated within the assessment for the determination of risk level. The actuarial approach has no leverage for unique risk factors that are not

contained in the risk assessment tool, which may be relevant to a patient's profile and in a specific context.

Another distinction to draw upon across the actuarial and SPJ approach is the relevance of static and dynamic risk factors of violence that are contained in the tool as risk factor items. Generally, static risk factors (e.g., young age at first offence) are not amenable to intervention. Dynamic risk factors can fluctuate over time and circumstances (e.g., impulsivity) but may be amenable to change through intervention to mitigate the level of subsequent risk. Given that risk assessment is conducted not only to identify the level of risk but to also formulate a management plan (Doyle & Logan, 2012) to reduce the level of risk, tools consisting of only static risk factor items are of limited use in terms of risk management i.e., implementing appropriate interventions. Nevertheless, static risk factors are very relevant for hospital admission (e.g., level of security required) and hospital discharge planning (e.g., listed on sex offender register) which Douglas and Skeem (2005) describe as *risk status*; and *risk state* to describe the current and combination of dynamic risk factors that could contribute to offending behaviour.

6.1.2.1. Historical Clinical Risk-management - 20 (HCR-20)

The Historical-Clinical-Risk-Management 20 scheme (HCR-20; Webster, Douglas, Eaves & Hart, 1997)[2] is an example of an SPJ tool for the assessment of violence-risk. It contains both static and dynamic risk factor items; ten historical items are to some extent considered static, as the risk status can change over subsequent assessments (e.g., employment problems, substance use problems). The remaining five clinical and five risk-management items are dynamic since they concern current presentation and adaptation to future circumstances. The HCR-20 requires evaluators to be trained in the use of the assessment. The procedure in completing the HCR-20 requires comprehensive information to justify the scoring of each item. It is one of the most commonly used tools in forensic mental health (Khiroya, Weaver & Maden, 2009).

Studies have shown that the HCR-20 has good predictive validity of inpatient aggression (Robbe, De Vogel, Wever, Douglas & Nijman, 2016). One systematic review

[2] At the time of conducting this research the HCR-20 Version 2 was being used in the study setting. HCR-20 Version 3 was published in 2013.

(O'Shea, Mitchell, Picchioni & Dickens, 2013) for example, involving 2067 patients across 20 studies found that a summary judgment (i.e., Low, Moderate, High) of risk was a stronger predictor of inpatient aggression than each of the HCR-20 subscales. Although this finding is promising, as it is the approach advocated by the authors of the tool to derive at a judgement of determining level of risk, it has been criticised for its limited ability to inform day-to-day treatment and management of risk factors (Ogloff & Daffern, 2006; Ireland et al., 2016). Frontline staff members, such as nurses and healthcare assistants who take a hands-on approach in the delivery of care plans, are perhaps not always involved in the HCR-20 completion process or relevant risk information is not sufficiently communicated. Thus the consideration of unique dynamic risk factors that predict inpatient aggression will enable frontline staff members to become more aware of such factors. This will also contribute to the effective delivery of management and treatment protocols for each patient to prevent associated incidents.

6.1.2.2. Short-Term Assessment of Risk and Treatability (START)

Another SPJ tool, the Short-Term Assessment of Risk and Treatability (START; Webster, Martin, Brink, Nicholls & Desmarais, 2009) consists of 20 dynamic risk factor items. Its use is intended to predict risk in the shorter-term (three months) and for a range of challenging behaviours: violence, suicide, self-harm, victimisation, substance use, unauthorised absences and self-neglect. Its focus on dynamic risk factors, for which evaluators must consider both strengths (risk factors) and vulnerabilities (protective factors) of the person on each item, to derive a risk-level for the range adverse outcomes, sets itself apart from other SPJ tools such as the HCR-20 (Nonstad et al., 2011). The extent to which the dynamic risk and protective factor items and correlates of challenging behaviours overlap, the assessment and subsequently informed management strategies to prevent such incidents is likely to be more effective and efficient than other tools (Webster et al., 2009). However, as noted by Doyle and Logan (2012), despite significant gains in the area of risk assessment, the research literature does not reflect comparable advances in risk management interventions. Thus, whether the START is effective and efficient in this respect of risk management requires exploration; in order to be in a position to conduct this kind of investigation, an understanding in the assessment of, and which, dynamic risk factors would be weighed against the identification of relevant treatment interventions would be a good first step.

6.1.2.3. The role of anger as a dynamic risk factor in HCR-20 and START

Anger is not a risk factor item per se in either the HCR-20 nor the START. The omission could be understood since items in both tools are broader and encapsulate anger amongst a range of other dispositions/presentations. For example, in the START, anger is mentioned as 'angry' in the vulnerabilities description for the *Emotional State* item, along with: depressed, labile, pessimistic, lethargic, irritable, hopelessness, inappropriately elevated mood, and emotionally withdrawn/restricted. Relatedly, and perhaps interchangeably as terms used for the construct of anger, 'hostile' and 'aggressive attributional style' are mentioned in the vulnerabilities' description for the *Attitudes* item (Webster et al., 2009). Further, in the HCR-20, notions of anger also appear to be embedded in three of the Clinical scale items: in the *Lack of Insight* item, it is stated that 'determine the extent to which the person perceives himself or herself to be dangerous, angry, or out of control'; for the *Impulsivity* item reference should be made to 'behavioural and affective instability'; and in the *Unresponsive to Treatment* item attention should be given to 'whether the individual has recently been placed in seclusion and for what reasons, and whether there have been the occurrences of angry outbursts and rage episodes' (Webster et al., 1997).

The responsibility to gauge the relevance of anger in the broader sense lies with the evaluator, whether through clinical notes and/or an interview with and observations of the individual. The scoring of the aforementioned risk factor items in this manner for the level of violence-risk is then derived. As such, no systematic measurement of anger plays a role in these SPJ tools. The assessment of anger in the tools is featured as a global evaluation amongst other presenting characteristics. A more objective approach to evaluate the presence of anger may help inform violence risk assessment and risk management planning.

6.1.3. Anger as a predictive variable of inpatient aggression-risk

Provision for anger assessment and treatment has lagged compared to depression and anxiety in mental health care (DiGiuseppe & Tafrate, 2007). Anger has often been perceived as a behavioural manifestation of a psychotic symptomatology, rather than a dysregulated emotion warranting clinical attention (Novaco, 2010). This may, in part, explain the neglect of directly assessing and treating anger in the context of inpatient aggression. Indeed, a study of inpatients conducted by Daffern, Howells, Ogloff and Lee (2005) found no association between anger and aggression. The authors noted however that the absence of an anger trait association does not imply that anger would not be relevant as a state factor or as an antecedent to aggressive behaviours. Other studies have demonstrated the predictive validity of anger in inpatient aggression: for example, Doyle and Dolan (2006) assessed the predictive validity of brief assessment scales including the Novaco Anger Scale (NAS; Novaco, 2003) and the Ward Anger Rating Scale (WARS; Novaco & Renwick, ND) in a sample of 94 forensic inpatients. Twenty-two patients were responsible for 50 incidents of threats of physical aggression and/or acts of physical aggression in the 12-week period following assessment. When physical aggression was considered in isolation as an outcome variable, only five of these patients committed a total of ten incidents. Both the NAS and WARS had relatively high predictive validity, with significant area under the curve (AUC) values, .82 and .83 respectively, for physical aggression. The AUC value, however, reduced for the NAS when calculating for threats of aggression and/or physical aggression together as the outcome variable. Nonetheless, this study indicates that anger is a predictor of different forms of inpatient aggression and reinforces the need to consider an appropriate treatment intervention.

With respect to a systematic measurement of anger alongside SPJ tools, McDermott, Quanbeck, Busse, Yastro and Scott (2008a) examined the accuracy for each scale in terms of its predictive validity for reactive, instrumental and psychotic types of aggression. Because of the denial of requests and restrictions imposed on patients by staff in forensic and secure settings, it is perhaps not surprising that reactive aggression is the more prevalent type (Quanbeck et al., 2007). It was found that the Clinical and Risk-Management subscales of the HCR-20 had higher AUC values than the NAS in the prediction of reactive aggression. McDermott et al., (2008b) also found

that the Clinical and Risk-Management subscales had significant AUC values only when aggression was directed at other patients, whereas anger as measured with the NAS had significant AUC values when aggression was directed at staff. It is evident from these studies that anger has predictive validity in type and direction of aggression. However, these studies are limited in terms of generalisation to routine clinical practice. The use of the HCR-20 in these studies were completed by researchers rather than clinicians. Therefore, research on SPJ tools' predictive validity which is that of clinicians' rating, and simply not of trained research associates, is sparse. In addition, it is not known whether relevant item ratings in the SPJ tools are congruent with patients' self-reported anger. Such information would reveal a direction of association which would be informative not only in risk management and treatment planning, but also for risk assessment education and training programs. Desmarais, Nicholls, Read and Brink (2010) found that evaluators who had higher confidence in their ratings on a SPJ tool were actually associated with lower predictive accuracy in risk outcomes. Thus, knowing whether patients' self-reported anger is associated with clinicians' ratings on respective items in routinely completed violence risk assessments is not only important for the recommendation of appropriate treatment interventions, but also in determining whether self-reported anger has a higher predictive accuracy in inpatient aggression, over the sole use of clinicians' ratings on SPJ tools.

6.1.4. A case for self-reporting anger in violence risk assessments

Involving patients in their own care within mental health services is advocated by Tait and Lester (2005). They argued that patient involvement is more than a politically mandated 'good thing' to do, since it is a worthwhile activity with a range of practical and ethical benefits. Such benefits include the appreciation of patients being the expert of their own presentation and need for care: patients may have a different but equally important perspective that could increase the existing (limited) understanding of a presenting condition. Patient involvement may be therapeutic in itself and encourage greater inclusion. With such benefits in mind, involving patients in the task of assessing violence-risk could potentially facilitate increased engagement in treatment interventions and thus in the reduction of associated aggression incidents. Further, Monahan and Skeem (2014) propose that patients' self-reporting is one of the most promising candidates for incremental advances in violent-risk assessments.

There has been recent empirical interest in examining patients' self-report in the assessment of violence-risk. Skeem, Manchak, Lidz and Mulvey (2013) compared the predictive validity of two clinician-rated risk assessment tools and a measure of patients' self-perception of risk. Eighty-six inpatients were rated on two routinely administered risk assessment tools by clinicians. During an interview, patients had indicated a global rating on a scale 0 to 5 in how concerned the therapist should be that they would be violent in the next two months. Patients were interviewed again after two months in the community to assess their involvement in violence. Patients' self-perception of risk compared better (AUC = .74) than the routine clinician-rated risk assessments (AUC = .59 - .66), in predicting violence. Although the outcome measure for violence was concerned with violence in the community, the findings from this study suggest that self-reporting can add value to improving risk assessment and management in inpatient settings. Also, given that the assessment of the engagement of violence following discharge was reliant on patients disclosing this information, this would be overcome by the observation and recording of such incidents whilst in hospital which may improve accuracy of self-reporting risk. Roaldset and Bjorkly (2010) conducted a similar predictive validity study exclusively on patients' risk estimates of violence, suicide and self-harm whilst in hospital and in the community. Patients were asked four questions in respect to the risk behaviour and responded on a (0 to 6) scale. Ward staff recorded any of these behaviours continuously during the hospital stay. The AUC values in patient' risk estimates ranged from .73 to .92 for the respective behaviours during hospitalisation. Even though patients in this study only rated the extent that they considered themselves to engage in such behaviour (rather than an identifiable antecedent to target in terms of treatment), the relatively high positive predictive values indicate that patients' self-report in risk assessment could be of clinical importance.

6.1.5. Present study aim

Given the support for patients self-reporting as part of risk assessments (Monahan & Skeem, 2014), this area is worth exploration since anger has also previously been found to predict inpatient aggression (Doyle & Dolan, 2006; McDermott et al., 2008; Vitacco et al., 2009). Anger is a dynamic risk factor that can be amenable to change and may be identified as an appropriate treatment intervention informed by

assessment. The aim of the present study is therefore to cross-examine scores for association between patients' self-reported anger and clinicians' ratings on the dynamic risk factor items on the SPJ tools. This would provide evidence on whether patient-informed assessment in aggression-risk of anger in this manner explains a similar or dissimilar prediction to that of clinicians' ratings. It would also provide support for the use of more systematic measurement of patient anger in SPJ violence-risk assessments.

Study hypotheses:

H1: There will be a positive relationship between patients' self-reported anger and clinicians' rating on items in the SPJ tools that incorporate anger: HCR-20 Lack of Insight, HCR-20 Impulsivity, HCR-20 Unresponsive to Treatment, START Emotional State (vulnerability) and START Attitudes (vulnerability).

H2: Patients' self-reported anger will have incremental predictive validity over the clinician-rated dynamic risk factor subscales in the prediction of inpatient aggression.

6.2. Method

6.2.1. Participants and setting

The sample was drawn from inpatients at St Andrew's Healthcare. Patients were sampled from the men's and women's adult mental disorder pathway wards across three of St Andrew's Healthcare sites: Northampton, Birmingham and Essex.

Seventy six patients (50% male) were recruited into this study on the basis of the inclusion criteria that they are over the age of 18 years and diagnosed with a mental disorder (ICD-10, WHO, 2011). Patients were not eligible if they had a neurocognitive or a neurodevelopmental disorder, lacked the capacity to consent, or were not fluent in English.

6.2.2. Design

A correlational and pseudo-prospective cohort design was used to explore the hypothesised relationship between patients' self-reported anger score and clinician-rated items in the SPJ tools. This design also lends for the study hypothesis that patients' self-reported anger would add incremental predictive validity over clinicians' rating on the dynamic risk scales in inpatient aggression in the three months following assessment.

6.2.3. Measures

Novaco Anger Scale (NAS; Novaco, 2003)

A full description of the NAS is presented in Chapter 4 (the reliability (Cronbach's Alpha) was .94 for the NAS for this sample). The NAS total score was used in the analyses as a measure of self-reported anger.

Historical, Clinical, Risk-Management – 20 Version 2 (HCR-20; Webster, Douglas, Eaves & Hart, 1997)

HCR-20 is a comprehensive set of professional guidelines for the assessment and management of risk factors for violent behaviour. The tool consists of 20 items which are organised as ten past ('Historical') factors, five present ('Clinical') variables, and five future ('Risk Management') issues. The coding is done on two levels; evaluators must first determine the presence versus absence for each of the 20 items (0 = *No - The item is absent or does not apply*, 1 = *Maybe – The item possibly is present, or is present to a limited extent,* 2 = *Yes – The item is definitely present*, Omit = *Don't know – There is insufficient valid information to permit a decision concerning the presence or absence of the item*); and then the item-level information is integrated to reach a summary risk for violence (*Low, Moderate or High*). Multiple sources of information are often used to complete the coding of the risk assessment. The authors suggest that a file review, interview and testing should suffice to complete the HCR-20. The HCR-20 in this study was completed as part of routine clinical practice. The HCR-20 was conducted by registered psychologists or assistant psychologists under their supervision and ratified by the clinical team. Although the HCR-20 is a SPJ tool, in research it is used in an actuarial manner; that is by summing individual item ratings to derive a total score that can range from 0 to 10 for each dynamic risk scale. The dynamic risk subscales (*HCR-20 Clinical total* and *HCR-20 Risk-management total*) were used for the purposes of this study and items in each subscale are presented in Table 6.1. The reliability (Cronbach's Alpha) was .67 for the Clinical and .46 for the Risk-management subscales for this sample. In the HCR-20 manual, item descriptions for *Lack of Insight (C1)*, *Impulsivity (C4*) and *Unresponsive to Treatment (C5)* reference is made to anger for the evaluator to consider. Thus, clinicians' ratings of C1, C4 and C5 were explored for any association with patients' self-reported anger.

Table 6.1. HCR-20 V2 dynamic risk subscales and items

Clinical-5	Risk-Management-5
C1. Lack of Insight	R1. Plans Lack Feasibility
C2. Negative Attitudes	R2. Exposure to Destabilizers
C3. Active Symptoms of Major Mental Illness	R3. Lack of Personal Support
C4. Impulsivity	R4: Noncompliance with Remediation Attempts
C5. Unresponsive to Treatment	R5: Stress

Short-term Assessment of Risk and Treatability (START; Webster, Martin, Brink, Nicholls & Demarais (2009)

The START is the assessment of multiple risk behaviours: violence, suicide, self-harm, victimization, substance use, unauthorised absences and self-neglect. For each of these risk behaviours, the evaluator is required to estimate the level of risk (Low, Moderate, High) following the rating and relevance of the 20 dynamic risk items in the scheme. The evaluator is required to rate for *strength* (0 to 2) and *vulnerability* (0 to 2) on each of the items (See Appendix E). A vulnerability rating in relation to the item is associated with increases in the likelihood of adverse outcomes, whereas, a strength rating is a positive attribute that serves as a resource to reduce, mitigate and manage the likelihood of adverse outcomes. The START was also completed as part of routine clinical practice by trained members of the clinical team. In the study setting, it is required that the completed START for each patient is signed off by three members of the clinical team from different professions (psychiatrist, psychologist, nurse, occupational therapist, social work). In the START manual, item descriptions for vulnerability on *Emotional State* and *Attitudes* reference is made to the construct of anger and clinicians' ratings of these items were thus used in this study to explore for any association with patients' self-reported anger. Clinicians' ratings on all the strength and vulnerability items were summed for a 'START *total strength*' and 'START *total vulnerability*' score and were also used for the purpose of this study. The reliability (Cronbach's Alpha) was .83 for the Strength and .92 for the Vulnerability scales for this sample.

Overt Aggression Scale (OAS; Yudofsky et al., 1986)

A full description of the OAS is presented in Chapter 4. The OAS was used to rate flagged incidents[3] which had occurred in the three months post-participation for each patient. To reduce the number of aggression types analysed, aggressive outcomes was amalgamated into two dichotomised (absent/present) categories: any aggression (‘*any aggression’*; including verbal aggression, physical aggression towards objects, self and people) and physical aggression towards people (‘*physical aggression’*).

Demographic and clinical measures

Information relating to patients’ gender, age, self-reported ethnicity, admission/discharge date (length of stay), ward security level and ICD-10 (WHO, 2011) diagnoses were extracted from clinical records. A registered psychologist from the clinical teams completed the CGI. A full description of the CGI is presented in Chapter 4.

6.2.4. Procedure

A more detailed outline of the procedure for the research project can be found in Chapter 4. However, a brief overview for the current study is provided here.

All eligible patients were given the study information brief detailing what their participation would entail. Interested patients provided their written informed consent. Subsequently, a one-to-one interview took place in a quiet room on the ward to complete the study questionnaire. The NAS was administered with instructions on how to complete. Patients were assisted by the researcher in reading the items if they had any difficulties. The most recent completed HCR-20 and START data dated prior to the assessment of self-reported anger for each patient were obtained from clinical records. Clinicians’ ratings of items were obtained and total scores for dynamic risk scales in the SPJ tools were calculated. Incident data for three months following the assessment of self-reported anger were collated and rated for aggression using the OAS.

[3] Case notes that were electronically flagged as: ‘Aggression – Physical’, ‘Aggression – Verbal’, ‘Fire setting’, ‘Hostage taking’, ‘Intimidation/Bullying’, ‘Self-Harm/Suicide’ and ‘Sexual Offending’ on RiO.

6.2.5. Data analysis

Means and standard deviations for scale variables and frequencies/percentages for categorical variables measured in the study were calculated. Independent *t*-tests were used to ascertain any differences in self-reported anger and dynamic risk subscale scores between aggressive and non-aggressive patients. The magnitude of difference in scores was denoted by the *t*-value converted into an *r*-value (Rosnow & Rosenthal, 2005) for an effect size, with the following thresholds: small (.20), medium (.30) and large (.50). Pearson's correlation was used to explore the relationship between patients' self-reported anger and clinicians' ratings on anger related items in the dynamic risk subscales. Receiver operating characteristic (ROC) analyses was used to calculate Area Under the Curve (AUC) for the predictive validity of variables on any aggression and physical aggression-only as the outcome. The AUC value ranges from 0 (perfect negative prediction) to 1 (perfect positive prediction), with .5 representing performance of the measure being equivalent to chance. Although there is some variation in the literature (Singh, Desmarais & Van Dorn, 2013) for thresholds in indicators of performance, Rice and Harris (2005) report that AUC values of .556, .638, and .714 respectively are equivalent to small (.2), moderate (.5) and large (.8) Cohen's *d* values (Cohen, 1992). To ascertain incremental predictive validity of self-reported anger, a hierarchal logistic regression test was used. Only the statistically significant dynamic risk subscale predictor(s), as determined by the ROC analyses, were entered first into the regression model, followed by self-reported anger in the second step of the model. The reverse entering of predictor variables in the steps of the model was also conducted. Incremental validity is thus indicated by significant changes in the chi-squared values in improvement between the two steps in the hierarchal logistic regression model (Field, 2009). Analyses were conducted using IBM Statistics version 22 for Windows (SPSS Inc., Version 22).

6.3. Results

The mean age of patients was 34 years (*SD* = 11.6). Most of the patients were of Caucasian descent (*n* = 52; 68.4%), while others were either of Black (*n* = 16; 21.1%) or Asian (*n* = 8; 10.5%) descent. Patients had a primary diagnosis of either a schizophrenia spectrum disorder (*n* = 32; 42.1%), personality disorder (*n* = 39; 51.3%) or bipolar and related disorder (n = 5; 6.6%). Patients were moderately ill (*M* = 3.8, *SD* = 1.5) in terms of severity of their presenting problems as indicated on the CGI. At the time of recruitment and administration of tests, 51 patients were residing on low secure (67%) and 25 patients were on medium secure (33%) mental disorder wards; mean length of hospitalisation at this point was 2.9 years (range: 37 - 8144 days). There were 238 recorded aggressive incidents. Thirty-four (65% males) of these 76 (45%) patients exhibited any form of aggressive behaviour in the three-month follow-up period, and 13 (17%) patients (62% males) were physically aggressive towards people in the same follow-up period. Further descriptive values for each variable grouped by aggressive and non-aggressive patients, and physically aggressive and non-physically aggressive patients are presented in Table 6.2 and 6.3.

Table 6.2. SPJ scale/item and patients' self-reported anger scores for aggressive and non-aggressive patients

Measures	Non-aggressive		Aggressive		*r*
	Mean	***SD***	**Mean**	***SD***	
NAS Total	86.78 [82.24, 91.43]	14.85	93.61 [88.44, 99.03]	16.47	0.22
HCR-20 Clinical total**	4.90 [4.21, 5.63]	2.23	6.67 [5.94, 7.32]	2.11	0.38
HCR-20 C1	1.31 [1.13, 1.54]	0.56	1.55 [1.43, 1.81]	0.61	0.20
HCR-20 C4	1.21 [1.04, 1.43]	0.75	1.44 [1.24, 1.73]	0.70	0.15
HCR-20 C5*	0.83 [0.63, 1.02]	0.65	1.17 [1.03, 1.42]	0.57	0.27
HCR-20 Risk-management total*	5.19 [4.63, 5.71]	1.90	6.41 [5.63, 7.32]	2.42	0.28
START Strength total	22.09 [19.42, 22.81]	4.93	21.02 [19.44, 22.81]	4.80	0.11
START Vulnerability total	22.83 [20.42, 25.31]	8.66	22.26 [20.11, 24.43]	6.61	0.04
START Emotional State vulnerability*	1.52 [1.32, 1.74]	0.55	1.26 [1.13, 1.41]	0.51	0.24
START Attitudes vulnerability	1.19 [1.04, 1.41]	0.74	1.38 [1.22, 1.63]	0.55	0.15

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on1000 samples

*p<.05 **p<.01

Table 6.2. shows that aggressive and non-aggressive patients differed in mean scores on both dynamic risk subscales of the HCR-20, as well as on the HCR-20 Unresponsive to Treatment (C5) item. There was a statistically significant difference in mean scores on the HCR-20 Clinical total, HCR-20 Risk management total and HCR-20 C5; aggressive patients scored higher than non-aggressive patients. Aggressive and non-aggressive patients significantly differed also in mean scores on the START Emotional State item; non-aggressive patients scored higher than aggressive patients. These differences in scores have a small to medium effect size. There were no

differences in scores on NAS Total, HCR-20 Lack of Insight (C1) item, HCR-20 Impulsivity (C4) item, START Strengths total, START-Vulnerabilities total and START Attitudes item between aggressive and non-aggressive patients.

Table 6.3. SPJ scale/item and patients' self-reported anger scores for physically aggressive and non-physically aggressive patients

Measures	Non-physically aggressive		Physical Aggressive		*r*
	Mean	***SD***	**Mean**	***SD***	
NAS Total*	87.52 [84.24, 91.14]	14.96	101.07 [92.74, 110.03]	15.84	0.32
HCR-20 Clinical total**	5.26 [4.74, 5.83]	2.28	7.76 [7.03, 8.52]	1.36	0.40
HCR-20 C1*	1.34 [1.23, 1.52]	0.59	1.76 [1.51, 2.02]	0.3	0.27
HCR-20 C4*	1.22 [1.04, 1.41]	0.75	1.76 [1.53, 2.03]	0.43	0.28
HCR-20 C5	0.93 [0.83, 1.12]	0.64	1.23 [0.91, 1.53]	0.59	0.17
HCR-20 Risk-management total	5.53 [5.03, 6.12]	2.19	6.69 [5.43, 7.94]	2.17	0.19
START Strength total*	22.17 [20.41, 24.32]	4.98	18.92 [17.12, 20.71]	3.22	0.25
START Vulnerability total	22.26 [20.41, 24.3]4	8.02	24.07 [20.63, 28.02]	6.43	0.09
START Emotional State vulnerability	1.41 [1.35, 1.62]	0.55	1.38 [1.13, 1.72]	0.50	0.02
START Attitudes vulnerability	1.25 [1.14, 1.42]	0.67	1.38 [1.03, 1.73]	0.65	0.07

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples

*p<.05 **p<.01

Table 6.3 shows that physically aggressive and non-physically aggressive patients differed in mean scores on NAS total, HCR-20 Clinical total, HCR-20 Lack of Insight (C1) item, HCR-20 Impulsivity (C4) item and START Strengths total. There was a statistically significant difference in mean scores: physically aggressive patients

scored higher than non-physically aggressive patients on the NAS Total, HCR-20 Clinical total, HCR-20 C1 item and HCR-20 C4 item, and physically aggressive patients scored lower than non-physically aggressive patients on START Strengths total. These differences in scores had a small to medium effect size. There were no differences in mean scores on HCR-20 C5 item, HCR-20 Risk management total, START-Vulnerabilities total and START Emotional State and Attitude items between physically aggressive and non-physically aggressive patients.

Correlations between patients' self-reported anger and clinicians' ratings on dynamic risk factor items and total subscale scores are presented in Table 6.4.

Table 6.4. Pearson's *r* correlation between patients' self-reported anger and SPJ dynamic subscales and items

***n* = 76**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**NAS Total**
1 HCR-20 Clinical total		.80** [.69, .87]	.58** [.41, .72]	.71** [.62, .81]	.45** [.25, .63]	-.53** [-.67, -.37]	.43** [.22, .61]	.22 [.00, .41]	.40** [.21, .57]	**.46** [.32, .60]**
2 HCR-20 C1			.39** [.16, .57]	.57** [.41, .69]	.43** [.21, .62]	-.37 [-.56, -.15]	.37** [.14, .55]	.24* [.04, .42]	.31** [.10, .49]	**37** [.18, .55]**
3 HCR-20 C4				.29* [.07, .50]	.30** [.10, .50]	-.60** [-.73, -.44]	.56** [.39, .70]	.57** [.43, .70]	.39** [.16, .62]	**.42** [.25, .58]**
4 HCR-20 C5					.35** [.16, .53]	-.34 [-.56, -.11]	.41** [.22, .58]	.17 [-.08, .37]	.35** [.15, .56]	**.35** [.15, .52]**
5 HCR-20 Risk management total						-.35** [-.53, -.18]	-.37** [.17, .55]	.23* [.03, .45]	34** [.16, 52]	**.23* [-.04, .48]**
6 START Strengths total							-.66** [-.77, -.53]	-.46** [-.61, -.29]	-.49** [-.67, -.28]	**-.35** [-.52, -.17]**
7 START Vulnerabilities Total								.72** [.61, .81]	.70** [.57, .80]	**.34** [.15, .53]**
8 START Emotional state									.49** [.32, .65]	**.29* [.07, .47]**
9 START Attitude										**.29* [.08, .48]**

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples

*p<.05 **p<.01

The correlations in Table 6.4. show that self-reported anger is related to clinicians' rated dynamic risk subscales/items in the expected directions. The strongest association was between self-reported anger and HCR-20 Clinical total, followed by self-reported anger and HCR-20 Impulsivity (C4). HCR-20 Lack of Insight (C1), HCR-20 Unresponsive to treatment (C5), START Emotional state and START Attitude items also positively correlated with self-reported anger. There was also a positive correlation between self-reported anger and HCR-20 Risk management total; however, the bootstrap corrected confidence intervals crosses from a negative to positive value range. Also, expectedly, there was a negative correlation between self-reported anger and START Strengths.

The AUC, sensitivity and specificity values for each predictor variable, grouped by any aggression and physical aggression-only, are presented in Table 6.5.

Table 6.5. Predictive validity of the scales for any inpatient aggression, and physical aggression only

	Any aggression					Physical Aggression only				
	AUC	***p***	**95% CI**	**Sensitivity**	**Specificity**	**AUC**	***p***	**95% CI**	**Sensitivity**	**Specificity**
NAS Total	.64*	.04	.51, .77	0.64	0.33	.75**	.01	.60, .89	0.85	0.40
HCR-20 Clinical	.72**	.01	.61, .84	0.74	0.33	.81**	.00	.71, .92	1.00	0.41
HCR-20 Risk Management	.63*	.05	.50, .76	0.62	0.43	.66	.07	.48, .84	0.69	0.48
START Strengths	.56	.34	.43, .69	0.41	0.50	.69**	.01	.54, .83	0.31	0.49
START Vulnerabilities	.46	.58	.33, .59	0.47	0.50	.56	.52	.40, .71	0.46	0.54

AUC, area under receiver operating characteristic curve; CI, confidence interval
n = 76
**p*<.05 ***p*<.01

The AUC values in Table 6.5. indicated that NAS total, HCR-20 Clinical total and HCR-20 Risk management total has significant medium to large predictive validity for any aggression. The remaining variables were not statistically significant. For physical aggression-only, the AUC values revealed that NAS total, HCR-20 Clinical total and START Strengths total were also medium to large and statistically significant, but not HCR-20 Risk management total and START Vulnerabilities total.

To determine incremental predictive validity of self-reported anger in any aggression, clinician-ratings on statistically significant dynamic risk subscales (HCR-20 Clinical total and HCR-20 Risk management total) as identified by AUC values were block entered into the first model of the hierarchical logistic regression, along with patients' self-reported anger in the second model.

Table 6.6. Logistic regression model predicting whether patients were aggressive

	b	95% CI for Odds Ratio		
		Lower	**Odds**	**Upper**
Model 1				
Constant	-2.89			
HCR-20 Clinical total	0.32** [0.14, 0.72]	1.07	1.38	1.77
HCR-20 Risk management total	0.13 [-0.11, 0.44]	0.89	1.15	1.47
Model 2				
Constant	-3.33			
HCR-20 Clinical total	0.30* [0.01, 0.74]	1.02	1.35	1.77
HCR-20 Risk management total	0.13 [-0.21, 0.44]	0.89	1.14	1.47
NAS Total	0.01 [-0.03, 0.05]	0.97	1.00	1.04

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples
Note. R^2= .16 (Cox & Snell) .21 (Nagelkerke). Model $\chi^2(1) = 12.88$ p<.01
Note. R^2= .16 (Cox & Snell) .21 (Nagelkerke). Model $\chi^2(2) = 13.00$ p<.01
Note. $\chi^2(2) - \chi^2(1) = 0.12$ *p*>.05
**p*<.05 ***p*<.01
n = 76

Table 6.6 shows the logistic regression that was performed to ascertain: Model 1 the effects of HCR-20 Clinical total, HCR-2 Risk management total on the likelihood that patients are aggressive or not; and Model 2 the effects of HCR-20 Clinical total, HCR-20 Risk management and self-reported anger. Model 1 was statistically significant χ^2 = 12.88, p<.01. The model explained 21% of the variance in any aggression and correctly classified 70% of cases. Sensitivity was 64.7%, specificity was 73.8%, positive predictive value was 66.7% and negative predictive value was 72.1%. Of the two predictor variables, only HCR-20 Clinical total was statistically significant. Increasing HCR-20 Clinical total scores is associated with aggression (OR 1.38). Model 2 was also

statistically significant $\chi 2$ = 13.00, p<.01. The difference (0.12) between Model 1 and Model 2 was not statistically significant thus indicating that there was no incremental validity of self-reported anger present. Linearity of the logit was also tested which revealed that interaction terms were not significant p>.05, and thus did not violate the assumption. Collinearity diagnostics confirm that there were no concerns with multicollinearity (Average VIF = 1.34, Average Tolerance = 0.75).

To determine incremental predictive validity of self-reported anger in physical aggression-only, clinician ratings on statistically significant dynamic risk subscales (HCR-20 Clinical total and START Strengths total) as identified by AUC values were block entered into the first model of the hierarchical logistic regression, along with patients' self-reported anger in the second model.

Table 6.7. Logistic regression model predicting whether patients were physically aggressive

	b	95% CI for Odds Ratio		
		Lower	Odds	Upper
Model 1				
Constant	-4.45			
HCR-20 Clinical total	0.59** [0.24, 1.24]	1.17	1.82	2.82
START Strengths total	-0.05 [-0.34, 0.15]	0.78	0.94	1.14
Model 2				
Constant	-6.88			
HCR-20 Clinical total	0.52**	1.07	1.69	2.67
START Strengths total	-0.05 [-0.32, 0.24]	0.78	0.95	1.16
NAS Total	0.03 [-0.03, 0.10]	0.98	1.02	1.07

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples
Note. R^2= .18 (Cox & Snell) .30 (Nagelkerke). Model $\chi^2(1) = 15.15$ p<.01
Note. R^2= .20 (Cox & Snell) .33 (Nagelkerke). Model $\chi^2(2) = 16.81$ p<.01
Note. $\chi^2(2) - \chi^2(1) = 1.66$ p>.05
*p<.05 **p<.01
n = 76

Table 6.7. shows the logistic regression that was performed to ascertain: Model 1 the effects of HCR-20 Clinical total and START Strengths total on the likelihood that patients are physically aggressive or not; and Model 2 the effects of HCR-20 Clinical total, START Strengths total and self-reported anger. Model 1 was statistically significant χ^2 = 15.15, p<.01. The model explained 30% of the variance in physical aggression and correctly classified 83% of cases. Sensitivity was 15.4%, specificity was 97%, positive predictive value was 50% and negative predictive value was 85%. Of the

two predictor variables, only the HCR-20 Clinical total was statistically significant. Increasing HCR-20 Clinical total scores is associated with physical aggression (OR 1.82). Model 2 was also statistically significant $_{\chi}2 = 16.81$, $p<.01$. The difference (1.66) between Model 1 and Model 2 was not statistically significant thus indicating that there was no incremental validity of self-reported anger present. Linearity of the logit was also tested which revealed that interaction terms were not significant $p>.05$, and thus did not violate the assumption. Collinearity diagnostics confirm that there were no concerns with multicollinearity (VIF = 1.43, Average Tolerance = 0.70).

6.4. Discussion

6.4.1. Summary of findings

The first hypothesis that self-reported anger would be related to clinicians' ratings on selected items in the dynamic risk subscales is supported by the current findings. The strongest association is between items in the clinical subscale of the HCR-20; Impulsivity (C4), followed by Lack of Insight (C1) and Unresponsive to Treatment (C5) items are positively related to self-reported anger. The START Emotional state and Attitude items are also positively related to self-reported anger. The second hypothesis that patients' self-reported anger would add incremental predictive validity, over clinicians' ratings on the dynamic risk subscales, for the prediction of inpatient aggression is not supported by the current data. Indeed, ROC analyses indicated that self-reported anger is predictive of both aggressive outcomes: any aggression and physical aggression-only. Although a different combination of clinician-rated dynamic risk subscales were found to be predictive of any aggression and physical aggression-only, HCR-20 Clinical total consistently predicted both aggressive outcomes. A hierarchal logistic regression model did not indicate incremental validity for self-reported anger, in either aggressive outcome, whilst HCR-20 Clinical total remained the significant predictor variable.

6.4.2. Findings in the context of previous research

The current study's findings are to some extent consistent with previous research carried out by Doyle and Dolan (2006). With a similar sample size, although with a smaller number of female patients included in their study, the base rate of aggressive patients was also similar over the same follow-up period to the current study. Aggressive outcome data were analysed in the same way; isolating physical aggression from an amalgamated form of any aggression in a variable analyses. Interestingly, both studies revealed the same AUC value of .64 for anger in the prediction of any aggression, and increased AUC value of anger in the prediction of physical aggression-only. This pattern of result could perhaps be explained by the suggestion that anger is neither necessary nor sufficient in aggression. But where reactive aggression is

progressively more severe, that is, actually becoming or being physically aggressive toward others, anger may indeed be a key variable.

These findings add to current understandings of self-reported patient anger over clinicians rating of dynamic risk factors items. McDermott et al., (2008) found that HCR-20 dynamic risk subscales had higher AUC values than the NAS in the prediction of reactive physical aggression, and depending to whom it was directed (i.e., patient or staff). The authors found AUC values ranging from .59 to .70 between the HCR-20 Clinical and HCR-20 Risk Management scales, and .59 to .65 for anger in the prediction of physical aggression and to whom it was directed. Whereas in the current study, the HCR-20 was rated by clinicians as opposed to researchers, the AUC values for the respective dynamic risk scales fared slightly better, ranging from .66 to .81, and .75 for anger in the prediction of physical aggression. However, incremental validity analysis revealed self-reported patient anger, over clinicians' rating on the dynamic subscales, is not statistically significant in the prediction of any aggression or physical aggression. Rather the clinician-rated HCR-20 Clinical subscale is the significant predictor. Interestingly, McDermott et al., (2008) found that the HCR-20 Clinical scale was a significant predictor when aggression was directed at other patients, but anger was a significant predictor when aggression was directed at staff. Although it was not the aim of the current study to investigate the prediction of victim of aggression, the pattern of this finding provides further support for the predictive utility of the Clinical scale in the HCR-20, whether rated by clinicians or researchers, in the prediction of aggression including physical aggression. The HCR-20 Clinical scale considers a range of current risk factors that contributes to patient's risk state for the likelihood of aggression, and anger may indeed be relevant but only in combination with other salient dynamic risk factors.

Notwithstanding, the relevance of anger is demonstrated by the correlations between self-reported anger and clinicians' ratings of the items in the dynamic risk subscales. Increase in anger scores was associated with higher ratings on the dynamic risk items included in the subscales. The concurring view between patients and clinicians as demonstrated by the association between scores does, however, suggest that anger must be considered in relevant interventions to address inpatient aggression risk. Further, the evidence that clinicians' ratings that have been found to correspond

with patients' self-reported anger should not give the impression of increased confidence in clinicians' skill in predicting risk with absolute certainty. As Demarais et al., (2010) found that increased confidence in clinicians was actually associated with lower predictive accuracy in risk outcomes, and the current finding demonstrates rather the congruent view for the need to consider treatment interventions to appropriately regulate anger in order to prevent or at least minimise aggressive incidents.

This study produced results which corroborate the ideas set out in Roaldset and Bjorkly (2010) and Skeem et al., (2013); it is encouraging that patients' self-reporting in the task of aggression-risk is a useful and important endeavour. These previous studies did indeed find that self-report of risk predicted aggression, but this self-reporting manner did not offer anything in terms of identifying what might be driving the behaviour in order to target an intervention to prevent future incidents. The current findings can therefore add to this understanding of using patients' perspective in risk assessments, and offer an explanation for the relevance of specific dynamic risk factors to facilitate targeted treatment interventions in order to reduce levels of risk.

6.4.3. Limitations

As with other studies that attempt to establish the predictive validity of risk assessments for inpatient aggression, it should be recognised that the clinical staff involved in the scoring of the SPJ tools in this study were also those operationalising a risk management plan (Doyle & Logan, 2013), which may have prevented incidents of inpatient aggression. Thus, this may have impacted on the accuracy of the measures included in this study. However, data relating to reported aggressive incidents were coded independently and blind to the predictive measures. It is also important to bear in mind that whilst it is advantageous to use clinicians' rating of the dynamic items in routine clinical practice to increase the ecological validity of findings, not all patients would have had this completed at the same time or proximally within the time of the self-reported anger assessment. In this study, the most recent SPJ assessment prior to the assessment of anger was retrieved, but it is possible that some patients were due another SPJ violence risk assessment as it is recommended to be completed every three months, or when there is a significant change in risk. A future experimental study could involve a pre-and post-test with an anger treatment intervention. This would allow

researchers and clinicians to establish whether there has been a reduction in scores in dynamic risk subscales on the SPJ tools and on an anger measure in the post assessment. But also, more importantly, whether there has been a reduction in inpatient aggression incidents following a targeted treatment intervention. As the current findings cannot be generalised to all diagnostic groups of patients and should therefore be interpreted with caution, future studies ought to be replicated in other service care pathways.

6.4.4. Implications

An implication of this study is that patients self-reporting in the assessment of violent-risk, particularly on dynamic risk factors, should be encouraged where possible. In this study, patients only gave information about anger as one risk factor which may or may not manifest in aggressive incidents. Other internal characteristics that may play a role in inpatient aggression, which have an identifiable treatment intervention, should also be sought from patients and included in the risk assessment and management plans. As advocated by Tait and Lester (2005), patient involvement in this manner could potentially even be therapeutic for the patient and in turn increase insight into the factors responsible for their aggressive behaviour. It could also help guide clinicians' decisions more effectively in the structured professional judgement scheme in terms of the risk-level posed and for the identification of targeted treatment, for which progress could be monitored more closely and collaboratively with patients.

6.4.5. Conclusion

This study set out to determine whether there is any value in patients' self-reported anger in addition to clinical routine assessment of inpatient aggression-risk using SPJ tools, such as the HCR-20 and START dynamic risk subscales. As dynamic risk factors are amenable to change through intervention, anger as one of many dynamic risk factors relevant to inpatient aggression should be addressed in terms of treatment. Although self-reported anger did not add incremental validity over clinician-rated risk factors in the prediction of inpatient aggression, in the interest of limited resources it may not be ideal to administer another assessment for this purpose. Items in the SPJ tools seem to adequately capture the role of anger in inpatient aggression.

The positive relationship between self-reported anger and clinician-rated items in the dynamic risk subscales suggests targeted treatment interventions for anger could potentially reduce level of risk. It would be good practice to consider patient involvement where possible in violence-risk assessments for better informed risk management plans. This may facilitate increased self-awareness and insight into their unique set of risk factors, and in turn, become more compliant to engage in relevant treatment interventions to address and reduce their level of risk.

7. CHAPTER SEVEN: STUDY THREE

7.1. NURSING STAFF ANGER AND CONTAINMENT OF PATIENT AGGRESSION

The literature review on staff anger in Chapter 3 demonstrated the relevance of nursing staff emotion, including anger, in the context of both patient aggression and in terms of using of coercive containment. However, there is a dearth of studies using a standardised measure of anger and associated incidents. The study in this chapter outlines the effects of workplace aggression and the containment of patient aggression for nursing staff. The findings of nursing staff anger using a standardised measure and in relation to exposure of patient aggression, attitude towards and actual involvement in coercive containment are presented and discussed.

7.1.1. Emotional labour

Hochschild (1983) defines emotional labour as the effort that is involved on part of the employees to regulate their emotional display to meet organisationally based expectations specific to their roles. Nurses identified emotional labour as a necessary feature to their roles to help patients feel safe and comfortable (Smith & Gray, 2000). The emotional dissonance in instances of genuinely experienced emotions, such as anger, which do not concur with the desired emotion or expectation leads to emotional labour. There is a clear link between emotional labour and work stress (Tully, 2004) and studies thus far indicate that the attitude of nursing staff towards, and the experiences of, patient aggression and its subsequent containment can be influenced by, and also result in, anger. This has important implications for the extent of emotional labour required, the wellbeing of nursing staff and the quality of care in mental health services. As Farrell, Touran and Salmon (2010) discussed, emotional processes in staff are important in three ways: they influence staff behaviour, which might trigger or maintain patient aggression; they sensitise staff to perceive behaviour as challenging; and then they influence their responses to such behaviour. This is supported by Chen, Huang, Hwang and Chen's (2010) findings that low psychological wellbeing in nursing staff, within seven days before an incident had occurred was a predictor of patient aggression. Further research in this area that explores nursing staff factors in relation to patient aggression and its management could help to inform support mechanisms in clinical practice and advance training programmes for staff working in mental health services. This is especially important given that Needham et al., (2005) found that a

training course on the management of patient aggression had no effect on nurses' perception and on the negative feelings that arise from such incidents.

7.1.2. Workplace aggression

It is not uncommon for nursing staff to experience workplace aggression (Farrell & Shafiei, 2012), which can range from (in)direct verbal to physical aggression by individuals, including: patients and their visitors, and also colleagues (Jackson, Clare & Mannix, 2002; McKenna, Smith, Poole & Coverdale, 2003). It was found that 55% of psychiatric nurses experienced physical aggression, and there was a higher rate of aggression in mental health care settings than any other health care setting (Spector, Zhou & Che, 2014). Nurses report that aggression experienced at work is an expected part of the job (Deans, 2004). Despite this, there is a clear need to understand the impact of aggression on nursing staff in the interest of workplace safety and in the delivery of therapeutic patient care.

Amongst the multidisciplinary team, nursing staff are unsurprisingly the most frequently assaulted group of professionals (Royal College of Psychiatrists, 2007), since they are providing frontline patient care. However, the extent to which nurses are victims of patient aggression remains unclear due to under-reported incidents for reasons which may include: fear of being perceived as incompetent and being blamed for the incident or not wanting to complete the necessary documentation (Lion, Snyder, & Merrill, 1981). Additionally, being an under-researched issue, available studies have rarely adopted observational methods but have instead used self-reported retrospective methods which are reliant on recall of incidents (Jackson et al., 2002), and thus can be subject to bias in estimating the true prevalence of nursing staff victimisation.

Assault by patients can result in both minor and severe injuries which could negatively affect the social, emotional and psychological wellbeing of staff (Carmel & Hunter, 1989; Carmel & Hunter, 1993; Fujishiro, Gee & de Castro, 2011). Carmel and Hunter (1993) studied patient assaults on staff over a five-year period. They found that 209 employees suffered a total of 236 injuries; over 70% of injuries were to the head. Harris and Rice (1986) found assaults which resulted in injuries to major joints, including knee injuries, there was an increase in lost work days than if injuries were sustained elsewhere on the body. Flannery et al., (2003) found that 9% of 193 assaults resulted in

an open wound injury over their one year study period. Less severe or mild-moderate injuries, which resulted in bruises, sprains or welts was found to have occurred in 20.3% of 197 incidents (Daffern, Mayer & Martin, 2003). These findings highlight the extent and severity of the broad range of physical injuries in the staff victims of patient aggression. The emotional and psychological effects of patient aggression on nursing staff are equally notable, as there is, for example, an increased risk of developing posttraumatic stress disorder (Richter & Berger, 2006). Deans (2004) found that nurses questioned their own professional competency and experienced emotional confusion after being assaulted. Nursing staff feeling angry, fearful, guilt and shame are the commonly reported emotional consequences of patient aggression (Needham et al., 2005). As reported in Chapter 3, a review of nursing staff anger studies has shown that there is some link with nursing staff experiencing anger and the use of coercive containment methods to manage patient aggression. Indeed, Bowers et al., (2011) argued that it is imperative nursing staff can regulate emotional states, otherwise their performance in effectively carrying out patient care and teamwork duties may be compromised.

7.1.3. Containment of patient aggression

The use of coercive containment methods to manage patient aggression in mental health care settings is controversial. Evidence about the effectiveness of such matters is lacking. The nature and frequency of the use of coercive containment methods is considered an important indicator of care quality (Sacks & Walton, 2014).

Physical restraint with or without seclusion procedures are used to manage behaviour that is otherwise likely to cause harm to self and/or others. Morrison et al., (2002) found that patients were secluded in 48% of physical restraint incidents. It is advocated in hospital policies that these procedures should only be used as a last resort following unsuccessful attempts at de-escalation (Royal College of Nursing, 2008). Larue et al., (2009) provided an overview of the factors that would be relevant in staff's decision to use coercive containment methods. These include factors specific to the patient, nursing staff, environment and the organisation, that play a role in shaping judgment regarding the use of containment methods. The factors specific to nursing staff include: educational level, experiences, stress level, training and attitude.

Decisions made by nursing staff may in turn affect the norms of the team (Paterson, McIntosh, Wilkinson, McComish & Smith, 2013); thus it is important to explore, for example, staff experiences and attitude in relation to coercive containment methods to reduce the use of such methods.

Bowers, Alexander, Simpson, Ryan and Carr-Walker (2007) found that nursing staff having a positive attitude toward patients was associated with the approval of less restrictive containment methods such as intermittent and continuous observations. At the same time, however, nursing staff also felt angry when they deemed patients' aggression as unacceptable. The authors speculate that this finding indicates that nursing staff's feeling of anger could be related to their preparedness to use containment measures. Indeed, this supposition has been to some extent supported by De Benedictis et al.'s (2011) study, which examined whether staff perceptions of factors related to the nursing team predicted the use of physical restraint and seclusion to contain patient aggression. Nursing staffs' perception that there is a higher level of anger among team members, the frequency of physical aggression against self among patients, and insufficient safety measures in the workplace, independently predicted greater use of physical restraint and seclusion. Also, Sequeira and Halstead (2004) noted the effects on nursing staff experience of conducting a physical restraint procedure. In qualitative accounts, anger emerged as a theme that was often experienced during the physical restraint process. Nursing staff made sense of this anger through the association of patients hurting them or colleagues, and because of the frustration with patients not responding to less restrictive containment methods. Additionally, patients in this study believed that physical restraint was used to punish them and related its use to nursing staff being angry.

7.1.4. Present study aim

With reports of nursing staff frequently being exposed to patient aggression, it is evident that the role of emotions including anger warrants further study. The aim of the present study is therefore to clarify our understanding of anger in nursing staff by using a standardised measure to ascertain its relationship with:(i) the prevalence of exposure of patient aggression, (ii) the attitude towards, and (iii) the actual involvement in, physical restraint and seclusion in mental health services.

Study hypotheses:

H1: Greater exposure to patient aggression is related to higher levels of nursing staff anger.

H2: Higher levels of nursing staff emotion (anger, fear, sadness, guilt and fatigue) are positively associated with: i) greater approval of physical restraint and seclusion and ii) actual involvement in the use of these coercive containment methods.

Method

7.1.5. Participants and setting

The sample was drawn from employees at St Andrew's Healthcare. Nursing staff were sampled from the men's and women's adult mental disorder pathway wards across three of St Andrew's Healthcare sites: Northampton, Birmingham and Essex.

Sixty-eight qualified nurses (71% female) were recruited into the study. Nursing staff were deployed on the medium and low secure wards at the time of recruitment and assessment.

7.1.6. Design

A correlational design was used to explore the hypothesised relationship between exposure to patient aggression and nursing staff anger. As well as the association between nursing staff anger and related emotions (i.e., fear, guilt, sadness and fatigue), and i) approval of physical restraint and seclusion, and ii) involvement in the use of physical restraint with/without seclusion over the six-month follow-up period (three-month pre-and post-participation).

7.1.7. Measures

Novaco Anger Scale – Provocation Inventory (NAS-PI; Novaco, 2003)

A full description of the NAS-PI is presented in Chapter 4 (the reliability (Cronbach's Alpha) was .91 for the NAS and .94 for the PI for this sample) . The NAS total score was to represent level of anger and PI was used to represent anger intensity. The PI is different from the NAS since it asks about anger in specific provocation situations, rather than focusing on an individual's personal disposition toward anger. It is suggested that this may help overcome resistance to self-disclosure involved in reporting anger (Novaco, 2003), which may be relevant for staff who are parting with information within their professional capacity.

Positive and Negative Affect Schedule – Expanded Form (PANAS-X; Watson & Clark, 1994)

A full description of the PANAS-X is presented in Chapter 4. The subscale scores for Fear, Sadness, Guilt and Fatigue were used for the study (the reliabilities (Cronbach's Alpha) for this sample were .90, .87, .90, and .86, respectively), since these have been the most commonly reported experiences of nurses in the literature.

Perception of Prevalence of Aggression Scale (POPAS; Oud, 2000)

The POPAS is a 16-item questionnaire which aims to gauge the prevalence of each of the following inpatient behaviours: Non-threatening verbal aggression, Threatening verbal aggression, Humiliating aggressive behaviour, Proactive aggressive behaviour, Passive-aggressive behaviour, Aggressive 'splitting' behaviour, Threatening physical aggression, Destructive aggressive behaviour, Mild physical violence, Severe physical violence, Mild violence against self, Severe violence against self, Suicide attempts, Successful suicide, Sexual intimidation/harassment, Sexual assault/rape. To aid clarity, each type of aggression included in the questionnaire is accompanied by a written example of the behaviour. Respondents are required to indicate the extent to which they have been exposed to each type of aggression during the course of their work in the past year. The responses are on a 5-point scale with options ranging from: 0 = *Never*, 1 = *Occasionally*, 2 = *Sometimes*, 3 = *Often*, and 4 = *Frequently*. An approximation of the number of times the specific behaviour has occurred in the past year is also required for each question. For this study, the responses on the rating scale were used for analyses to represent the prevalence of being exposed to such behaviours in the past year.

The Attitude to Containment Measures Questionnaire (ACMQ; IoP, King's College, London, UK, 2010)

The ACMQ consists of 11 containment methods: Consensual PRN medication, Compulsory intramuscular sedation, Physical restraint, Intermittent observation, Constant observation, Time-out, Transfer to a psychiatric intensive care unit (PICU), Locked-door seclusion, and Open-area seclusion, Mechanical restraint and use of a Net

bed. All of these methods are used in psychiatric settings in the UK apart from the latter two which are used elsewhere in Europe (Whittington et al, 2009). With each method, a short description and photograph is provided on the questionnaire. Respondents are asked to indicate their extent of approval in terms of overall acceptance of the containment method on a 5-point Likert scale ranging from 5 = *Strongly agree*, 4 = *Agree*, 3 = *Uncertain*, 2 = *Disagree*, 1 = *Strongly disagree*. For the purpose of this study, scores relating to the extent of approval for Physical restraint and Seclusion were used in the analyses.

Incidents of physical restraint and seclusion

A full description of how incidents of physical restraint and seclusion data were retrieved is presented in Chapter 4. Nursing staff participants were categorised as either having been or not been involved in i) physical restraint and ii) physical restraint followed by seclusion incidents over the six-month follow-up period.

7.2.3. Procedure

A more detailed outline of the procedure for the research project can be found in Chapter 4. However, a brief overview for the current study is provided here.

Nursing staff interested in the study were given the study information brief detailing what their participation would entail and provided written informed consent. Subsequently, a one-to-one interview took place in a quiet room on the ward for the completion of study questionnaires. The NAS, PANAS, POPAS and ACMQ were provided, along with instructions on how to complete them. Incident data about the involvement in physical restraint-only, and physical restraint followed by seclusion, were retrieved from Datix for a time period covering six months; three months pre-and-post the participation date for each nursing staff participant.

7.2.4. Data analysis

Means and standard deviations for scale variables and frequencies/percentages for categorical variables measured in the study were calculated. Spearman's correlation

was used to examine the relationship between the prevalent exposure to types of patient aggression and nursing staff anger, as well as nursing staff anger and related emotions with the approval of physical restraint and seclusion. Based on the correlation tests, a linear regression model that predicts nursing staff anger provocation was used to estimate how much of the variance was explained by the prevalent exposure of patient aggression. Independent *t*-tests were used to ascertain any differences in nursing staff anger and related emotions between the involvement and non-involvement in coercive containment methods. The magnitude of difference in scores is denoted by the *t*-value converted into an *r*-value (Rosnow & Rosenthal, 2005) for an effect size, with the following thresholds: small (.20), medium (.30) and large (.50). A model that predicts nursing staff involvement in coercive containment method incidents was tested with a logistic regression, with predictor variables informed by the independent *t*-tests. Analyses were conducted using IBM Statistics version 22 for Windows (SPSS Inc., Version 22).

7.3. Results

The mean age of nursing staff was 41.6 years (*SD* = 9.0). More than half of nursing staff were of Black descent (*n* = 40; 58.8%), 25 (36.8%) nurses were of Caucasian descent, two (2.9%) nurses identified as Other and one nurse (1.5%) was of Asian descent. Whilst nurses were all ward-based registered nurses, 13 (19.1%) nurses assumed a managerial nursing role. Forty-five nurses (66%) were deployed on low secure and 23 (34%) nurses were deployed on medium secure mental disorder wards; and 63 (92.6%) nurses were full-time employed. The (mode) length of service at the time of assessment was 10 years or more (*n* = 20, 29.4%), followed by five to 10 years (*n* = 15; 22.1%), two to five years (*n* = 15; 22.1%), one to two years (*n* = 10; 14.7%) and less than one year (*n* = 8; 11.8%). There were 157 coercive containment incidents. Thirty-one (45.6%) nurses were involved in physical restraint followed by seclusion; and 30 (44.1%) nurses were involved in physical restraint-only incidents in the six-month follow-up period (four missing cases, respectively, in each count). Further descriptive statistics for each emotion variable are presented in Table 7.1., and the reported prevalent exposure of each type of patient aggression as well as the approval of physical restraint and seclusion are presented in Table 7.2.

Table 7.1. Descriptive statistics for NAS-PI (*n*=68) and PANAS-X subscales (*n*=67)

Measures	Mean	*SD*
Novaco Anger Scale – Total score	71.13 [68.43, 73.82]	11.08
Provocation Inventory	59.32 [56.13, 62.54]	13.11
PANAS-Fear	9.14 [8.21, 10.10]	3.93
PANAS-Guilt	8.29 [7.43, 9.14]	3.48
PANAS-Sadness	7.97 [7.12, 8.95]	3.74
PANAS-Fatigue	8.28 [7.43, 9.11]	3.40

BCa 95% Confidence Intervals reported in parenthesis and are based on 1000 samples

Table 7.2. Descriptive statistics for approval of physical restraint and seclusion (ACMQ; *n*=68), and prevalent exposure of type of patient aggression (POPAS; *n*=66)

Measures	Mean	*SD*
ACMQ Physical Restraint	4.04 [3.94, 4.23]	0.78
ACMQ Seclusion	4.08 [3.92, 4.34]	0.84
Verbal aggression	4.09 [3.84, 4.31]	1.01
Threatening Verbal aggression	3.00 [2.70, 3.32]	1.31
Humiliating aggressive behaviour	3.18 [2.94, 3.51]	1.14
Provocative aggressive behaviour	2.80 [2.53, 3.12]	1.09
Passive aggressive behaviour	3.10 [2.83, 3.41]	1.25
Aggressive splitting behaviour	3.19 [2.93, 3.53]	1.26
Threatening physical aggression	2.75 [2.51, 3.13]	1.20
Destructive aggressive behaviour	2.50 [2.32, 2.81]	1.07
Mild physical violence	2.68 [2.42, 3.01]	1.26
Severe physical violence	1.43 [1.24, 1.71]	0.89
Mild violence against self	2.81 [2.52, 3.11]	1.22
Severe violence against self	2.18 [1.95, 2.51]	1.18
Suicide attempts	1.93 [1.7, 2.2]	1.14
Successful suicide	1.01 [1.04, 1.02]	0.12
Sexual intimidation	2.24 [2.01, 2.54]	1.17
Sexual assault	1.01 [1.00, 1.00]	0.12

BCa 95% Confidence Intervals reported in parenthesis and are based on 1000 samples

Correlations between the prevalent exposure of type of patient aggression and nursing staff anger provocation (NAS-PI) are presented in Table 7.3.

Table 7.3. Spearman's rho correlation between NAS-PI and POPAS (*n*=68)

Type of patient aggression	NAS-Total	Provocation Inventory
Verbal aggression	.04 [-.20, .28]	-.04 [-.28, .22]
Threatening verbal aggression	.20 [-.05, .46]	.21 [-.01, .43]
Humiliating aggressive behaviour	.29* [.06, .47]	.36** [.14, .55]
Provocative aggressive behaviour	.23 [.00, .43]	.21 [-.04, .47]
Passive aggressive behaviour	.20 [-.03, .45]	.18 [-.08, .46]
Aggressive splitting behaviour	.13 [-.12, .36]	.12 [-.15, .39]
Threatening physical aggression	.13 [-.13, .39]	.13 [-.11, .35]
Destructive aggressive behaviour	-.18 [-.38, .03]	.01 [-.21, .25]
Mild physical violence	.14 [-.12, .39]	.19 [-.06, .42]
Severe physical violence	-.10 [-.35, .18]	-.01 [-.23, .23]
Mild violence against self	-.10 [-.32, .14]	-.07 [-.28, .18]
Severe violence against self	-.14 [-.35, .06]	-.07 [-.28, .18]
Suicide attempts	-.14 [-.38, .11]	.01 [-.25, .24]
Successful suicide	-.04 [-.13, -.01]	.00 [-.06, .08]
Sexual intimidation	.10 [-.14, .32]	-.05 [-.32, .21]
Sexual assault	.09 [.06, .21]	-.10 [-.28, -.10]

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on up to 1000 samples

*p<.05 **p<.01

The correlations in Table 7.3 show that nursing staff anger and nursing staff anger provocation are both positively related to greater exposure of humiliating aggressive behaviour by the patient. These relationships are statistically significant. Bootstrap corrected bias confidence lower and upper bound intervals are within the positive value range. The reported extents of prevalent exposure of other types of patient aggression were not correlated with nursing staff anger and provocation scores.

To test whether nursing staff anger and anger provocation is predicted by patients' humiliating aggressive behaviour, linear regression was conducted with the respective outcome variable (See Tables 7.4. and 7.5.).

Table 7.4. Linear model of predictor of nursing staff anger

	b	*SE b*	β	*p*
Constant	64.08 [58.11, 69.94]	3.12		
Humiliating aggressive behaviour	2.23 [0.23, 4.32]	1.07	.23	.03

BCa Bootstrap 95% confidence intervals reported in parenthesis and standard error are based on 1000 samples

A linear regression established that prevalent exposure of humiliating aggressive behaviour by the patient could statistically significantly predict nursing staff anger, F (1, 66) = 3.9, p<.05 and extent of prevalent exposure of humiliating aggressive behaviour accounted for 6% of the explained variability in nursing staff anger.

Table 7.5. Linear model of predictor of nursing staff anger provocation

	b	*SE b*	β	*p*
Constant	45.98 [38.63, 52.52]	3.84		
Humiliating aggressive behaviour	4.23 [2.04, 6.81]	1.10	.38	.00

BCa Bootstrap 95% confidence intervals reported in parenthesis and standard error are based on 1000 samples

A linear regression established that prevalent exposure of humiliating aggressive behaviour by the patient could statistically significantly predict nursing staff anger provocation, F (1, 66) = 10.8, p<.01 and extent of prevalent exposure of humiliating aggressive behaviour accounted for 14% of the explained variability in nursing staff anger provocation.

Correlations between nursing staff anger and related emotions and the approval of physical restraint and seclusion are presented in Table 7.6.

Table 7.6. Spearman's *rho* correlation between NAS-PI (*n*=68), PANAS subscales (*n*=67), and ACMQ (*n*=68)

	ACMQ Physical Restraint	ACMQ Seclusion
NAS-Total	-.06 [-.23, .28]	-.04 [-.27, .21]
Provocation Inventory	.28* [.08, .46]	.18 [-.07, .42]
PANAS-Fear	.19 [-.05, .40]	-.12 [-.35, .14]
PANAS-Guilty	.02 [-.24, .24]	-.27* [-.49,-.02]
PANAS-Sadness	-.08 [-.18, .34]	-.18 [-.43, .09]
PANAS-Fatigue	-.05 [-.32, .21]	-.22 [-.42, .00]

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples

*p<.05

The correlations in Table 7.6. show that nursing staff anger provocation is positively correlated with approval of physical restraint. This relationship also has lower and upper bootstrap corrected bias confidence intervals in the positive value range.

Examination of the other emotions, and their relationship with the approval of containment methods revealed that guilt is negatively correlated with the approval of seclusion. This relationship also has lower and upper bootstrap corrected bias confidence intervals in the negative value range. Other emotions were not correlated with the approval of either containment methods.

Scale scores for nursing staff involvement and non-involvement in physical restraint-only incidents were ascertained prior to modelling the relevant predictor variables in a logistic regression analyses (See Tables 7.7. and 7.8.).

Table 7.7. Scale scores for nursing staff involvement and non-involvement in physical restraint-only incidents

Measures	No involvement in physical restraint-only		Involvement in physical restraint-only		*r*
	Mean	***SD***	**Mean**	***SD***	
NAS Total*	72.73 [68.6, 76.5]	12.29	67.53 [64.6, 70.5]	8.3	0.24
Provocation Inventory	58.88 [54.7, 63.7]	13.56	59.20 [54.7, 63.8]	13.4	0.00
PANAS-Fear	9.15 [8.11, 10.36]	3.44	9.30 [7.4, 10.9]	4.6	0.00
PANAS-Guilt	8.81 [7.62, 10.28]	4.12	7.53 [6.5, 7.8]	2.3	0.17
PANAS-Sadness	7.66 [6.71, 8.79]	3.22	8.00 [6.72, 9.24]	3.66	0.00
PANAS-Fatigue*	8.93 [8.42, 10.70]	3.52	7.60 [6.94, 9.32]	2.6	0.29

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples

*p<.05

Table 7.7. shows that involvement and non-involvement in physical restraint-only differed in mean scores on two scales: anger and fatigue. There was a statistically significant difference in mean scores on the NAS Total and PANAS-Fatigue, with involved staff scoring lower than non-involved staff in physical restraint-only. These differences in scores have a small reported effect size. There were no differences in scores on anger provocation, fear, guilt, or sadness between involved and non-involved staff.

Table 7.8. Logistic regression model predicting nursing staff involvement in physical restraint-only

	b	95% CI for Odds Ratio		
		Lower	Odds	Upper
Constant	3.49 [-.45, 9.87]			
NAS Total	-0.03 [-.09, .02]	0.92	0.97	1.02
PANAS-Fatigue	-0.17 [-.38, -.01]	0.70	0.85	1.03

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples
Note. R^2= .11 (Cox & Snell) .14 (Nagelkerke). Model $\chi^2(1) = 7.3$ $p<.05$

Table 7.8. shows the logistic regression model that was performed to ascertain the effects of anger and fatigue on the likelihood that nursing staff will be involved in physical restraint-only incidents. The logistic model was statistically significant χ^2 (2) = 7.31, $p<.05$. The model explained 15% of the variance in physical restraint-only incidents and correctly classified 65.1% of cases. Sensitivity was 70%, specificity was 60.6%, positive predictive value was 61.8% and negative predictive value was 69%. However, the two predictor variables were not statistically significant. Linearity of the logit was also tested which revealed that interaction terms were not significant $p>.05$, and thus did not violate the assumption. Collinearity diagnostics confirm that there were no concerns with multicollinearity (Average VIF = 1.23, Average Tolerance = 0.82).

Scale scores for nursing staff involvement and non-involvement in physical restraint followed by seclusion incidents were ascertained prior to modelling the relevant predictor variables in a logistic regression analyses (See Tables 7.9. and 7.10).

Table 7.9. Scale scores for nursing staff involvement and non-involvement in physical restraint followed by seclusion incidents

Measures	No involvement in physical restraint and seclusion		Involvement in physical restraint and seclusion		*r*
	Mean	***SD***	**Mean**	***SD***	
NAS Total	70.24 [66.53, 74.02]	11.26	70.35 [66.42, 74.33]	10.57	0.16
Provocation Inventory	59.03 [54.11, 64.32]	14.44	59.03 [54.81, 63.24]	12.40	0.13
PANAS-Fear	10.15 [8.92, 11.51]	3.79	8.25 [7.03, 9.82]	4.04	0.24
PANAS-Guilt*	9.09 [7.93, 10.62]	3.95	7.29 [6.53, 8.32]	2.58	0.26
PANAS-Sadness	8.25 [7.04, 9.52]	3.57	7.25 [6.21, 8.54]	3.19	0.15
PANAS-Fatigue*	8.84 [7.73, 10.21]	3.55	7.16 [6.24, 8.23]	2.75	0.25

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples

*p<.05

Table 7.9. shows that nursing staff involvement and non-involvement in physical restraint followed by seclusion differed in mean scores on two scales: guilt and fatigue. There was a statistically significant difference in mean scores on the PANAS-Guilt and PANAS-Fatigue, with involved staff scoring lower than non-involved staff in physical restraint followed by seclusion. These differences in scores have a small reported effect size. There were no differences in scores on anger provocation, fear, or sadness between involved and non-involved staff.

Table 7.10. Logistic regression model predicting nursing staff involvement in physical restraint followed by seclusion

	b	95% CI for Odds Ratio		
		Lower	Odds	Upper
Constant	2.02 [-0.53, 5.72]			
PANAS-Guilt	-0.15 [-0.81, 0.12]	0.69	0.86	1.10
PANAS-Fatigue	-0.10 [-0.34, 0.15]	0.75	0.90	1.10

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples
Note. R^2= .10 (Cox & Snell) .13 (Nagelkerke). Model $\chi^2(1) = 6.42$ $p<.05$

Table 7.10. shows the logistic regression that was performed to ascertain the effects of guilt and fatigue on the likelihood that nursing staff will be involved in physical restraint followed by seclusion incidents. The logistic model was statistically significant χ^2 (2) = 6.42, $p<.05$. The model explained 13% of the variance in physical restraint followed by seclusion incidents and correctly classified 63.5% of cases. Sensitivity was 71%, specificity was 56.3%, positive predictive value was 61.1% and negative predictive value was 33.3%. However, the two predictor variables were not statistically significant. Linearity of the logit was also tested which revealed that interaction terms were not significant $p>.05$, and thus did not violate the assumption. Collinearity diagnostics confirm that there were no concerns with multicollinearity (Average VIF = 1.31, Average Tolerance = 0.76).

7.4. Discussion

7.4.1. Summary of findings

The hypothesis that greater prevalent exposure of patient aggression is related to higher levels of nursing staff anger is supported by the study findings for a specific type of aggression exhibited. The specific type of aggression, as defined in the POPAS (Oud, 200), comprises the expression of clear personal insults, abusive cursing, name calling, making discriminatory remarks and gestures towards staff that are perceived as making an impression that impacts on pride and self-esteem which results in feelings of humiliation in the victim. Experience of humiliating aggression exhibited by the patient is associated with nursing staff anger and anger provocation. Interestingly, the other 15 types of patient aggression known to be exhibited in inpatients settings were not related to measures of nursing staff anger.

The hypothesis that a higher level of nursing staff emotion, including anger, is related to the approval of physical restraint and seclusion, and in the involvement of these containment methods, is partially supported. Firstly, regarding to the approval of physical restraint, there was a positive correlation with nursing staff anger provocation. There was no relationship between the approval of seclusion and nursing staff anger. Amongst related emotions, guilt was negatively correlated with the approval of seclusion; thus, the more guilt experienced by nursing staff, the less they approve of secluding patients. Other emotions did not correlate with either the approval of physical restraint or approval of seclusion.

Secondly, regarding to the actual involvement in physical restraint-only incidents, there was a significant difference in reported levels of anger and fatigue. Contrary to the hypothesis, lower levels of anger and fatigue were found in nurses who were involved in physical restraint-only incidents compared to nurses that were not involved. Similarly, there was a significant difference in reported levels of guilt and fatigue between the actual involvement and non-involvement in physical restraint followed by seclusion incidents; lower levels of guilt and fatigue were found in nurses who were involved compared to nurses who were not involved. Neither of these identified differences in emotion, however, predicted involvement in the respective containment method.

7.4.2. Findings in the context of previous research

The association between patient aggression and nursing staff anger found in the current study is supported by the emotional confusion theme that emerged from Deans' (2004) qualitative exploration of nurses' lived experience of aggression in the workplace. Anger, as one of the emotions captured within the theme, was often intensified by non-supportive colleagues during and/or following the aggressive incident. The experience of anger in nurses is believed to be perpetuated by the inequities of the system in which an organisation operates. Given that only 13% of the variance in nursing staff anger provocation was explained by patient humiliating aggressive behaviour, it is possible that environmental factors (McKenna et al., 2003) could contribute. The current study finding, however, extends Needham et al.'s (2005) conclusions concerning the effects of patient aggression on nursing staff, where anger is one of the frequently reported effects. Although the focus of the review concerns the effects of patient aggression, the review has not specified which particular type of patient aggression should cause the reported effects. The finding reported in the current study has indicated that humiliating aggression is one particular type of aggression exhibited by the patient that predicts anger in nursing staff.

It is interesting to note, however, that other types of patient aggression - such as threatening verbal and/or physical aggression - are not associated with nursing staff anger. One explanation for this non-association could be found in Farrell et al., (2010). The authors suggest that emotional processes in staff are important because they may sensitise staff to perceiving patient behaviour as challenging. It is therefore possible that nursing staff could have become immune to particular types of patient aggression, which consequently may impact on their subjective reporting of the prevalence of the type of behaviour to which they have been exposed.

As highlighted by Larue et al., (2011), several factors could shape nursing staff's decision to use coercive methods to contain patient aggression, including nursing staff attitude and experiences. The current study explored nursing staff's attitude toward physical restraint and seclusion, and has also obtained data about staff involvement (i.e., experience) in using physical restraint with or without seclusion, in relation to levels of emotion. The present study finding that nursing staff anger provocation is positively

correlated with the approval of physical restraint mirrors previous research. Bowers et al., (2007) found that in instances where staff believed patient aggression to be intolerable they also had feelings of anger present. However, anger was not directly measured in this study, but rather is embedded within the construct of 'feelings of acceptance' that included the absence of anger, irritation and alienation from patients.

The current study uses a standardised measure of anger, and therefore supports Bowers et al.'s (2007) conclusion that there is an association between nursing staff anger and the use of patient aggression containment methods. It was speculated, though, that this association could perhaps imply nursing staff's preparedness to use containment methods, such as physical restraint. Paradoxically, however, in the current study, nursing staff who were involved in physical restraint incidents reported lower levels of anger than nursing staff who were not involved in physical restraint incidents over the study period. A possible explanation for this might be that although nursing staff with higher levels of anger have a favourable attitude toward the use of physical restraint, they may have consciously avoided becoming involved in incidents because they were sufficiently self-aware that involvement in the procedure could trigger or evoke the aversive emotion. The inducement of the aversive emotion has been evidenced in Sequiera and Halstead's (2004) study, which found that nurses became angry during the physical restraint process. Or indeed, another explanation is that nursing staff with greater use of emotional labour, performed through 'surface acting' that involves managing the expression of behaviour rather than feelings, were involved in physical restraint incidents; since they would be strategically designated for the procedure in steps of the de-escalation process, by which physical restraint was subsequently used as a last resort.

For incidents when physical restraint is followed by seclusion, a different pattern of findings emerged in the current study. Amongst the emotions measured in nursing staff, feelings of guilt were negatively related to the approval of seclusion. Nursing staff involved in physical restraint followed by seclusion incidents reported lower levels of guilt and fatigue, than staff who were not involved. There was no association between anger and involvement in physical restraint followed by seclusion incidents. These findings therefore do not support De Benedictis et al.'s (2011) study, which found that staff perception of a higher level of expression of anger among team members

predicted greater use of physical restraint and seclusion of patients. This discrepancy could be attributed to the difference in measurement between the perception of other colleagues' anger and the self-reporting of the nurse's own anger. What is being suggested with the present study findings, however, is that other self-reported emotions such as guilt and fatigue could also play a role in the attitudes of, and involvement in, physical restraint followed by seclusion incidents. That nursing staff experience guilt could be due to the potential injuries on the patient and/or staff members which may occur as a result of the procedure, or because of the long period observing secluded patients who are further deprived of their liberties. Nursing staff are often required to work 12-hour shifts; thus, feelings of fatigue are unsurprising in this challenging work environment.

7.4.3. Limitations

Although the data have revealed an association between nursing staff anger and greater prevalent exposure of patient aggression, the multiple-testing could have increased the risk of type one errors. Notwithstanding, the reported associations demonstrate the relevance of the measured variables in nursing practice in mental health care settings. It is, of course, important to bear in mind the possible bias in nursing staff responses and recording of the measures. The extent to which nursing staff experience the emotions may have been reported in a way where a distinction had inadvertently been made between personal and work life, as opposed to an overall general trait tendency. The presence of emotions is perhaps better regulated and masked with levels of professionalism in the workplace which could be considered as emotional labour (Hochschild, 1983). Also, the measurement of involvement in containment methods may have been confounded to some extent; nursing staff who avoided involvement probably have elected to work on wards with less patient aggression. Inevitably, however, there would be a limit to how much this can be avoided since it is a professional duty to manage incidents as and when they occur. Further, the way in which the data was captured for the involvement in physical restraint with or without seclusion incidents could be improved. Nurses' names who were recruited into the study were manually searched within electronic clinical records, thus any omissions or misspelling of names on the forms during the recording of incidents will not have

been included. However, the six-month time frame of retrieving incidents would have overcome this issue, and also any of the on- or off-duty staffing rota concerns.

Further research should be conducted to investigate levels of anger, and related emotions, in nursing staff who have suffered injuries as a result of patient aggression which has led to time off work for sickness recovery. Levels of absenteeism amongst regular staff, and therefore the increased need for bank staff, in services due to patient aggression could also impact on care quality. Quantitative and qualitative studies exploring emotions in nursing staff can be conducted more closely to the time of an incident, whether staff members are a victim to patient aggression, or involved in frequent physical restraint with or without seclusion. This would provide a clearer picture of the association between the variables presented in this study. In addition to measuring nursing staff emotion, aspects of the infrastructure and/or operations of the system (i.e., levels of support) used within the hospital should also be included to better understand what influence this may have on containment practices of patient aggression and its effects on staff.

7.4.4. Implications

The relevance of nursing staff emotion, including anger, in relation to patient aggression and the containment of patient aggression raises concerns for the current provision to support nursing staff. The associated variables presented in this study do not imply cause and effect relationships, thus it is unknown whether anger and related emotions determine the use of more coercive containment methods to manage patient aggression, or whether it is these methods that give rise to the emotions in nurses. The association, however, is worthy of closer exploration in efforts to improve wellbeing in nurses and in the quality of care delivery for patients. Support mechanisms such as regular clinical supervision, involving reflective practice to openly discuss thoughts and emotions without the risk of competency (Deans, 2004) being questioned is imperative. This would help to alleviate any confusion around nursing staff's experience of emotions and emotional labour, their sense of empowerment as individuals and as a staff team. Education and training programmes could perhaps encourage and promote notions of becoming reflective practitioners by acknowledging the emotions that can persist in nursing staff working in mental health care settings. These efforts would lead in the

right direction to influence attitudes and the experiences concerning coercive containment methods to manage patient aggression.

7.4.5. Conclusion

This study has found support for a positive relationship between nursing staff anger and the prevalent exposure to patient aggression. As well as research and clinical efforts focusing on reducing the risk of inpatient aggression, it should also consider the role of nurses within that and its impact on them as individuals, as a team and the ward atmosphere. The study has revealed associations between nursing staff emotion and attitude towards, and involvement in, physical restraint with and without seclusion incidents. Recognising how emotions in staff, including anger, may drive or arise in the containment of patient aggression is crucial to understanding the wellbeing in staff and quality of patient care delivery. Initiatives involving reduction in coercive containment methods, such as physical restraint and seclusion, must consider the provision of appropriate support mechanisms for nursing staff.

8. CHAPTER EIGHT: STUDY FOUR

8.1. THE ROLE OF INTERPERSONAL STYLE IN PATIENT AGGRESSION AND ITS CONTAINMENT: A STUDY OF PATIENTS AND NURSING STAFF

The study in this chapter considers how anger is manifested in interpersonal styles of nursing staff and patients. Interaction between nursing staff and patients as a risk factor of inpatient aggression and its containment is outlined. The findings of reciprocally-rated interpersonal styles and self-reported anger in relation to inpatient aggression and its containment are presented and discussed.

8.1.1. Interaction between nursing staff and patient as a factor in inpatient aggression

Patient's mental illness has been perceived by nursing staff to be the cause of inpatient aggression (Duxbury & Whittington, 2005). The identification of aggressive patients has focused on their clinical presentation and demographic characteristics. Other variables that may contribute to the probability of an aggressive incident occurring include staff, environment and organisational factors (Nijman, 2002). To reduce the risk and subsequent effects of inpatient aggression, a comprehensive understanding of these risk factors is required.

The causes of inpatient aggression have been grouped according to internal, external and situational/interactional aspects (Nijman, 2002). The internal aspect comprises patient-related variables such as age, gender and psychopathology. External aspects include privacy, space, location, unit design and organisational routines. The situational/interactional aspect captures the relationship between staff and patients. Apart from medication, most of the therapeutic care for patients in mental health services is based upon relationships (Stockman, 2005). Whilst empirical research has focused on these aspects to understand the cause of inpatient aggression, it is the interaction between nurses and patients which is currently by comparison a neglected area of research (Daffern, Day & Cookson, 2012).

Exploring the role of interaction between nursing staff and patients is supported on the basis of the antecedents to aggressive incidents. Papadopoulos et al., (2012)

conducted a review of 71 studies of antecedents to inpatient aggression. Themes that were identified include: patient-patient interaction, staff-patient interaction, patient conflict behaviours, external/personal issues, structural issues, patient behavioural cues, emotional/mood cues and patient symptoms. The meta-analyses revealed that staff-patient interaction was the most frequent type of antecedent; that is, 39% of all aggressive incidents involved a staff-patient interaction as an immediate precursor. In context, this is perhaps unsurprising given that patients are often involuntarily admitted into secure mental health services and nursing staff are bound by their duty to enforce limits. Relational security is one of three aspects of detention (Collins & Davies, 2005). Relational security is reliant on the relationship between staff and patients, which can also enable open communication to discuss any foreseen risks to prevent or manage incidents appropriately (DH, 2010). However, the dual role of staff to deliver therapeutic care and the duty to work in line with security protocols is often experienced as a central dilemma in practice (Mason, 2002). Such dilemmas can sometimes inadvertently cause conflict in the nurse-patient relationship. Requests by patients often include wanting to either be discharged or leave the ward, wanting to smoke a cigarette and other privileges which are otherwise prohibited under the specific circumstances of detention. Within the staff-patient interaction, it was found that staff had to limit patients' freedom either by denying requests or placing restrictions upon them (Papadopoulos et al., 2012), and in such instances an aggressive incident often ensued.

8.1.2. Interpersonal theory

Sullivan (1953) proposed Interpersonal Theory to explain how personality is shaped through the role of relationships and social experiences. It was further developed by Leary (1957) who defined a range of interpersonal styles as essentially two orthogonal dimensions of power (dominance vs. submission) and affiliation (hostility vs. friendliness). Beliefs about the self and others are organised by the motives of power and affiliation which lead to differences in interpersonal styles. The two dimensions form a circumplex (circular structure) which is termed the interpersonal circle (Kiesler, 1983) and degrees of intensity of each interpersonal styles, between and within individuals, can therefore be identified.

Kiesler's (1983) interpersonal circle model posits that individuals are predisposed to establish a relationship which reinforces their self-conceptualisation during interactions. This is achieved by eliciting a response from others that will complement one's own interpersonal style. An individual's interpersonal style can be characterised on the two main dimensions: *affiliation* and *control*. The affiliation dimension reflects behaviours ranging from friendly to hostile characteristics. The control dimension reflects behaviours ranging from submissive to dominant characteristics. The elicited responses from others' interpersonal style during interactions can then be categorised as either: *complementary* whereby both persons' behaviours are corresponding on both dimensions (e.g., affiliation: friendly evokes friendly; control: dominant evokes submission); *acomplementary* whereby both persons' behaviour are corresponding on one dimension but not the other; or *anticomplementary* whereby both persons' behaviours correspond on neither dimensions. Acomplementary and anticomplementary interactions are hypothesised to generate conflict in the relationship. Daffern et al., (2010) suggests that an acomplementary (e.g., assertive) rather than complementary (e.g., submissive) reaction typically occurs when staff members are confronted in an aggressive manner by patients who are attempting to secure a dominant position. The use of Kiesler's (1983) interpersonal circle model would allow to explore the type of relationships between staff and patients in terms of the complementarity principle. This would further our understanding about the manner of interactions that are, or are not, associated with incidents of aggression and coercive containment methods.

8.1.3. Conflict in interaction as a result of deviation from role expectations

Whittington and Richter (2005) suggest that inpatient aggression shares many of the features of aggression occurring in other contexts, particularly when the antecedent involves interpersonal exchange. The authors articulate the concepts of 'double contingency' and 'aversive stimulation' to offer a better understanding of the interaction dynamics which might promote aggressive behaviour. Double contingency stresses that each person can never be sure about the other person's reaction; the only orientation each person has is the other person's supposed direction. Thus, each person has their internal expectation of how the other person should behave. From here, a circular process of each other's expectations begins; that is, both persons react not only to their own expectations, but also to their expectations of the other person's expectations. A

typical abstract example of double contingency in inpatient settings is: nursing staff expect patients to wait patiently for their care; patients expect nursing staff to fulfil the caring tasks. It is, of course, in reality not that simplistic since patients and nursing staff generally do not behave entirely according to expectation and in a reciprocal manner. Because patients are detained and treated involuntarily, they may behave in a challenging manner; nurses, as previously mentioned, play not only a caring role but also must maintain levels of security, which can vary from time to time as dictated by reviewed care plans for each patient. Any deviation from role expectation, it is suggested, gives rise to distrust of one another (Whittington & Richter, 2005). Trust or distrust, in a sociological sense rather than psychological sense, only applies to the other person's behaviour when role expectations in double contingency are not met by at least one person in the interaction exchange.

Following from double contingency and the rise of distrust is a resulting conflict of aversive stimulation, which is defined as: 'any event that increases emotional and/or physiological arousal that is experienced as unpleasant by the person' (Whittington & Richter, 2005). Aversive stimulation is relevant for both patient and nursing staff as there may be many potential sources in the inpatient context. It is argued that human sources of aversive stimulation are important because the aggression will often be targeted at the source. Patients have frequent close contact with nursing staff during the course of hospitalisation. The way in which nurses' actions may potentially aversively stimulate the patient is three-fold: done deliberately (i.e., punitive); done deliberately but as part of caring (i.e., therapeutic, e.g., preventing self-harm); or done accidentally without any intent or awareness of impact (Whittington & Richter, 2005). As well as some of the actions by nurses that may be experienced as a form of aversive stimulation for the patient, similarly, patient behaviour such as aggression, including self-harming behaviours (Whittington, Lancaster, Meehan, Lane & Riley, 2006) may be a form of aversive stimulation for nursing staff. In such instances, nursing staff may be more prepared to use coercive containment methods (Bowers et al., 2007) as guided by their emotional reactions and decision making processes.

8.1.3.1. Patient's interpersonal style as a source of conflict

Interpersonal style, the characteristic way that people relate to, and view themselves in social situations (Daffern et al., 2012) has been the subject of a growing body of research. The interest in interpersonal style is particularly important as it is suggested that how patients react to, for example, denial of requests and/or demands placed on them, is critical to the understanding of the interaction. Indeed, research has supported the view that aggressive patients can be differentiated from nonaggressive patients by their interpersonal style. Doyle and Dolan (2006) found that a measure of interpersonal style was associated with increased risk of violent behaviour by patients in a forensic mental health hospital, even whilst controlling for age, gender, length of stay and presence of major mental disorder. In another study which used the same interpersonal measure (CIRCLE; Blackburn & Glasgow, 2006), Daffern et al., (2010) report that a coercive interpersonal style, characterised by extremity in both hostility and dominance, was associated with more frequent aggressive and self-harming behaviour. But, hostility and dominance was not independently related to aggression. It is, therefore, suggested that aggressive patients would have elevated levels in both dominance and hostility which is projected through their interpersonal style. This finding however cannot be asserted as conclusive, since Cookson, Daffern and Foley (2012) found that only the dominance scale of interpersonal style predicted aggression against staff. While different methods across studies have been adopted, including different measures of interpersonal style, the conclusions drawn must be considered tentative. However, the evidence thus far indicates that the study of patient's interpersonal style is highly applicable to the understanding of inpatient aggression. Further, Doyle and Dolan (2006) found that a measure of self-reported anger correlated with an interpersonal style measure rated by a person whom has had interaction with the patient. Thus, particular interpersonal styles of persons can be validated by a measure of self-report.

There is empirical evidence to suggest that interpersonal style is independent of psychiatric symptomatology (Podubinksi, Daffern & Lee, 2012). The researchers evaluated the relationship between a hostile-dominant interpersonal style and paranoia over a one-year period during hospitalisation. It was found that hostile-dominance was relatively stable over time even though symptoms of paranoia subsided. This finding reinforces the need to consider interpersonal style in the assessment of risk of inpatient

aggression, but also highlights the need to develop more targeted interventions to manage such styles to prevent aggressive incidents. Promisingly, Daffern et al., (2013) showed that with the relevant treatment programme, and providing that treatment is completed, there is potential for the level of hostile-dominance to be reduced. They also found that a reduced hostile-dominant interpersonal style was associated with a reduced likelihood of criminal recidivism in the community upon hospital discharge.

8.1.4. Managing patients' interpersonal style and its impact on therapeutic alliance

At present, there are no universally agreed interventions to therapeutically manage inpatient aggression, since there is a lack of theory to guide their design and implementation (Finfgeld-Connett, 2009). Although de-escalation skills form part of a range of interventions used in violence reduction and containment initiatives (NICE, 2015), the nature of these skills, their theoretical and empirical basis, and their effectiveness is unclear (Daffern, Day & Cookson, 2012). Daffern et al., (2012) argue for the application of interpersonal theory which could inform the limit-setting and de-escalation literature, and practice guidelines, in inpatient mental health settings. Much of this work implies staff's interpersonal style plays an important role. Yet it has received little research attention. One study is noted (Daffern, Duggan, Hubband & Thomas, 2010) whereby patients rated the interpersonal style of nurses, and the same sampled nurses rated patients' interpersonal style. However, the outcome variable was in relation to variances in the severity of patient's personality disorder rather than in the context of aversive stimulation i.e., conflict events/behaviours on the ward.

Patients' interpersonal style has bearing on their therapeutic alliance with staff. Relationships between staff and patients should be based on empathy, respect, trust and responsibility (Morse, 1991; Johansson, Oleni & Fridlund, 2002). Therapeutic alliance is a product of the extent to which there are shared goals, tasks, and bonds between staff and patients (Ackerman & Hilsenroth, 2003). Intuitively, such alliances would be an important aspect of caregiving and, ultimately, conducive for outcomes in mental health care. In Cookson et al.'s (2012) study, it was found that a hostile-dominant interpersonal style predicted poor therapeutic alliance. Therapeutic alliance was assessed via a self-report measure by patient participants. Patients' interpersonal

style was rated by the researcher following the interview. Thus, the study is limited in not offering a more informed view of patients' interpersonal style, where this is rated by nurses who would theoretically encounter more ward-based interactions with the patient. The study also lacks a more detailed analysis of therapeutic alliance between nurses and patients which, logically, requires reported views from both sides within the alliance.

Within the nursing role, in the event of an incident, coercive actions such as physical restraint and seclusion of patients may be considered appropriate in the interest of patient's safety and safety of others. Although this would be an attempt to contain an incident in the immediate term, these coercive actions may precipitate and/or exacerbate further patient aggression (Garrison et al., 1990), and also impact on the therapeutic alliance. It may therefore be reasonable to expect that patients perceive nurses' interpersonal style as dominant and thus coercive. This may be because of the patient's own need for control and dominance in an involuntary placement. However, nurses' interpersonal style remains to be empirically researched. Anestis et al., (2013) examined the association between patients' interpersonal style and their experiences perceived as coercion during hospitalisation at two time intervals over the one year period. At recruitment there was a small positive correlation between hostile-dominant interpersonal style and perceived coercion. At follow-up, there was a significant decrease in perceived coercion. However, the study findings would have been more informative if actual coercive incidents were considered, which would be for example the documented incidents of physical restraint and seclusion.

8.1.5. The role of nursing staffs' interpersonal style in patient aggression and use of coercion

Research on nursing staff's interpersonal style, as rated by patients, is scarce. Bilgin (2009) used a self-report measure; four of the subscales pertained to interpersonal dimensions: sociable (choosing to accompany and work together with others); help-seeking (seeking help and support when having problems), nurturing (being ready to help others); and sensitive (being aware of others' attitudes and feelings). The study examined nurses' interpersonal style in relation to their experience of patient aggression. It was found that nurses who are less sociable were more

exposed to physical aggression, while nurses who are help-seeking were more exposed to verbal aggression. Concerning the association between sociability and aggression, this finding is in line with Whittington's (1994) suggestion that nurses who are socially distant can be experienced as a form of aversive stimulation for some patients, especially those who constantly demand nurses' attention. Bilgin (2009) interpreted the association between help-seeking and aggression as being due to a greater distrust in patients because of the deviation from role expectation when nursing staff have to use coercion. It was concluded that nurses' interpersonal style may increase the likelihood of being confronted with patient aggression. What is currently unknown, however, is whether nurses' interpersonal style is related to the use of coercive containment methods for patient aggression.

The way in which nursing staff manage their own anger to prevent or manage patient aggression through their interpersonal styles should be considered carefully, especially given that the use of coercive containment methods is an indicator of the quality of inpatient treatment (Donat, 2003). Zijlmans, Embregts, Bosman and Willems (2012) found that nursing staff who perceived patients challenging behaviour as within their control (intentional) experienced a range of emotions and scored higher on hostility and control subscales of interpersonal style. Chien et al., (2005) explored aggressive patients' experiences and resulting feelings of physical restraint. Patients reported negative effects of physical restraint which were, in their view, related to the attitude and behaviour of the staff participating in the intervention. Patients felt that staff did not satisfy their needs for concern, empathy, active listening, and information about the procedure during and after its use. Whittington et al., (2012) investigated whether the first aggressive incident is managed differently from subsequent incidents involving the same patient in terms of the degree of coercion used over a five-year period. They concluded that repeated patient aggression increased the coerciveness of staff members' response in reaction to the emotions generated by previous incidents of aggression. What is apparent from these studies is that the nature of the relationship between nurses and patients must be explored in relation to aggressive incidents and in the use of coercive containment. Thus, this would allow for a better understanding about the interpersonal styles that may contribute to the occurrence of patient aggression, and in the use of physical restraint and seclusion incidents.

8.1.6. Present study aim

Research evidence has shown the importance of patients' interpersonal style in inpatient aggression. Several attempts have been made to demonstrate its significance in relationships with staff in terms of therapeutic alliance and perceived coercion. However, little attention has been paid to understanding patient and nursing staff interpersonal styles, and therefore the characteristic nature of these relationships in relation to inpatient aggression and its containment. The current study aims to address this knowledge gap in the context of inpatient aggression and its containment by measuring self-reported anger and reciprocally-rated interpersonal styles, to delineate the typical interactions between nursing staff and patients.

Study hypotheses:

H1: Self-reported anger will be positively related to a nurse-rated/patient-rated hostile-dominant interpersonal style.

H2: Higher levels of an hostile-dominant interpersonal style of the patient will be positively associated with i) incidents of inpatient aggression and ii) subjected to incidents of containment.

H3: Higher levels of an hostile-dominant interpersonal style of the nurse will be positively associated with involvement in incidents of containment.

H4: A relationship dyad between a member of nursing staff and patient that is characterised as deviating from complementarity will be positively associated with incidents of i) inpatient aggression and ii) icontainment

8.2. Method

8.2.1. Participants and setting

The sample was drawn from employees and inpatients at St Andrew's Healthcare. Nursing staff and patients were sampled from the men's and women's adult mental disorder pathway wards across three of St Andrew's Healthcare sites: Northampton, Birmingham and Essex.

Eighty-five patients (53% male) were recruited into this study on the basis of an inclusion criteria that they are over the age of 18 years and diagnosed with a mental disorder (ICD-10; WHO, 2011). Patients were not eligible if they had a neurocognitive or a neurodevelopmental disorder, lacked the capacity to consent, or were not fluent in English. The recruited patient's designated key worker was identified, as being a key worker for a patient in the study was the inclusion criteria for the nursing staff sample. Sixty-five qualified nursing staff (71% female) were recruited into the study.

8.2.2. Design

A correlational and pseudo-prospective design was used to explore the hypothesised relationship between scores of self-reported anger and nurse-rated/patient-rated interpersonal style, as well as recorded incidents in the three-month period following participation for aggression, physical restraint followed by seclusion, and physical restraint-only.

8.2.3. Measures

Novaco Anger Scale (NAS; Novaco, 2003)

A full description of the NAS is presented in Chapter 4 (the reliability (Cronbach's Alpha) for the NAS was 0.94 for the patient sample and 0.91 for the nursing staff sample). The NAS total score was used in the analyses to represent self-reported anger.

Impact Message Inventory – Circumplex (IMI-C; Kiesler & Schmidt, 2006)

The IMI-C is a self-report transactional inventory. The IMI-C works on the assumption that the interpersonal style of one target individual can be validly defined and measured by assessing the evoked covert reactions of another person with whom he or she interacts. The IMI-C contains 56 items which measures eight categories of interpersonal behaviour. The eight subscales, each comprising seven items, are: Dominant, Hostile-Dominant, Hostile, Hostile-Submissive, Friendly-Submissive, Friendly, and Friendly-Dominant.

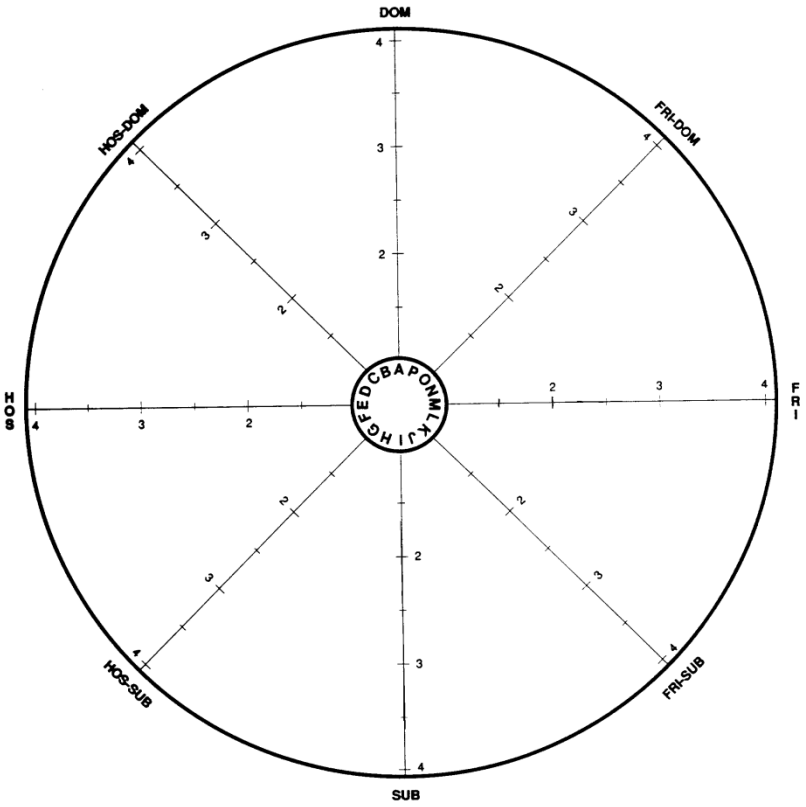

Figure 8.1. Interpersonal Circle of the Impact Message Inventory – Circumplex (Kiesler & Schmidt, 2006)

The items in each subscale are a mixture of statements concerning direct feelings, actions tendencies, and perceived evoking messages in the respondent. Respondents report using a 4-point scale (1 = *not at all*, 2 = *somewhat*, 3 = *moderately so*, 4 = *very much so*) for the extent to which 'each item accurately describes the impact a particular target person produced in him or her during an interaction or during previous interactions' (Kiesler & Schmidt, 2006). Summed items are divided by seven to derive a mean score for each subscale (in instances when nurses were designated

keyworker for two or more patients in the study, the score was derived by calculating a mean score from ratings of all their patients). With the use of the averaged subscale scores, a mathematical formula (See Appendix F) is applied to calculate axis scores. As shown in Figure 8.1. there are two major dimensions that constitute the axes of the interpersonal circle: control (dominance-submission) on the ordinate, and affiliation (friendliness-hostility) on the abscissa. The resulting point at which the two axis scores fall within one of the four circle quadrants (friendly-dominant, friendly-submissive, hostile-submissive, hostile-dominant) is identified. With simultaneous administration of the IMI-C, in this case, to both nursing staff and patient, the measure also allows analyses for the degree of complementarity of fit (Kiesler, 1983) of each individual's interpersonal styles within a dyad. Axis scores of the two persons are also used in a mathematical formula (See Appendix F) to obtain the complementarity scores. The score characterises the deviation from complementarity; the higher the score (0 = perfect complementarity, 12 = maximum non-complementarity) the less complementarity there is present among the paired individuals within the relationship dyad. The IMI-C is reported to have high internal consistency for each subscale with mean coefficients ranging from .69 to .85, indicating strong to excellent reliabilities for the IMI-C (Kiesler & Schmidt, 2006). The reliabilities (Cronbach's Alpha) for the Dominant, Hostile-Dominant and Hostile subscales were .82, .89 and .84, respectively, for the patient-rated interpersonal styles, and .76, .73 and .83, respectively, for the nurse-rated interpersonal styles for this sample.

Overt Aggression Scale (OAS; Yudofsky et al., 1986)

A full description of the OAS is presented in Chapter 4. The OAS was used to rate flagged incidents[4] which had occurred in the three-month post-participation for each patient. To reduce the number of aggression types analysed, aggressive outcomes were amalgamated into dichotomised categories for the presence or absence of aggression.

[4] Case notes that were electronically flagged as: 'Aggression – Physical', 'Aggression – Verbal', 'Fire setting', 'Hostage taking', 'Intimidation/Bullying', 'Self-Harm/Suicide' and 'Sexual Offending' on RiO.

Demographic and clinical measures

Information relating to patients' gender, age, self-reported ethnicity, admission/discharge date (length of stay), ward security level and ICD-10 (WHO, 2011) diagnoses were extracted from clinical records. A registered psychologist from the clinical teams completed the CGI. A full description of the CGI is presented in Chapter 4.

Incidents of physical restraint and seclusion

A full description of how incidents of physical restraint and seclusion data were retrieved is presented in Chapter 4. Patients and nursing staff were categorised as either having been or not been subjected to/ involved in i) physical restraint and ii) physical restraint followed by seclusion incidents over the three months follow-up period.

8.2.4. Procedure

A more detailed outline of the procedure for the research project can be found in Chapter 4. However, a brief overview for the current study is provided here.

All eligible patients were given the study information brief detailing what their participation would entail. Interested patients provided their written informed consent. Subsequently, a one-to-one interview took place in a quiet room on the ward to complete the study questionnaires. The NAS and IMI-C were administered with instructions on how to complete. The patient's key worker was identified as the target person whilst they completed the IMI-C. Patients were assisted by the researcher in reading the items if they had any difficulties. A one-to-one interview was conducted with respective nursing staff that was designated as a key worker for the patient(s) in the study. Written informed consent was obtained and the same measures were administered, with the identified patient as the target person. Patient aggression incident data were collated and rated using the OAS, and containment incident data were retrieved from Datix, for the three months following the interviews.

8.2.5. Data analysis

Means and standard deviations for scale variables, and frequencies/percentages for categorical variables measured in the study were calculated. Independent *t*-tests were used to ascertain any differences in self-reported anger and interpersonal style scores between patients who were and were not aggressive, whether or not the patient was subjected to/nursing staff involved in physical restraint-only, and whether or not patient was subjected to/nursing staff involved in physical restraint followed by seclusion. The magnitude of difference in scores is denoted by the *t*-value converted into an *r*-value (Rosnow & Rosenthal, 2005) for an effect size, with the following thresholds: small (.20), medium (.30) and large (.50). Pearson's correlation was used to explore the relationship between self- reported anger and nurse-rated/patient-rated interpersonal style subscales (IMI-C Hostile, IMI-C Hostile-Dominant, and IMI-C Dominant). A model that predicts patient aggression, patients subjected to/nursing staff involved in containment, was tested with a logistic regression, respectively, with predictor variables informed by the independent *t*-tests. Analyses were conducted using IBM Statistics version 22 for Windows (SPSS Inc., Version 22).

8.3. Results

The mean age of the patient sample was 34.1 years (*SD* = 12.1). Sixty-two of the 85 patients were Caucasian (73%), with the remaining identified as of Black (*n* = 16; 19%) or Asian (*n* = 7; 8%) descent. Patients had a primary diagnosis of either a schizophrenia spectrum disorder (*n* = 38; 45%), personality disorder (*n* = 42; 49%) or a bipolar and related disorder (*n* = 5; 6%). Patients were moderately ill (*M* = 3.8, *SD* = 1.5) in terms of severity of their presenting problems as indicated on the CGI. At the time of recruitment and administration of tests, 56 patients were residing on low secure (66%) and 29 patients were on medium secure (34%) wards; mean length of hospitalisation at this point was 2.7 years (Range = 32-8144 days). There were 227 recorded aggressive incidents. Thirty-eight of the 85 patients (45%) exhibited aggressive behaviour in the three-month follow-up period. There were 31 coercive containment incidents, which seven patients (8%) were subject to physical restraint followed by seclusion, and four patients (5%) were subject to physical restraint-only in the three-month follow-up period.

The mean age of the nursing staff sample was 41.8 years (*SD* = 9.0). Thirty-nine of the 65 nursing staff were of Black descent (60%), 23 identified as Caucasian (*n* = 23; 35%) and the remaining either identified as Asian (*n* = 1; 2%) or Other (*n* = 2; 3%). Whilst nurses were all ward-based registered nurses, 12 (18.5%) of the nurses assumed a managerial nursing role. Thirty-seven of the nursing staff were deployed on the low secure (64%) and 23 on the medium secure (36%) wards; and 61 (94%) nurses were full-time employed. The (mode) length of service at the time of assessment was 10 years or more (*n* = 18; 27.7%), followed by two to five years (*n* = 15; 23.1%), five to 10 years (*n* = 14; 21.5%), one to two years (*n* = 10, 15.4%) and less than one year (*n* = 8, 12.3%). There were 74 coercive containment incidents, which nineteen members of the nursing staff (31%) were involved in physical restraint-only, and 25 nursing staff (41%) were involved in physical restraint followed by seclusion in the three-month follow-up period (four missing cases, respectively, in each count).

Further descriptive statistics for each variable: self-reported anger, interpersonal style and patient and nursing staff relationship dyad are presented in Table 8.1.

Table 8.1. Descriptive statistics for self-reported anger (patients *n* = 80, staff *n* = 65), interpersonal styles (patients *n* = 85, staff *n* =65)

Measures	Patient		Staff	
	M	***SD***	***M***	***SD***
NAS Total	90.75 [87.73, 94.42]	15.87	71.33 [68.33, 74.03]	11.25
IMI-Dominant	1.79 [1.71, 1.93]	0.59	1.77 [1.62, 1.91]	0.66
IMI-Hostile-Dominant	1.51 [1.42, 1.63]	0.49	1.49 [1.32, 1.74]	0.65
IMI-Hostile	1.59 [1.51, 1.71]	0.58	1.46 [1.31, 1.63]	0.59
Complementarity	Interpersonal relationship dyad *n*=85			
	M = 2.93 [2.62, 3.44] *SD* = 1.96			

BCa 95% confidence intervals reported in parenthesis and are based on 1000 samples

As shown in Table 8.1. there were 85 nursing staff-patient relationship dyads. Nineteen nursing staff were designated as keyworker for multiple patients; 18 nurses for two patients, and one nurse for three patients.

The relationship between patients' self-reported anger and nurse-rated interpersonal style scores are presented in Table 8.2.

Table 8.2. Pearson's *r* correlation between patients' self-reported anger and interpersonal style subscales

***n* = 80**	**IMI-C Dominant**	**IMI-C Hostile Dominant**	**IMI-C Hostile**
NAS Total	.15 [-.12, .39]	.15 [-.06, .37]	.28** [.10, .46]

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples

***p*<.01

Table 8.2. shows that IMI-C Hostile is the only nurse-rated interpersonal style subscale that is positively related to patients' self-reported anger. This relationship is also significant.

Scale scores for aggressive and non-aggressive patients (See Tables 8.3. and 8.4.), patients subjected to and not subjected to physical restraint-only (See Tables 8.5. and 8.6.), and patients subjected to and not subjected physical restraint followed by seclusion (See Tables 8.7. and 8.8), were ascertained prior to modelling the relevant predictor variables in a logistic regression analyses.

Table 8.3. Scale scores for aggressive and non-aggressive patients

Measures	Not aggressive		Aggressive		*r*
	Mean	***SD***	**Mean**	***SD***	
NAS Total**	86.84 [82.33, 91.41]	14.51	95.52 [90.42, 100.81]	16.34	0.27
IMI-C Dominant	1.70 [1.52, 1.91]	0.61	1.90 [1.72, 2.12]	0.55	0.17
IMI-C Hostile-Dominant	1.43 [1.32, 1.61]	0.45	1.61 [1.52, 1.81]	0.52	0.18
IMI-C Hostile	1.50 [1.42, 1.71]	0.50	1.70 [1.53, 1.91]	0.66	0.17
IMI-C Complementarity	3.13 [2.63, 3.84]	2.25	2.78 [2.33, 3.34]	1.55	0.08

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples

**p<.01

Table 8.3. shows that aggressive and non-aggressive patients only differed in mean scores on the anger scale. There was a statistically significant difference in mean scores on the NAS Total, with aggressive patients scoring higher than non-aggressive aggressive patients. The difference in scores has a small reported effect size. There were no differences in scores on the interpersonal style subscales between aggressive and non-aggressive patients.

Table 8.4. Logistic regression model predicting patients that were aggressive

	b	95% CI for Odds Ratio		
		Lower	**Odds**	**Upper**
Constant	-3.57 [-7.37, -0.84]			
NAS Total	0.04* [0.01, 0.08]	1.01	1.04	1.07

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples
Note. R^2= .07 (Cox & Snell) .10 (Nagelkerke). Model $\chi^2(1) = 6.17$ $p<.05$
*$p<.05$

$n = 80$

Table 8.4. shows the logistic regression model that was performed to ascertain the prediction of anger on the likelihood that patients will be aggressive. The logistic model was statistically significant χ^2 (1) = 6.17, $p<.05$. The model explained 10% of the variance in aggressive incidents and correctly classified 63.8% of cases. Sensitivity was 47.2%, specificity was 77.3%, positive predictive value was 62.9% and negative predictive value was 64.2%. Anger was a statistically significant predictor variable. Linearity of the logit was also tested which revealed that interaction terms were not significant $p>.05$, and thus did not violate the assumption.

Table 8.5. Scale scores for patients subjected to and not subjected to physical restraint-only

Measures	Not subjected to physical restraint-only		Subjected to physical restraint-only		*r*
	Mean	***SD***	**Mean**	***SD***	
NAS Total*	89.97 [86.53, 93.42]	15.57	105.50 [93.05, 128.01]	16.29	0.21
IMI-C Dominant	1.79 [1.74, 1.91]	0.60	1.75 [1.31, 2.33]	0.41	0.02
IMI-C Hostile-Dominant	1.49 [1.42, 1.63]	0.48	2.00 [1.33, 2.41]	0.54	0.22
IMI-C Hostile	1.56 [1.41, 1.72]	0.54	2.21 [1.01, 3.62]	1.07	0.23
IMI-C Complementarity	3.01 [2.62, 3.41]	2.00	2.23 [1.54, 3.11]	0.74	0.08

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples

*p<.05

Table 8.5. shows patients who were and were not subjected to physical-restraint only differed in mean scores on three scales: anger, hostile-dominant interpersonal style, and complementarity. There was a statistically significant difference in mean scores on the NAS Total and IMI-C Hostile-Dominant, with subjected to physical restraint-only patients scoring higher than non-subjected patients. However, patients subjected to physical restraint-only had a statistically significant lower mean score on the IMI-C Complementarity than patients who were not subjected to physical restraint-only. These differences in scores have a small reported effect size. There were no differences in scores on IMI-C Dominant and IMI-C Hostile between patients that were and were not subjected to physical-restraint only.

Table 8.6. Logistic regression model predicting patients that were subjected to physical restraint-only

	b	95% CI for Odds Ratio		
		Lower	**Odds**	**Upper**
Constant	-10.16 [-385.34, -2.92]			
NAS Total	0.05* [-0.00, 2.81]	0.99	1.05	1.12
IMI-C Hostile-Dominant	1.71* [-1.24, 56.34]	0.79	5.53	38.65
IMI-C Complementarity	-0.24 [-4.21, 0.44]	0.41	0.79	1.51

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples
Note. R^2= .08 (Cox & Snell) .25 (Nagelkerke). Model $\chi^2(1) = 6.70$ $p>.05$,
*$p<.05$

$n = 80$

Table 8.6. shows the logistic regression model that was performed to ascertain the prediction of anger, hostile-dominant interpersonal style, and complementarity relationship on the likelihood that patients will be subjected to physical restraint-only. The Hosmer and Lemeshow test indicated that the model is not a poor fit (χ^2 (3) = 5.94, $p<.05$). The model explained 25% of the variance in physical restraint-only incidents and correctly classified 95% of cases. Sensitivity was 0%, specificity was 100%, positive predictive value was 0% and negative predictive value was 95%. Of the three predictor variables, anger and hostile-dominant interpersonal style was statistically significant. Linearity of the logit was also tested which revealed that interaction terms were not significant $p>.05$, and thus did not violate the assumption. Collinearity diagnostics confirm that there were no concerns with multicollinearity (Average VIF = 1.03, Average Tolerance = 0.96).

Table 8.7. Scale scores for patients subjected to and not subjected physical restraint followed by seclusion

Measures	Not subjected to physical restraint and seclusion		Subjected to physical restraint and seclusion		*r*
	Mean	***SD***	**Mean**	***SD***	
NAS Total	90.17 [86.64, 93.73]	15.62	96.71 [83.42, 110.61]	18.50	0.12
IMI-C Dominant	1.78 [1.73, 1.94]	0.59	1.89 [1.41, 2.43]	0.66	0.05
IMI-C Hostile-Dominant	1.48 [1.43, 1.62]	0.46	1.79 [1.32, 2.31]	0.68	0.17
IMI-C Hostile*	1.54 [1.43, 1.72]	0.53	2.18 [1.61, 2.93]	0.84	0.30
IMI-C Complementarity	3.04 [2.61, 3.53]	2.01	2.31 [1.42, 3.53]	1.34	0.10

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples

*p<.05

Table 8.7. shows patients who were or were not subjected to physical restraint followed by seclusion differed in mean scores on a hostile interpersonal style scale. There was a statistically significant difference in mean scores on the IMI-C Hostile, with patients subjected to physical restraint and seclusion scoring higher than non-subjected patients. The difference in scores has a small reported effect size. There was no difference in scores on the NAS-Total, IMI-C Dominant, IMI-C Hostile-Dominant, and IMI-C Complementarity between patients that were and were not subjected to physical restraint and seclusion.

Table 8.8. Logistic regression model predicting patients that were subjected to physical restraint followed by seclusion

	b	95% CI for Odds Ratio		
		Lower	Odds	Upper
Constant	-5.11 [-10.02, -2.71]			
IMI-Hostile	1.47* [0.12, 3.32]	1.36	4.38	14.03

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 998 samples
Note. R^2= .08 (Cox & Snell) .17 (Nagelkerke). Model $\chi^2(1) = 6.35 < .05$,
*p<.05

n = 85

Table 8.8. shows the logistic regression model that was performed to ascertain the prediction of patients' hostile interpersonal style on the likelihood that patients will be subjected to physical restraint and seclusion. The logistic model was statistically significant χ^2 (1) = 6.35, p<.05. The model explained 17% of the variance in physical restraint and seclusion incidents and correctly classified 93% of cases. Sensitivity was 14.3%, specificity was 100%, positive predictive value was 100% and negative predictive value was 92.9%. Patients' hostile interpersonal style was a statistically significant predictor variable. Linearity of the logit was also tested which revealed that interaction terms were not significant p>.05, and thus did not violate the assumption.

The relationship between nursing staff self-reported anger and patient-rated interpersonal style scores are presented in Table 8.9.

Table 8.9. Pearson's *r* correlation between nursing staff self-reported anger and interpersonal style subscales

***n* = 65**	**IMI-C Dominant**	**IMI-C Hostile Dominant**	**IMI-C Hostile**
NAS Total	.20 [0.0, .45]	-.04 [-.22, .28]	-.05 [-.22, .32]

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples

Table 8.9. shows that IMI-C Dominant interpersonal style is the only patient-rated scale that is positively related to nursing staff self-reported anger.

Scale scores for nursing staff who were and were not involved in physical restraint-only, and nursing staff who were and were not involved in physical restraint followed by seclusion are presented in Table 8.10. and Table 8.11.

Table 8.10. Scale scores for involved and not involved nursing staff in physical restraint-only

Measures	Not involved in physical restraint-only		Involved in physical restraint-only		*r*
	Mean	***SD***	**Mean**	***SD***	
NAS Total	71.95 [67.33, 74.54]	11.95	69.42 [65.32, 73.51]	8.88	0.06
IMI-C Dominant	1.76 [1.62, 2.04]	0.61	1.85 [1.52, 2.21]	0.81	0.06
IMI-C Hostile-Dominant	1.43 [1.32, 1.71]	0.63	1.69 [1.44, 2.01]	0.73	0.18
IMI-C Hostile	1.42 [1.32, 1.61]	0.57	1.62 [1.31, 2.04]	0.67	0.15

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 samples

Table 8.10. shows that nurses who were and were not involved in physical restraint-only did not statistically differ in mean scores on any scales.

Table 8.11. Scale scores for involved and not involved nursing staff in physical restraint followed by seclusion

Measures	Not involved in physical restraint and seclusion		Involved in physical restraint and seclusion		*r*
	Mean	***SD***	**Mean**	***SD***	
NAS Total	70.30 [66.72, 74.01]	11.33	70.72 [67.03, 75.32]	10.83	0.02
IMI-C Dominant	1.88 [1.72, 2.23]	0.80	1.66 [1.53, 1.81]	0.43	0.17
IMI-C Hostile-Dominant	1.61 [1.41, 1.92]	0.77	1.37 [1.21, 1.53]	0.45	0.17
IMI-C Hostile	1.56 [1.43, 1.82]	0.71	1.36 [1.23, 1.53]	0.40	0.21

BCa Bootstrap 95% confidence intervals reported in parenthesis and are based on 1000 sampless

Table 8.11. shows that nurses who were and were not involved in physical restraint and seclusion did not statistically differ in mean scores on any scales.

8.4. Discussion

8.4.1. Summary of findings

The first hypothesis that self-reported anger would be related to nurse-rated/patient-rated interpersonal style is supported by the current findings. Specifically, patients' self-reported anger was positively related to nurse-rated hostile interpersonal style. Nursing staffs' self-reported anger was positively related to patient-rated dominant interpersonal style.

The second hypothesis that patients' hostile-dominant interpersonal style is associated with i) inpatient aggression and ii) containment, is partially supported by the current findings. Patients who were aggressive had higher mean scores on interpersonal style (Dominant, Hostile-Dominant, Hostile) subscales than patients who were not aggressive, but the difference in scores were not statistically significant. Patients' self-reported anger, however, revealed a significant difference, and predicted aggression. Patients' self-reported anger and a hostile-dominant interpersonal style predicted being subject to physical restraint-only. A hostile interpersonal style predicted being subject to physical restraint followed by seclusion.

The third hypothesis that nursing staffs' hostile-dominant interpersonal style is associated with involvement in containment is not supported by the current findings. However, nursing staff involved in containment had a higher dominant interpersonal style score than nursing staff who were not involved, but the differences in scores were not statistically significant. None of the staff variables predicted involvement in physical restraint with and without seclusion.

The fourth hypothesis that a relationship dyad characterised as deviating from complementarity is associated with i) inpatient aggression and ii) patients subjected to containment, is not supported by the current findings. Paradoxically, patients who were aggressive, and were subjected to containment, had lower complementarity scores (i.e. near to 'perfect complementarity'), than patients who were not aggressive or subjected to containment.

8.4.2. Findings in the context of previous research

The relevance of patients' interpersonal style in inpatient aggression is consistent with previous research that has reported positive associations (Doyle & Dolan, 2006; Daffern et al., 2010). This provides further support for the consideration of patient's interpersonal style in the assessment of inpatient aggression-risk. Although Doyle & Dolan (2006) found that patients' interpersonal style was associated with increased risk of violent behaviour, the hostile subscale of the interpersonal measure did not correlate with self-reported anger. In the current study, however, it was found that patients' self-reported anger is in line with nurses' view of a more hostile interpersonal style in the patient. Anger was, however, the strongest predictor of aggression. This finding reinforces the importance of considering patient anger to be a treatment need. Addressing this successfully could minimise the way in which anger is manifested in their interactions with nursing staff.

Not all aggressive incidents would typically result in coercive containment methods such as physical restraint with or without seclusion. There may however be occasions where the presented risk as perceived by staff requires the aggressive patient to be managed by coercive means. Determining whether the coercion used was proportionate to the presented risk is difficult to ascertain, especially from written accounts, since the circumstances of each incident would be highly diverse in relation to staff and patient characteristics involved in the situation for example. It is somewhat surprising that although patients' interpersonal style was not predictive of aggression, it was predictive of patients being subjected to containment. A possible explanation for this result is that coercive action may have been taken against the patient where the exhibited aggression was, or had the potential to be, at a more severe level (i.e. physical aggression toward self and/or others). Prior de-escalation attempts in such instances may have failed because of the patient's hostile-dominant interpersonal style which would supposedly be to claim his or her controlling stance in the already aversively stimulated incident (Whittington & Richter, 2005).

In attempting to establish the characteristic nature of the relationship between nursing staff and patients, Kiesler's (1982) complementarity principle offers an indication of how two persons based on their interpersonal styles on two dimensions (i.e.,

affiliation and control) may generate conflict within the interactions. Studies have not yet attempted to investigate complementarity between nursing staff and patients in forensic mental health research. The concept of therapeutic alliance (Cookson et al., 2012) which could be considered to some extent similar or indeed interrelated with complementarity has however been studied. For instance, in order to establish mutual goals, tasks, and bonds (therapeutic alliance), a relationship that is characteristic of minimal conflict within interactions (complementarity) may, hypothetically, facilitate this process more effectively. The findings of complementarity in the current study revealed that the average mean score of relationship dyads that deviate from complementarity (perfect complementarity = 0) was 2.93 [CI: 2.62, 3.44], out of a possible maximum score of 12.0. This suggests that individuals within the relationship dyad are not completely reciprocating on the control dimension (e.g., dominant nurse actions evoke submissive patient reactions, or submissive patient actions evoke dominant nurse reactions), and not completely corresponding on the affiliation dimension (friendliness evoke friendliness, or hostility evoke hostility in each other's reactions). However, the deviation from a perfect complementarity score found in this study is not large. This finding is therefore interesting when considering staff-patient relationships in the context of therapeutic alliance, which can work as a catalyst for mental health recovery.

Deviation from complementarity in relationship dyads did not predict both patient aggression and patients being subjected to containment. In accordance with this counterintuitive finding, Cookson et al., (2012) also found that a poor therapeutic alliance did not predict aggression. The current study highlights the need to further consider whether nursing staff-patient relationships are risk or protective factors in the occurrence of inpatient aggression, since findings thus far appear to be inconclusive.

However, there are several possible explanations for this pattern of result of complementarity. According to Kiesler and Schmidt (2006), a number other than zero is indicative of deviation from perfect complementarity as measured by the IMI-C. The average score in this study was nine scores less from maximum deviation. Thus, there is not, on average, a large deviation (i.e., more conflict present in relationship dyads) that is related to aggression and containment incidents. It would be useful to know at which deviation point incidents are likely to occur. Further, a systematic approach was taken to recruiting samples: respective key-workers were identified since they are likely

to know the patient well based on previous interactions of working closely together, in order to provide a more valid response to gauge patients' interpersonal styles. Patients are cared for by a number of nursing staff and would thus have multiple relationships, with varying degrees of complementarity with each nurse. The reported incidents of aggression, or containment, may have involved other members of staff and not necessarily the identified key-worker. It is also important to note that the antecedents to patient aggression in this study may not solely be characteristic of staff-patient interactions. It is also possible that patient-patient interactions are antecedents, amongst others, (Papadopoulous et al., 2012) to the incidents in this study. The challenge is therefore to investigate complementarity to understand the nature of the relationship dyad consisting of aggressive patients and members of the ward team who have been frequently involved in the antecedent to an incident.

Nursing staffs' interpersonal style could be examined, independent of the relationship dyad, for the involvement in containment incidents of any patients on their deployed ward during the participation period. Nursing staffs' interpersonal style, as rated by patient(s), provides some indication of how nursing staff members are perceived by patients. The mean scores of the interpersonal style subscales, both patient and nursing staff have the same average scores for dominant and hostile-dominant interpersonal style (M = 1.8 and 1.5, respectively), while nursing staff had a lower score (M = 1.4) than patients (M = 1.6) on hostile interpersonal style. Given this, it is interesting to note that the dominant interpersonal style is the only IMI-C subscale to have positively correlated with nursing staffs' self-reported anger. Thus, where nursing staff are required to gain or maintain control over a situation, for example, when patients are in breach of security-related protocols or not being compliant with treatment, nursing staff may also experience anger but do not necessarily allow it to be manifested in their interactions with patients. This is perhaps reassuring in terms of professional conduct. Duxbury and Whittington (2005) found that patients perceived poor staff communication to be a significant precursor of aggressive behaviour. This association between patient-rated dominant interpersonal style of nursing staff and self-reported anger could perhaps explain possible poor communication issues, which may aggravate the patient further to become aggressive in an aversively stimulated incident, whereby the member of staff would be asserting dominance.

Neither of the interpersonal style scales for nursing staff were associated with the involvement in containment. The current study used data of actual incidents of coercion which reveals findings that do not support previous research examining patients' perceived coercion. Anestis et al., (2012) studied patients' interpersonal style in relation to perceived coercion which concerns members of staff. The current study revealed that staffs' interpersonal style, as assessed by patients, had no association with the coercive containment methods that actually occur. But considering that Anestis et al., (2012) found perceived coercion decreased over time during hospitalisation, it is perhaps possible that patients' rating of staff's interpersonal style may also change dependent on how long they have stayed in hospital and their familiarity with nursing staff. Also, Chien et al., (2005) found that patients attributed the negative effects of physical restraint to the attitude and behaviour of staff who participate in the containment. This did not reflect in the current study since patients rated the nurses' interpersonal style, and no association was found between these interpersonal style ratings and nurses' involvement in containment.

8.4.3. Limitations

The most important limitation of this study is the investigation of only one nursing staff member, the key-worker, per patient. As with therapeutic alliance, complementarity is also a complex and difficult construct to assess in inpatient settings. This is because patients will almost always need to interact with multiple members of staff. Further, due to working shift rotas, a proportion of sampled designated key workers could have been assigned to work night shifts during the three-month participation period. This means that there would inevitably be a limited opportunity for these particular members of nursing staff to be involved in incidents as patients would, supposedly, be asleep or in their bedroom for most of their working shifts. However, it is not uncommon for incidents to occur during night shift hours (Bradley et al., 2001). Future studies would need to overcome these challenges to establish the importance of complementarity, and nursing staffs interpersonal style, in inpatient aggression and its containment. It would be particularly useful if incident data pertaining to patient aggression that was targeted specifically towards staff, is captured and used in the analyses to ascertain the role of nursing staffs' interpersonal style. It is also imperative to ensure that the recording of routine collected data is accurate, since there were four missing cases for staff in

whether they were or were not involved in incidents of containment. This was possibly due to the misspelling of staff names on the documentation within Datix, or members of staff resigning from employment during the study period.

These findings cannot be generalised to all patients in forensic mental health settings. With a relatively modest sample size and given that few of the patients were subjected to containment, these patients are in the minority in the recruited sample in terms of the risk that they probably posed compared to other patients who did not require coercive containment. Aggressive patients who were not subjected to containment were perhaps due to exhibiting low level of aggression i.e. verbal aggression and thus did not require a coercive intervention, or nursing staff had successfully de-escalated potential incidents.

8.4.4. Implications

The findings of this study have several possible implications. Firstly, patients' interpersonal style is relevant in incidents of aggression and its containment. Patient anger predicted incidents of aggression; however, both patient anger and interpersonal style predicted the occurrence of containment. This implies that anger-focused treatments, as anger may be underpinning the interpersonal style, may help to reduce aggressive behaviour or make sure it does not escalate to the point where coercive containment is required. Secondly, the examination of complementarity in this study could help to inform the managerial task of key-worker designation to achieve at least near to "perfect complementarity" for nursing staff-patient relationships as much as possible. This could enable the formation of better therapeutic alliances, though this remains a future research question. Finally, these findings could inform nursing staff training programmes. Equipping nurses with skills to manage patients' interpersonal styles, and the recognition of their own (dominant) interpersonal style and anger, would help to reduce discomfort and problematic relationships.

8.4.5. Conclusion

This study set out to understand the interpersonal styles of both nursing staff and patients, and the characteristic nature of nursing staff-patient dyads, in relation to inpatient aggression and its containment. Despite most of the aggressive behaviour in mental health care settings is interpersonal, the study of interactional aspects is limited. This study has revealed the relevance of patients' interpersonal style in both incidents of aggression and coercive containment. More targeted intervention for anger may have a positive impact on interpersonal style and lead to the reduction of incidents. The study has also shown that the relationship between patients and a member of the nursing team is not complementary. Staff education and training programmes which incorporate an understanding of interpersonal style and skills to manage relationships could help to promote and enhance positive communication between nursing staff and patients. Positive communication within nursing staff-patient relationships could have the potential to minimise the negative effects when coercive containment is required.

9. CHAPTER NINE

9.1. DISCUSSION AND CONCLUSIONS

This concluding chapter brings together the research aims and main findings of each empirical study presented in this thesis. The discussion of these findings in relation to previous literature are presented in the respective empirical study chapters; however, the wider implications of these findings are discussed. The research project limitations and recommendations for future research are also presented, followed by a conclusion.

9.1.1. Restatement of research aims and main findings

The overall aim of this thesis was to examine the role of anger in and between patients and nursing staff, and in relation to inpatient aggression and its containment. Little is known about the assessment of patient anger and how anger is manifested in incidents of inpatient aggression and its containment. Nursing staff anger and its association with the use of coercive containment is not well established. Moreover, given that the interaction between nursing staff and patients is a common precursor to inpatient aggression (Papadopoulous et al., 2012), investigation of how anger is manifested in the relationship via interpersonal styles, and therefore in incidents, is of importance. The following is a breakdown of each empirical study's aims and an overview of key findings:

9.1.1.1. Study one

The aim of study one was to use the ICM as a framework to understand the relationship between anger and inpatient aggression. To establish the extent of automaticity of the cognitive components in relation to anger and inpatient aggression, implicit and explicit testing were used for measurement.

It was found that the combination of implicit measures used for hostility, rumination and effortful control did not correlate with each cognitive component, nor did they correlate with anger in the expected direction as depicted in the ICM. By contrast, the combination of explicit measures revealed correlations in the expected directions

between the cognitive components and with anger. Explicit measures of both hostility and rumination predicted anger, which is consistent with the ICM. Furthermore, neither implicit nor explicit measures for each of the cognitive components differentiated aggressive from non-aggressive patients. Inpatient aggression was predicted by anger.

Hostility as the attitudinal disposition (Buss & Perry, 1992) and rumination by which patients have the tendency to dwell (Sukholdolsky et al., 2001; Novaco, 2011) are to be considered key components for levels of anger. Effortful control did not differentiate aggressive from non-aggressive patients, but a higher level of effortful control was related to lower levels of hostility, rumination and anger. This perhaps suggests that patients wish to express their anger by exhibiting aggressive behaviour, and not because they are unable to regulate or re-evaluate their thought processes. This may in part also explain the incongruence with the implicit measures: patients are perhaps sufficiently self-aware of their thought processes in relation to anger and were thus able to control responses on such measures. Thus, in viewing the concept of cognitive automaticity along a continuum of conscious thought (Ireland & Adams, 2015), rather than distinct parallel processes, may be more helpful for assessment and treatment protocols.

9.1.1.2. Study two

The aim of study two was to cross-examine scores for association between patients' self-reported anger and clinicians' ratings on dynamic risk factor items on the SPJ tools (HCR-20; Webster et al., 1997; START; Webster et al., 2009). A further aim was to establish whether patients' self-reported anger has incremental predictive validity over clinicians' ratings of risk in inpatient aggression.

It was found that patients' self-reported anger is positively correlated with clinicians' ratings on selected items which incorporate anger in the dynamic risk subscales of SPJ tools. The item ratings in the Clinical subscale of the HCR-20 (Impulsivity, Lack of Insight, and Unresponsive to Treatment) revealed the strongest association with self-reported anger. The item ratings for Emotional state and Attitude in the START were also positively related to self-reported anger. Although patients' self-reported anger was predictive of inpatient aggression, it did not reveal incremental

predictive validity over clinicians' ratings on dynamic risk subscales. The HCR-20 Clinical subscale was the significant predictor variable.

Since patients' self-reported anger and clinicians' rating on anger-relevant SPJ tool items are related, this suggests that there is some agreement about the patient's level of anger. However, despite patients' self-reported anger predicting inpatient aggression, it did not add incremental predictive validity over the HCR-20 Clinical subscale. This suggests that anger is confluent with a range of risk factors, since the Clinical subscale contains items relating to insight, attitudes, symptoms, impulsivity and unresponsiveness with treatment. Whether there is any added value of patients self-reporting anger in terms of their readiness to undertake treatment (Novaco, 2011), as part of a formulation-based treatment (i.e., risk management), is yet to be determined.

9.1.1.3. Study three

The aim of study three was to ascertain levels of nursing staff emotion including anger in relation to exposure to patient aggression, as well as the attitude toward, and actual involvement in, coercive containment such as physical restraint and seclusion.

It was found that a higher level of nursing staff anger is predicted by exposure to patient aggression that is specifically of a humiliating aggressive nature. In terms of attitude towards containment, nursing staff anger was positively correlated with the approval of physical restraint, and guilt was negatively correlated with the approval of seclusion. In terms of actual involvement in containment, lower levels of nursing staff anger and fatigue were found in nurses who were involved in physical restraint-only incidents compared to nurses that were not involved. Similarly, lower levels of guilt and fatigue were found in nurses who were involved in physical restraint followed by seclusion compared to nurses who were not involved.

Patient aggression which nursing staff perceive as humiliating results in increased level of anger. However, this only explained 14% of the variance. This could suggest other factors, such as lack of organisational or staff team support, may also be relevant in contributing to nursing staff anger. As other types of patient aggression were not related to nursing staff anger, it is perhaps only when nurses' pride and self-esteem

is attacked that they become angry. It is possible that nursing staff have become immune to the other types of patient aggression as an expected part of their work (Deans, 2004; Sequeira & Halstead, 2004). Although a higher level of nursing staff anger is related to their approval of physical restraint, this did not reflect to clinical practice in the actual use of coercive containment. This may be because patients were managed successfully with less restrictive containment methods or physical restraint with or without seclusion were used only as a last resort. Levels of guilt and fatigue are also associated with the approval of, and involvement in, coercive containment. This supports the notion that nursing staff emotions play a role in the management of patient aggression (Bowers, 2014).

9.1.1.4. Study four

The aim of study four was to ascertain how anger is manifested in the interactions between patients and nursing staff, and whether the characteristic dyad is related to inpatient aggression and its containment.

It was found that patients' self-reported anger correlated with a hostile interpersonal style as rated by nurses. Nurses' self-reported anger correlated with a dominant interpersonal style as rated by patients. Inpatient aggression was predicted by patients' self-reported anger, but not interpersonal styles. In terms of patients subjected to containment, it was found that their self-reported anger and a hostile-dominant interpersonal style were significant predictors for physical restraint-only; and a hostile interpersonal style was a significant predictor for physical restraint followed by seclusion. Nursing staffs' interpersonal styles were not associated with involvement in containment. The characteristic relationship dyads, with regards to the complementary principle (Kiesler & Schmidt, 2006), between nurses and patients were also not associated with inpatient aggression and containment.

Patients' anger is manifested in their interactions as being hostile toward nurses; nurses' anger is manifested in their interactions as being dominant toward patients. As nurses have a professional duty to provide therapeutic care and enforce security-related protocols (Mason, 2002), their controlling stance (e.g., to either deny patient requests or demand compliance (Daffern, 2007) is perhaps expected. However, this may occur in

instances where nursing staff are also experiencing anger. Given that patients' interpersonal styles were associated with being subjected to coercive containment, and not inpatient aggression, this possibly suggests de-escalation attempts are not successful with those who are hostile (Lowry, 2016) and dominant in their interactions. The characteristic relationship dyad between nurses and patients in this study is one of a keyworker-patient relationship. This may explain why the relationship was not of a conflicting nature and therefore not associated with incidents, as well as the fact that patients engage with multiple members of staff and not only with their keyworker.

9.2. Research implications

The following section will discuss the theoretical implications with respect to models of: anger and reactive aggression (ICM; Wilkowski & Robinson, 2010), conflict and containment (Safewards Model; Bowers, 2014) and Interpersonal Theory (Kiesler, 1983). Policy implications will be discussed in relation to clinical guidance and recommendations provided by DH and NICE. Implications for clinical practice are also discussed.

9.2.1. Theoretical

Despite there being an intuitive link between patient anger and inpatient aggression, understanding of the theoretical basis and underlying causes is limited (Doyle & Dolan, 2006). The research in this thesis therefore has considered the ICM in the study of inpatient aggression to illuminate component elements of anger and its relationship with reactive aggression. Measures of explicit cognitive processing indicated that hostility and rumination predicts anger; inpatient aggression was predicted by anger. Interestingly, effortful control did not predict nor differentiate aggressive from non-aggressive patients, which is contrary to the ICM. An implication of this is the possibility that incidents of inpatient aggression were not due to patients inability to positively reappraise situations i.e., effortful control, but rather that they are exhibiting aggression to express their anger. Daffern (2007) argues that each incident of inpatient aggression could serve a function for the patient, that is, there is an adaptive value of aggression and identifying the function can enable effective interventions to be derived to reduce associated incidents. In other words, staff should seek to understand

the antecedents to and consequences of aggression in order to understand the function of an individual patient's aggressive behaviour. This will help to lessen fear and increase confidence amongst staff in their management of inpatient aggression and also aid prevention of future incidents.

The findings in relation to the extent of automaticity in each of the cognitive components within the ICM add to a growing body of literature on implicit cognitive processing. Research concerning implicit measures has been a methodological, empirically driven enterprise rather than theoretical (Fazio & Olson, 2003). Since, in Study One, the implicit measures did not correlate with explicit measures for each of the cognitive components, and with anger and inpatient aggression, this leans to Fazio and Olson's (2003) view that the discussion of whether a relation exists is unproductive. Instead, it is suggested that researchers should be asking a 'when' question, that is: when, under what conditions, and for what kind of people, are implicit and explicit measures related for the assessed construct. Motivational factors are more likely to be evoked and exert some influence on overt responses to an explicit measure if the measured construct is sensitive. The magnitude of the relation between these measures will depend on the motivation and opportunity to deliberate; if either motivation or opportunity is relatively low at the time that the explicit response is being considered then explicit measures should correlate with implicit measures. When both motivation and opportunity are relatively high however, they are less likely to correlate (Fazio & Olson, 2003). Thus, given that the use of implicit measures on forensic populations is still in its infancy further empirical research must attempt, to not only standardise measures but also, consider motivational and opportunity factors in responses. Automaticity has not been previously considered in assessments but could potentially be an intervention avenue in targeting such cognitions associated with levels of anger.

The findings concerning nursing staff anger in relation to the exposure of patient aggression and in use of coercive containment bears relevance to The Safewards Model (Bowers, 2014). The model depicts six domains of originating factors (i.e., the staff team, the physical environment, outside of the hospital, the patient community, patient characteristics and the regulatory framework) which give risk to flashpoints that have the capacity to trigger conflict and/or containment. The model highlights how staff, as individuals or teams, can influence the rates of conflict and containment in their

wards at every level. Staff's ability to regulate their own emotions is fundamental to: reducing the conflict-originating factors, preventing flashpoints that arise out of them, cutting the link between the flashpoint and conflict, and by choosing not to use coercive containment when it would be counterproductive. Staff's technical mastery is also fundamental and concerns having the social and interpersonal skills to deal with patient challenges, to bring comfort to distressed patients and to de-escalate those becoming agitated. Thus, although nursing staff anger was not related to actual involvement in coercive containment methods in this research, the positive correlation between exposure to patient aggression and nursing staff anger, as well as nursing staff anger and attitude towards the approval of physical restraint, raises important questions whether staff are regulating emotions appropriately and what support is available to them within the organisation. Moreover, since nursing staff anger is manifested in interactions with patients as being dominant, these findings collectively reinforce the importance of attending to nursing staff's emotion and technical mastery to help affect the rate of conflict and containment. These findings, which specifically relate to the staff team domain within the model, could help demonstrate the variance it contributes to a multi-factorial problem alongside the other domains.

Nijman's (2002) proposed model suggests that ward, staff and patient variables may interact in triggering inpatient aggression. Concerning staff variables, problematic communication between staff and patient is emphasised that could contribute to inpatient aggression. Indeed, although communication per se was not investigated in this thesis, the study findings concerning interpersonal styles which constitute verbal and non-verbal communication between patients and nursing staff indicated that they were not related to incidents of inpatient aggression. Central to Kiesler's (1983) theory of interpersonal style is the concept of complementarity; emotional and behavioural reactions are evoked in each person within the interaction, which can affect the extent of conflict within the relationship. The research in this thesis considered the application of interpersonal theory to the care and management of patients in relation to inpatient aggression. The findings contribute to the body of evidence to propose the importance to ensure positive interactions between staff and patients which could help minimise the level of anger and consequent aggression, within the keyworker relationship at least as found in this research. The range of verbal and nonverbal behaviours and personal characteristics of staff can impact on patients' perceptions of staff affiliation and control,

and in turn, on patient compliance and satisfaction (Daffern et al., 2012). Patients are involuntary detained in secure hospitals and denial of patient requests is not uncommon. The use of interpersonal theory could therefore inform staff training to gain an understanding in some of the difficulties that patients may have in their relationships with staff, and also become more self-aware of how their approach towards patients could contribute to conflicting relationships in its formation and maintenance.

9.2.2. Policy

An implication for this thesis' findings is that both patient anger and nursing staff anger should be considered in the management of patient aggression initiatives in mental health services. In 2014, the DH published guidance for all those working in health and social care settings. The guidance, *Positive and Proactive Care: reducing the need for restrictive interventions* (DH, 2014), states the key actions outlined will ensure patient's quality of life is enhanced and that their needs are better met which, in turn, will reduce the need for coercive containment. It further states the key actions to ensure that staff are also protected. Although it is recognised in this guidance that inpatient aggression and the use of coercive containment puts both patients and staff at risk of physical and/or emotional harm, there is little emphasis on the provision for staff to be supported as individuals and in teams. For instance, post-incident reviews and debriefs are recommended in the guidance; however, this is in context to ensure lessons are learnt to reduce similar incidents from reoccurring. The findings presented in this thesis suggest the need for staff to be supported as victims of patient aggression and in their involvement of coercive containment, to reduce levels of anger. This would perhaps promote positive wellbeing amongst the workforce (NHS England, 2015) and also help contribute to the reduction of incidents, which the Positive and Proactive Care (DH, 2014) guidance sets out to achieve.

NICE is a non-departmental body of the DH in the UK that publishes guidance based on evaluations of efficacy and cost-effectiveness. NICE (2015) acknowledges that inpatient aggression is due to a combination of factors including patients' sociodemographic characteristics and clinical status, as well as both patients and staff attitudes and behaviours in the involuntary, confined mental health settings. In terms of preventing inpatient aggression, it is indicated that staff training should include learning

material that enables them to recognise early signs of anger and aggression. The use of the ICM in this research has allowed for signs such as hostility and rumination tendencies to be identified, which the findings reveal as key correlates of anger. It is also indicated that training should enable staff to respond to patient's anger in an appropriate, measured and reasonable way. Knowledge of patients and staff interpersonal styles, in terms of complementarity as found in this research, could help inform what it means to respond in such a way to avoid conflict and/or use of containment.

NICE (2015) recommends that when assessing and managing risk of inpatient aggression, the patient should also be involved where possible. The findings in this thesis with regards to patients' self-reporting anger did reveal it is predictive of inpatient aggression risk. However, although there was no incremental predictive validity over clinicians' ratings on items in the SPJ tools, there certainly could be value in assessing risk factors from the patient's perspective. Patient involvement in the assessment of inpatient aggression risk could be therapeutic in itself and foster increased engagement with identified treatment programmes. This implication is echoed by Monahan and Skeem (2004), who propose that patients' self-reporting is one of the most promising candidates for advances in risk assessments, and thus would also further benefit the task of risk management of inpatient aggression (Doyle & Dolan, 2002; Doyle & Logan, 2012). For instance, as part of patients' self-reporting risk in the assessment of inpatient aggression, associated advance statements could also be sought. Advance statements are a written statement that conveys the patient's preferences, wishes, beliefs and values about their future treatment and care. Given that coercive containment can give further rise to conflict (i.e. aggression) rather than successfully prevent it (Bowers, 2014), patients self-reporting inpatient aggression risk together with advance statements could help minimise levels of anger between patients and nursing staff when flashpoints and/or incidents occur.

9.2.3. Clinical practice

Clinical staff are expected to work within regulatory frameworks and hospitals must consider good practice guidelines for the development of local policies. It is imperative that due attention is given to the role of anger in mental health services for

initiatives to manage inpatient aggression. The relevance of patient anger is insufficiently prioritised (Novaco, 2011) in terms of assessment and therefore treatment. Risk assessments are designed to facilitate risk management (Doyle & Dolan, 2002; Doyle & Logan, 2012). As found in this research, and in previous studies (Doyle & Dolan, 2006; McDermott et al., 2008), patients' self-reported anger predicts inpatient aggression. To unpick this relationship, however, clinicians may find the ICM helpful in understanding the development and perpetuation of anger and how this is manifested in the patient's pattern of aggressive behaviour. This will help facilitate the task of evidence-based formulation by identifying the role and strength of each cognitive component and communicating this with the patient and staff (i.e., risk communication). This could result in formulation-based anger treatments, by targeting rumination tendencies for example, to reduce risk and associated incidents. Also, allowing patients to become more involved in their care plans (Tait & Lester, 2005), including in risk assessment protocols (Monahan & Skeem, 2014) should be encouraged and facilitated where possible.

Support for staff should be made available for those who have been exposed to patient aggression and involved in the use of coercive containment. As not only can the experience be emotionally distressing (Needham et al., 2005; Bowers et al., 2011), care quality may also be compromised (Sacks & Walton, 2014). With a view to support its workforce (NHS England, 2015), and in order maintain a positive appreciation for patients (Bowers, 2014) and a strong team morale, recognition of the impact of incidents on staffs' emotional wellbeing is required. Addressing concerns in supervision and discussing matters as a ward team in reflective practice groups (Oelofsen, 2012) could be a space to articulate experiences and frustrations without fear of sanction. These regular reflective practice groups ought to be a fixed arrangement in ward routines as they could offer the opportunity to provide on-going moral and emotional support amongst team members. Also, a specialist consultancy service (Royal College of Nursing, 2006) will accommodate the need to allow staff members to discuss matters outside of their ward environment and teams. Training courses to help staff regulate emotions should also be considered (Eslamian, Fard, Tavakol & Yazdani, 2010). Such courses which could equip staff with techniques and help build resilience to patient aggression, particularly when it is experienced as humiliation. In making these

provisions available for staff it will demonstrate that staff members have managerial support for initiatives in managing patient aggression.

9.3. Research limitations

The studies in this research project are limited in several ways. Firstly, barriers to conducting research with the use of a clinical population in a detained environment are also recognised by Appelbaum (2008) and Apa et al., (2012). Resistance from clinical and security staff and patients can pose as a challenge. Clinical staff members tend to be pressured for time and sometimes wards are not adequately staffed or arranging cover is not possible. Secure hospitals consider a range of items, such as laptops, as contraband and on occasions these were prohibited by security staff from being taken on to the ward despite having ethical approval. Also, the limited rooms available on wards can cause logistical problems when conducting interviews. Further, patients can be difficult to recruit into research because of suspicions of limited confidentiality and peer pressure not to participate, or follow-up can be lost if patients move wards/hospitals or are discharged (Appelbaum, 2008). Information technology and its systems which supports routinely collected data can further compound research if these are not sufficiently developed. Taken together, these challenges could have resulted in reduced sample sizes.

Correlational cohort designs were adopted in each of the studies. Thus, it is acknowledged that no cause and effect can be determined (Field & Hole, 2003) in terms of anger and incidents of inpatient aggression and its containment. However, the correlational design has enabled the relationship between variables to be determined from the systematic observations in patient and nursing staff samples. The thesis offers the current findings as initial results which are designed to prompt further research in the role of anger. Hypotheses about cause and effect can therefore be proposed as a result and tested directly with experimental methods in future research.

The scope of the research project included a sample of patients and nursing staff. Despite over half of the eligible patients who were recruited into the project, which is consistent with previous research studies conducted in inpatient settings, it is possible that only healthier and less troubled participants took part. Reasons for patients

declining research participation however were not documented nor were demographics compared with patients who were recruited into the project, as there was no consent to access clinical records for these patients. Further, as the RC considered their patient caseload for eligible research participation, patients who were perhaps particularly vulnerable in terms of risk would not have been put forward to be approached by the researcher, even though this did not form part of the exclusion criteria.

Generalisability is also limited to specific diagnostic patient groups as patients were recruited from the mental disorder pathway wards only. Patients on these wards had a diagnosis of a schizophrenia spectrum disorder and/or a personality disorder, which are the most common diagnoses in the care pathway service (UK National Statistics, Patients in Mental Health Hospitals and Units, 2012; The Sainsbury Centre for Mental Health, 2007; Coid, Kahtan, Gault, Cook & Jarman, 2001). Thus, the patient group studied is not representative of all psychiatric inpatients. Additionally, in terms of the nursing staff sample, qualified members of nursing staff were recruited into the project primarily because of their role as keyworkers. However, non-qualified nursing staff such as health care assistants (HCAs) also form part of the ward team and equally spend time interacting with patients, if not more than qualified nursing staff. Thus, study findings in relation to frontline members of staff are limited to qualified nurses.

Questionnaires and cognitive tasks for each study within the research project formed the assessment battery which participants completed at one time point; during a two-hour interview for patients and a one hour-interview for nursing staff. Biases such as fatigue effects (Rolstad, Adler & Ryden, 2011) from completing one questionnaire after another cannot be dismissed, as well as participants' reactivity of being aware of the study aims which may have affected their future behaviour or manipulated their responses. Missing or incomplete routinely collected data for patients and nursing staff samples also poses as a limitation. Although it is a hospital policy directive that all incidents are reported, it is not known whether incidents in this research were underreported but it is a common issue that is acknowledged in inpatient studies (Stewart et al., 2009; Bowers et al., 2011). Further, incident data were reviewed for three months pre- and post-assessment but not all participants were at St Andrew's Healthcare for the full review period. This was due to a combination of patient admissions/discharges and staff starting employment and resignations. Thus, not all

participants had the same amount of time for the opportunity for conflict and/or containment incidents to arise.

9.4. Future research

As noted in the previous section, correlational cohort designs were adopted as a first step to explore the association between anger and inpatient aggression and its containment. The next step would be conduct experimental studies to determine cause and effect (Field & Hole, 2003). Further research might explore whether levels of patients' self-reported anger and clinician-rated risk factor items change pre- and post-anger treatment intervention, and in the frequency of aggressive incidents. Such research has the potential to demonstrate the benefit of patients self-reporting a risk factor of inpatient aggression (Monahan & Skeem, 2014), for the risk management task (Doyle & Logan, 2012). Having noted this, however, self-reported anger did not add predictive incremental validity over the HCR-20 Clinical subscale for inpatient aggression; thus, other dynamic risk-factors with an identifiable treatment target should also therefore be considered for self-reporting. Patient self-reported risk factors should be tested for incremental predictive validity. Encouraging patients to take an active role in their care planning (Tait & Lester, 2005), including in risk assessments, will not only help to improve risk prediction accuracy but it will assist in risk management which will, theoretically, be more effective with patients' increased compliance and engagement in treatment. Research of this kind will be a shift to evaluating the quality and effectiveness of risk management plans, based on risk assessments to address inpatient aggression.

Implicit testing of anger and cognitive correlates such as hostility, rumination and effortful control, as identified in the ICM, should be further advanced with larger sample sizes to enable for statistical analyses such as path analysis modelling (Blunch, 2013) with different types of aggressive behaviour. Standardising implicit measures (Price et al., 2012) initially however will ensure the consistency between terms and assessment of construct, especially anger, hostility and aggression (AHA; Spielberger, Reheiser & Sydeman, 1995), which are often used interchangeably in research studies. The application of implicit testing in clinical forensic populations has the potential to effectively target maladaptive cognitions that give rise to anger and consequent aggression. Innovative approaches to the assessment and treatment of inpatient

aggression would advance current approaches and also help in reducing recidivism rates in the community post-discharge from hospital.

The experience of anger that is nested amongst other emotions (Novaco, 2011) is shown to be evident in the study of nursing staffs emotion in relation to coercive containment. Future studies should consider drawing comparisons between levels of nursing staff emotion who receive specialist consultative support with those who do not receive such support on a post-incident basis. A space to reflect individually, or in teams, about the impact of being exposed to patient aggression and in its containment could empower staff (Oelofsen, 2012). Emphasis on emotional regulation in the interest of staff well-being (NHS England, 2015) and on team morale could help improve work productivity, decreased absenteeism due to injuries and help increase the repertoire of alternative methods to manage challenging patients before coercive containment would be required. Data on the rates of coercive containment as well as alternative methods to manage patient aggression should also be collected to allow for these comparisons. The lack of an association between nursing staff anger and their involvement in coercive containment incidents may be considered surprising given the positive relationship between anger and approval of physical restraint. However, a decision to implement coercive containment does not usually rest on a single individual; rather it is a team-mediated decision (Laiho et al., 2013) and it is possible that this provides a 'brake' on the implementation of such interventions by nurses with relatively high anger levels. It may be fruitful in future research to examine the anger levels, and the level of coercive containment approval, among the staff members involved in decisions to implement coercive interventions in order to investigate this phenomenon further. For example, does the anger level of the senior decision-maker influence such a decision to use coercive containment.

Future studies should also consider the interpersonal styles of both patients and staff, rather than focussing on one group or the other exclusively. This would allow for the characteristic relationship dyad in terms of complementarity to be determined, and how this impacts on therapeutic alliance and the number of conflicts and/or containment incidents. The difficulty is that patients interact with multiple members of staff and will therefore have a different type of relationship with each. Therefore, a future exploratory study might consider using purposive sampling to recruit only aggressive patients and

respective staff that have frequently been victim of patient aggression and involved in coercive containment to determine the extent of complementarity in interpersonal styles.

9.5. Conclusion

The studies reported here have shown that patients' self-reported anger is predictive of inpatient aggression, and exposure to patient aggression – particularly that which is perceived as humiliating - is predictive of nursing staff anger. Further, it was shown that nursing staff anger is related to their approval of physical restraint as a method of containment of patient aggression. However, there was no association between nursing staff anger and their involvement in coercive containment. Given that the use of coercive containment can give rise to further patient aggression, rather than successfully prevent it, the relevance of anger in interactions between nursing staff and patients is of importance. Interpersonal styles as perceived by one another were related to their self-reported anger, suggesting that the experience of anger affects the way in which nursing staff and patients interact. However, the relationship between nursing staff and patients were characterised as highly complementary, in terms of non-conflicting interpersonal styles, and were not associated with inpatient aggression and coercive containment incidents. The non-conflicting interpersonal styles suggest that a good therapeutic alliance exists between nursing staff and patients in this research. This finding also provides evidence that not all incidents are due to the quality of staff-patient interactions. Further research would need to establish whether anger treatment and organisational support for staff reduces levels of anger in patients and staff. Also, whether there is subsequently a reduction in incidents of aggressive behaviour and use of coercive methods to contain it could then be determined. Staff training on awareness of non-conflicting interpersonal styles could help promote positive interactions between staff and patients. Developing innovative methods to assessing anger could help advance the management of inpatient aggression and inform staff training, to prevent or minimise associated incidents.

REFERENCES

Ackerman, S. J., & Hilsenroth, M. J. (2003). A review of therapist characteristics and techniques positively impacting the therapeutic alliance. *Clinical Psychology Review, 23,* 1-33.

Ahmed, A. G., Kingston, D. A., DiGiuseppe, R., Bradford, J. M., & Seto, M. C. (2011). Developing a clinical typology of dysfunctional anger. *Journal of affective disorders, 136*(1), 139-148.

Allison, P. D. (2001). *Missing Data*. Thousand Oaks, California: Sage.

Almvik, R., Woods, P., & Rasmussen, K. (2000). The Broset violence checklist: sensitivity, specificity and interrater reliability. *Journal of Interpersonal Violence, 15,* 1284-1296.

Amore, M., Menchetti, M., Tonti, C., Scarlatti, F., Lundgren, E., Esposito, W., & Beradi, D. (2008). Predictors of violent behaviour among acute psychiatric patients: a clinical study. *Psychiatry and Clinical Neurosciences, 62,* 247-255.

Anestis, A., Daffern, M., Thomas, S. D. M., Podubinski, T., Hollander, Y., Lee, S., Foley, F., de Castella, A., & Kulkarni, J. (2013). Predictors of perceived coercion in patients admitted for psychiatric hospitalization and the stability of these perceptions over time. *Psychiatry, Psychology and Law, 20*(4), 492-503.

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology, 53*, 27-51.

Anderson, C. A., Carnagey, N. L., & Eubanks, J. (2003). Exposure to violent media: the effects of songs with violent lyrics on aggressive thoughts and feelings. *Journal of Personality and Social Psychology, 84*(5), 960-971.

Anderson, C. A., Carnagey, N. L., Flanagan, M., Benjamin, A. J., Eubanks, J., & Valentine, J. C. (2004). Violent video games: specific effects of violent content on aggressive thoughts and behaviour. *Advances in Experimental Social Psychology, 36,* 199-249.

Antonysamy, A. (2013). How can we reduce violence and aggression in psychiatric inpatient units? *BMJ Quality Improvement Report, 2,* 1-4.

Apa, Z. L., Bai, R. Y., Mukherejee, D. V., Herzig, C. T. A., Koenigsmann, C., Lowy, F. D., & Larson, E. L. (2012). Challenges and strategies for research in prisons. *Public Health Nurse, 29*(5), 467-472.

Appelbaum, K. L. (2008). Correctional Mental Health Research: Opportunities and Barriers. *Journal of Correctional Health Care, 14*(4), 269-277.

Arnetz, J. E., & Arntez, B. B. (2001). Violence towards health care staff and possible effects on the quality of patient care. *Social Science and Medicine*, *52*, 417-427.

Arsenio, W. (2010). Social information processing, emotions, and aggression: conceptual and methodological contributions of the special section articles. *Journal of Abnormal Child Psychology, 38,* 627-632.

Asberg, M., Montgomery, S. A., Perris, C., Schalling, D., & Sedvall, G. (1978). A Comprehensive psychopathological rating scale. *Acta Psychiat Scand, 271,* 5-27.

Attitude to Containment Measures Questionnaire (ACMQ). (2010). Institute of Psychiatry, King's College, London, UK.

Bader, S. M., & Evans, E. S. (2015). Predictors of severe and repeated aggression in a maximum –security forensic psychiatry hospital. International Journal of Forensic Mental Health, *14*, 110-119.

Berkowitz, L., & Harmon-Jones, E. (2004). Toward an understanding of the determinants of anger. *Emotion, 4*(2), 107-130.

Biancosino, B., Delmonte, S., Grassi, L., Santone, G., Preti, A., Miglio, R., & deGirolamo, G. (2009). Violent Behavior in Acute Psychiatric Inpatient Facilities: A National Survey in Italy. *The Journal of Nervous and Mental Disease*, 197(10), 772-782.

Bilgin, H. (2009). An evaluation of nurses' interpersonal styles and their experiences of violence. *Issues in Mental Health Nursing, 30,* 252-259.

Bjorkdhal, A., Hansebo, G.,& Palmstierna, T. (2013). The influence of staff training on the violence prevention and management climate in psychiatric inpatient units. *Journal of Psychiatric and Mental Health Nursing, 20*(5), 396-404.

Blackburn, R., & Glasgow, D. V. (2006). *Manual for the Chart of Interpersonal Reactions in Closed Living Environments, (CIRCLE).* Unpublished manuscript, University of Liverpool.

Bluemke, M., & Zumbach, J. (2007). Implicit and explicit measures for analysing the aggression of computer games. In Steffgen, G., & Gollwitzer, M. (Eds.). *Emotions and aggressive behavior* (pp. 38-57). Gottingen: Hogrefe & Huber Publishers.

Blunch, N. J. *Introduction to structural equation modelling: using IBM SPSS statistics and AMOS.* London: Sage.

Bowers, L. (2014). Safewards: a new model of conflict and containment on psychiatric wards. *Journal of Psychiatric and Mental Health Nursing, 21*, 499-508.

Bowers, L., Alexander, J., Bilgin, H., Botha, M., Dack, C., James, K., Jarrett, M., Jeffery, D., Nijman, H., Owiti, J. A., Papadopoulos, C., Ross, J., Wright, S., & Stewart, D. (2014). Safewards: the empirical basis of the model and a critical appraisal. *Journal of Psychiatric and Mental Health Nursing, 21*, 354-364.

Bowers, L., Alexander, J., Simpson, A., Ryan, C., & Carr-Walker, P. (2007). Student psychiatric nurses' approval of containment measures: relationship to perception of aggression and attitudes to personality disorder. *International Journal of Nursing Studies, 44,* 349-356.

Bowers, L., Nijman, H., Allan, T., Simpson, A., Warren, J., & Turner, L. (2006). Prevention and management of aggression training and violent incidents on U.K. acute psychiatric wards. *Psychiatric Services, 57*(7), 1022-1026.

Bowers, L., Stewart, D., Papadopoulos, C., Dack, C., Ross, J., Khanom, H., & Jeffery, D. (2011). Inpatient violence and aggression: A literature Review. Institute of Psychiatry, Kings College London.

Bradley, Ng., Kumar, S., Ranclaud, M., & Robinson, E. (2001). Ward crowding and incidents of violence on an acute psychiatric inpatient unit. *Psychiatric Services, 52*(4), 521-525.

Brower, M. C., & Price, B. H. (2001). Neuropsychiatry of frontal lobe dysfunction in violent and criminal behaviour: a critical review. *J Neurol Neurosurg Psychiatry, 71,* 720-726.

Busner, J., & Targum, S. D. (2007). The Clinical Global Impressions Scale: Applying a Research Tool in Clinical Practice. *Psychiatry,* July, 29-37.

Buss, A. H., & Durke, A. (1957). An Inventory for Assessing Different Kinds of Hostility. *Journal of Consulting Psychology, 21*(4), 343- 349.

Buss, A. H., & Perry, M. (1992) The Aggression Questionnaire. *Journal of Personality and Social Psychology*, 63(3), 452-459.

Beech, B., & Leather, P. (2004). Evaluating a management of aggression unit for student nurses. *Journal of Advanced Nursing, 44*, 603-612.

Bigwood, S., & Crowe, M. (2008). 'It's part of the job, but it spoils the job': A phenomenological study of physical restraint. *International Journal of Mental Health Nursing, 17*, 215-222.

Bimenyimana, E., Poggenpoel, M., Myburgh, C., & van Niekerk, V. (2006). The lived experience by psychiatric nurses of aggression and violence from patients in a Gauteng psychiatric institution. *Curationis, 32*(3), 4-13.

Caldwell, M. F. (1992). Incidence of PTSD among staff victims of patient violence. *Hospital and Community Psychiatry, 43*, 838-839.

Carmel, H., & Hunter, M. (1989). Staff injuries from inpatient violence. *Psychiatric Services, 40*(1), 41-46.

Carmel, H., & Hunter, M. (1993). Staff injuries from patient attack: five years' data. *Journal of American Academy of Psychiatry and the Law, 21*(4), 485-493.

Centre for workforce intelligence. (2012). *Mental health nurses: workforce risks and opportunities – education commissioning risks summary from 2012.* Retrieved from http://www.cfwi.org.uk/publications/mental-health-nurses-workforce-risks-and-opportunities-education-commissioning-risks-summary-from-2012

Chen, W., Huang, C., Hwang, J., & Chen, C. (2010). The relationship of health-related quality of life to workplace physical violence against nurses by psychiatric patients. *Qual Life Res, 19,* 1155-1161.

Chien, W., Chan, C. W. H., Lam, L., & Kam, C.-W. (2005). Psychiatric inpatients' perceptions of positive and negative aspects of physical restraint. *Patient Education and Counselling, 59*, 80-86.

Ching, H., Daffern, M., Martin, T., & Thomas, S. (2010). Reducing the use of seclusion in a forensic psychiatric hospital: assessing the impact on aggression, therapeutic climate and staff confidence. *The Journal of Forensic Psychiatry & Psychology, 21*(5), 737-760.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155.

Coid, J., Kahtan, N., Gault, S., Cook, A., & Jarman, B. (2001). Medium secure forensic psychiatry services: comparison of seven English health regions. *Br J Psychiatry, 178*(1), 55-61.

Collins, J. (1994). Nurses' attitudes towards aggressive behaviour, following attendance at "The Prevention and Management of Aggressive Behaviour Programme." *Journal of Advanced Nursing, 20*, 117-131.

Collins, M., & Davies, S. (2005). The security needs assessment profile: a multidimensional approach to measuring security needs. *International Journal of Forensic Mental Health, 4*(1), 39-52.

Combs, D. R., Penn, D. L., Wicher, M., & Waldheter, E. (2007). The Ambiguous Intentions Hostility Questionnaire (AIHQ): A new measure for evaluating hostile social-cognitive biases in paranoia. *Cognitive Neuropsychiatry, 12*(2), 128-143.

Convit, A., Isay, D., Otis, D., & Volavka, J. (1990). Characteristics of repeatedly assaultive psychiatric inpatients. *Hospital & Community Psychiatry, 41*(10), 1112-1115.

Cookson, A., Daffern, M., & Foley, F. (2012). Relationship between aggression, interpersonal style, and therapeutic alliance during short-term psychiatric hospitalization. *International Journal of Mental Health Nursing, 21*, 20-29.

Cornaggia, C. M., Beghi, M., Pavone, F., & Barale, F. (2011). Aggression in psychiatry wards: A systematic review. *Psychiatry research, 189*, 10-20.

Craig, T. J. (1982). An epidemiologic study of problems associated with violence among psychiatric inpatients. *Am J Psychiatry, 139*(10), 1262-1266.

Crawford, M. J., Rutter, D., Manley, C., Weaver, T., Bhui, K., Fulop, N., & Tyrer, P. (2002). Systematic review of involving patients in the planning and development of healthcare. *British Medical Journal, 325,* 1263-1267.

Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information processing mechanisms in children's adjustment. *Psychological Bulletin, 115,* 74-101.

Crouch, J. L., Irwin, L. M., Wells, B. M., Shelton, C. R., Skowronski, J. J., & Milner, J. S. (2012). The word game: an innovative strategy for assessing implicit processes in parents at risk for child physical abuse. *Child Abuse & Neglect, 36,* 498-509.

Cutcliffe, J. R. (1999). Qualified nurses' lived experience of violence perpetrated by individuals suffering from enduring mental health problems: a hermeneutic study. *International Journal of Nursing Studies, 36,* 105-116.

D'Agostino, R. B., & Stephens, M. A. (1986). *Goodness of fit techniques.* New York: Marcel Dekker, Inc.

Daffern, M. (2007). Assessing the functions of aggression in psychiatric inpatients. *The Behavior Analyst Today, 8*(1), 43-51.

Daffern, M., Day, A., & Cookson, A. (2012). Implications for the prevention of aggressive behaviour within psychiatric hospitals drawn from interpersonal communication theory. *International Journal of Offender Therapy and Comparative Criminology, 56*(3), 401-419.

Daffern, M., Duggan, C., Huband, N., & Thomas, S. (2010). Staff and Patient's Perceptions of each other's interpersonal style: relationship with severity of personality disorder. *International Journal of Offender Therapy and Comparative Criminology, 54*(4), 611-624.

Daffern, M., & Howells, K. (2009). The function of aggression in personality disordered patients. *Journal of Interpersonal Violence, 24*(5), 586-600.

Daffern, M., Howells, K., & Ogloff, J. (2007). What's the point? Towards a methodology for assessing the function of psychiatric inpatient aggression. *Behaviour Research and Therapy, 45,* 101-111.

Daffern, M., & Howells, K., Ogloff, J., & Lee, J. (2005). Individual characteristics predisposing patients to aggression in a forensic psychiatric hospital. *The journal of Forensic Psychiatry & Psychology, 16*(4), 729-746.

Daffern, M., Mayer, M. M., & Martin, T. (2003). A preliminary investigation into patterns of aggression in an Australian forensic psychiatric hospital. *The Journal of Forensic Psychiatry & Psychology, 14*(1), 67-84.

Daffern, M., Thomas, S., Ferguson, M., Podubinski, T., Hollander, Y., Kulkhani, J., deCastella, A., & Foley, F. (2010). The impact of psychiatric symptoms, interpersonal style, and coercion on aggression and self-harm during psychiatric hospitalization. *Psychiatry, 73*(4), 365-381.

Daffern, M., Thomas, S., Lee, S., Huband, N., McCarthy, L., Simpson, K., Duggan, C. (2013). The impact of treatment on hostile-dominance in forensic psychiatric inpatients: relationships between change in hostile-dominance and recidivism following release from custody. *The Journal of Forensic Psychiatry & Psychology, 24*(6), 675-687.

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. *The Journal of Forensic Psychiatry & Psychology, 21*(3), 426-445.

Desmarais, S. L., Nicholls, T. L., Read, J. D., & Brink, J. (2010). Confidence and accuracy in assessments of short-term risks presented by forensic psychiatric patients. *The Journal of Forensic Psychiatry & Psychology, 21*(1), 1-22.

Davis, R. N., & Nolen-Hoeksema, S. (2000). Cognitive inflexibility among ruminators and nonruminators. *Cognitive Therapy and Research, 24*(6), 699-711.

De Benedictis, L., Dumais, A., Sieu, N., Mailhot, M., Letourneau, G., Tran, M. M., Stikarovska, I., Bilodeau, M., Brunelle, S., Cote, G., & Lesage, A. D. (2011). Staff perceptions and organizational factors as predictors of seclusion and restraint on psychiatric wards. *Psychiatric Services, 62*(5), 484-491.

De Vogel, V., & De Ruiter, C. (2006). Structured professional judgement of violence risk in forensic clinical practice: A prospective study into the predictive validity of the Dutch HCR-20. *Psychology, Crime & Law, 12*(3), 321-336.

Deans, C. (2004). Who cares for nurses? The lived experience of workplace aggression. *Collegian, 11*(1), 32-26.

Department of Health (2008). Mental Health Act. London. HMSO.

Department of Health. (2010). *Your guide to relational security: see think act.* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/320249/See_Think_Act_2010.pdf

Department of Health. (2012). *National Survey of Investment in Adult Mental Health Services.* Retrieved 18 November 2015 from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/140098/FinMap2012-NatReportAdult-0308212.pdf

Department of Health. (2014). *Positive and Proactive Care: reducing the need for restrictive interventions.* Retrieved 01 October 2016 from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300293/JRA_DoH_Guidance_on_RP_web_accessible.pdf

Derogatis, L. R., & Melisaratos, N. (1983). The Brief Symptom Inventory: an Introductory report. *Psychological Medicine, 13,* 595-605.

Desmarais, S. L., Nicholls, T. L., Read, J. D., & Brink, J. (2010). Confidence and accuracy in assessments of short-term risks presented by forensic psychiatric patients. *The Journal of Forensic Psychiatry & Psychology, 21*(1), 1-22.

Donat, D. C. (2003). An analysis of successful efforts to reduce the use of seclusion and restraint at a public psychiatric hospital. *Psychiatric Serv, 54,* 1119-1123.

Dooher J and Rye L. (2013). The impact of cuts on mental health services: Good mental health in Leicester? *Mental Health Nursing,* 33(6), 1-4.

Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Arlington, VA, American Psychiatric Association, 2013.

Dickens, G., Picchioni, M., Long, C. (2013). Aggression in specialist secure and forensic inpatient mental health care: incidence across care pathways. *British Journal of Forensic Practice, 15*(3), 206-217.

DiGiuseppe, R., Tafrate, R. C. (2007). Understanding anger disorders. *Oxford University Press,* USA.

Douglas, K. S., Cox, D. N., Webster, C. D. (1999). Violence risk assessment: Science and practice. *Legal and Criminological Psychology, 4,* 149-184.

Douglas, K. S., Otto, R. K., & Borum, R. (2003). Clinical forensic psychology. In Schinka, J., Veliver, W. F., & Weiner, I. B. (Eds.), *Handbook of Psychology; Research Methods in Psychology Volume 2* (pp. 189-212). New Jersey: John Wiley & Sons, Inc.

Douglas, K. S., & Skeem, J. L. (2005). Violence risk assessment: Getting specific about being dynamic. *Psychology, Public Policy, and Law, 11,* 347-383.

Douglas, K. S., Webster, C. D., Hart, S. D., Eaves, D., & Ogloff, J. R. P. (Eds.). (2001). *HCR-20: Violence risk management companion guide.* Burnaby, BC, Canada: Mental Health, Law, and Policy, University of South Florida.

Doyle, M., & Dolan, M. (2002). Violence risk assessment: combining actuarial and clinical information to structure clinical judgements for the formulation and management of risk. *Journal of Psychiatric and Mental Health Nursing, 9*(6), 649-657.

Doyle, M., & Dolan, M. (2006). Evaluating the validity of anger regulation problems, interpersonal style, and disturbed mental state for predicting inpatient violence. *Behavioural Sciences and the Law, 24,* 783-798.

Doyle, M., & Logan, C. (2012). Operationalizing the assessment and management of violence risk in the short-term. *Behavioural Sciences and the Law, 30,* 406-419.

Duxbury, J., & Whittington, R. (2004). Causes and management of patient aggression and violence: staff and patient perspectives. *Journal of Advanced Nursing,* 50(5), 469-478.

Duxbury, J., & Whittington, R. (2005). Causes and management of patient aggression and violence: staff and patient perspectives. *Journal of Advanced Nursing, 50*(5), 469-478.

Eckhardt, C. I., & Deffenbacher, J. L. (1995). Diagnosis of Anger Disorders. In Kassinove, H. (Eds.). *Anger Disorders: Definition, Diagnosis and Treatment.* (pp. 27-47). US: Taylor & Francis.

Eckhardt, C., Norlander, B., & Deffenbacher, J. (2004). The assessment of anger and hostility. *Aggression and Violent Behavior, 9,* 17-43.

Efron, B., & Tibshirani, R. J. (1998). *An introduction to the bootstroop.* USA: CRC Press LLC.

Egisdottir, S., White, M. J., Spengler, P. M., Maugherman, A. S., Anderson, L. A., Cook, R. S., Nichols, C. N., Lampropoulos, G. K., Walker, B. S., Cohen, G., & Rush, J. D. (2006). The meta-analysis of clinical judgment project: fifty-six years of accumulated research on clinical versus statistical prediction. *The Counselling Psychologist, 34*(3), 341-382.

Ellis, A. E. (1973). *Humanistic psychotherapy.* New York: McGraw-Hill.
Engin, E., & Cam, O. (2006). Correlation between psychiatric nurses' anger and job motivation. *Archives of Psychiatric Nursing, 20*(6), 268-275.

Engqvist, I., Ferszt, G., Ahlin, A., & Nilsson, K. (2009). Psychiatric nurses' descriptions of women with postpartum psychosis and nurses' responses – an exploratory study in Sweden. *Issues in Mental Health Nursing, 30,* 23-30.

Eslamian, J., Fard, S. H. H., Tavakol, K., & Yazdani, M. (2010). The effect of anger management by nursing staff on violence rate against them in the emergency unit. *Iranian Journal of Nursing and Midwifery Research, 15*(1), 337-342.

Evershed, S., Tennant, A., Boomer, D., Rees, A., Barkham, M., & Watson, A. (2003). Practice-based outcomes of dialectical behaviour therapy (DBT) targeting anger and violence, with male forensic patients: A pragmatic and non-contemporaneous comparison. *Criminal Behaviour and Mental Health, 13*(3), 198-213.

Farrell, G. A., & Shafiei, T. (2012). Workplace aggression, including bullying in nursing and midwifery: a descriptive survey (the SWAB study). *International Journal of Nursing Studies, 49,* 1423-1431.

Farrell, G. A., Shafiei, T., & Salmon, P. (2010). Facing up to 'challenging behaviour': a model of training in staff-client interaction. *Journal of Advanced Nursing, 66*(7), 1644-1655.

Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition research: their meaning and use. *Annual Review of Psychology, 54,* 297-327.

Ferguson, C. J., Averill, P. M., Rhoades, H., Rocha, D., Gruber, N. P., & Gummattira, P. (2005). Social isolation, impulsivity and depression as predictors of aggression in a psychiatric inpatient population. *Psychiatric Quarterly, 76*(2), 123-137.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). London: Sage Publications Ltd.

Finfgeld-Connett, D. (2009). Model of therapeutic and non-therapeutic responses to patient aggression. *Issues in Mental Health Nursing, 30*(9), 530-537.

Flannery, R. B., Hanson, M. A., Rego, J. J., & W. A. P. (2003). Precipitants of psychiatric patient assault on staff: preliminary empirical inquiry of the assaulted staff action program (ASAP). *International Journal of Emergency Mental Health, 5,* 141-146.

Flannery, R. B., & Walker, A. P. (2008). Characteristics of four types of patient assaults: fifteen-year analysis of the Assaulted Staff Action Program (ASAP) with EMS implications. *International Journal of Emergency Mental Health, 10*(3), 177-184.

Flood, C., Bowers, L., & Parkin, D. (2008). Estimating the costs of conflict and containment on adult acute inpatient psychiatric wards. *Nursing Economics, 26*(5), 325-330.

Fujishiro, K., Gee, G. C., de Castro, A. B. (2011). Associations of workplace aggression with work-related well-being among nurses in the Philippines. *American Journal of Public Health, 101*(5), 861-867.

Garnefski, N., Kraaij, V., & Spinhoven, P. (2002). *Manual for the use of the Cognitive Emotion Regulation Questionnaire.* Netherlands: DATEC.

Garrison, W. T., Ecker, B., Friedman, M., Davidoff, R., Haeberie, K., & Wagner, M. (1990). Aggression and counteraggression during child psychiatric hospitalisation. *Journal of the American Academy of Child & Adolescent Psychiatry, 29,* 242-250.

Gilburt, H., Rose, D., & Slade, M. (2008). The importance of relationships in mental health care: A qualitative study of service users' experiences of psychiatric hospital admission in the UK. *BMC Health Services Research, 8*(92), 1-12.

Goldberg, B. R., Serper, M. R., Sheets, M., Beech, D., Dill, C., & Duffy, K. G. (2007). Predictors of aggression on the psychiatric inpatient service: self-esteem, narcissism, and theory of mind deficits. *The journal of nervous and mental disease, 195*(5), 436-442.

Golden, C. J., & Freshwater, S. M. (1998). *Stroop color and word test adult version; A Manual for Clinical and Experimental Uses.* USA: Stoelting Co.

Griffith, J. J., Daffern, M., & Godber, T. (2013). Examination of the predictive validity of the dynamic appraisal of situational aggression in two mental health units. *International Journal of Mental Health Nursing, 22,* 485-492.

Harris, C. T., Rice, M. E. (1986). Staff injuries sustained during altercations with psychiatric patients. *Journal of Interpersonal Violence, 1,* 173-191.

Heaton, R. K. (1990). *WCST: Computer Version 4 – Research Edition.* Odessa, FL: Psychological Assessment Resources, Inc.

Hochschild, A. (1983). *The Managed Heart: Commercialization of Human Feeling.* Berkeley: University of California Press.

Hoffman, W., Friese, M., & Wiers, R. W. (2008). Impulsive versus reflective influences on health behaviour: a theoretical framework and empirical review. *Health Psychology Review, 2*(2), 111-137.

Hosmer, D.W., & S. Lemeshow (2000). *Applied Logistic Regression. 2nd ed.* New York: Wiley Interscience.

Howell, D. C. (2007). *Statistical methods for psychology* (6th ed.). Belmont, CA: Thomson Wadsworth.

Humphreys, M. S. (2005). The multidisciplinary team and the clinical team meetings. In Wix, S., Humphreys, M. S., & Prins, H. (Eds.). *Multidisciplinary Working in Forensic Mental Health Care* (pp. 35-52). United Kingdom: Elsevier Churchill Livingstone.

Ireland, J. L. (2011). Violence assessment and intervention. In Davey, G. (Ed.), *Applied Psychology* (pp.291-316). West Sussex, UK: BPS Wiley-Blackwell.

Ireland, J. L, & Adams, C. (2015). Implicit aggression among young male prisoners: association with dispositional and current aggression. *International Journal of Law and Psychiatry, 41,* 89-94.

Ireland, J. L., Lee, J. P., Ireland, C. A., Chu, S., Kilcoyne, J., & Mulligan, C. (2016). Predicting hospital aggression in secure psychiatric care. *British Journal of Psychiatry Open, 2*(1)*,* 96-100.

Ito, H., Eisen, S. V., Sederer, L. I. Yamada, O., & Tachimori, H. (2001). Factors affecting psychiatric nurses' intention to leave their current job. *Psychiatric Services, 52*(2), 232-234.

Jackon, R., Ameratunga, S., Broad, J., Connor, J., Lethaby, A., Robb, G., Wells, S., Glasziou, & Heneghan, C. (2006). The GATE frame: critical appraisal with pictures. *Evidence Based Medicine, 11,* 35-38.

Jackson, D., Clare, J., & Mannix, J. (2002). Who would want to be a nurse? Violence in the workplace – a factor in recruitment and retention. *Journal of Nursing Management, 10*, 13-20.

John, C. (1998). Emotionality Ratings and Free-association Norms of 240 Emotional and Non-emotional Words. *Cognition and Emotion, 2*(1), 49-70.

Johansson, P., Oleni, M., & Fridlund, B. (2002). Patient satisfaction with nursing care in the context of health care: a literature study. *Scandinavian Journal of Caring Sciences, 16*(4), 337-344.

Kang, H. (2013). The prevention and handling of the missing data. *Korean J Anesthesiol, 64*(5), 402-406.

Kassinove, H., & Sukhodolsky, D. G. (1995). Anger Disorders: Basic science and practice issues. In Kassinove, H. (Eds.). *Anger Disorders: Definition, Diagnosis and Treatment.* (pp. 1-26). USA: Taylor & Francis.

Kay, S. R., Fiszbein, A., & Opler, L. A. (1987). The Positive and Negative Syndrome Scale (PANSS) for Schizophrenia. *Schizophrenia Bulletin, 13*(2), 261-276.

Kennedy, H.G. (1992). Anger and irritability*. British Journal of Psychiatry, 161*, 145-153.

Khiroya, R., Weaver, T., & Maden, T. (2009). Use and perceived utility of structured violence risk assessments in English medium secure forensic units. *Psychiatric Bulletin, 33,* 129-132.

Kiesler, D. J. (1983). The 1982 interpersonal circle: a taxonomy for complementarity in human transactions. *Psychological Review, 90*(3), 185-214.

Kiesler, D. J., & Schmidt, J. A. (2006). *The Impact Message Inventory – Circumplex (IMI – C) Manual.* Redwood City, CA: Mindgarden Inc.

Kim, Y., Lee, Y. L., & Min, S. K. (2010). No evidence of an association between A218C polymorphism of the tryptophan hydroxylase 1 gene and aggression in schizophrenia in a Korean population. *Yonsei Med*, 51(1), 27-32.

Konomi, Y. (2008). Neuropsychological and personality risk factors of aggression in forensic and non-forensic psychiatric inpatients. *ProQuest: UMI Dissertation Publishing*

Krieglmeyer, R., Wittstadt, D., & Strack, F. (2009). How attribution influences aggression: answers to an old question by using an implicit measure of anger. *Journal of Experimental Social Psychology, 45,* 379-385.

Laiho, T., Kattainen, E., Astedt-Kurki, P., Putkonen, H., Lindberg, N., & Kylma, J. (2013). Clinical decision making involved in secluding an adult psychiatric patient: an integrative literature review. *Journal of Psychiatric and Mental Health Nursing, 20,* 830-839.

Lanza, M. L. (1983). The reactions of nursing staff to physical assault by a patient. *Hospital and Community Psychiatry, 34*(1), 44-47.

Large, M., & Nielssen, O. (2017). The limitations and future of violence risk assessment. *World Psychiatry, 16*(1), 25.

Larsen, R. J., Mercer, K. A., Balota, D. A. (2006). Lexical characteristics of words used in emotional stroop experiments. *Emotion, 6*(1), 62-72.

Larue, C., Dumais, A., Ahern, E., Bernheim, E., & Mailhot, M.-P. (2009). Factors influencing decisions on seclusion and restraint. *Journal of Psychiatric and Mental Health Nursing, 16,* 440-446.

Lazarus, R. (1991). Emotion and adaptation. New York: Oxford.

Leary, T. (1957). *Interpersonal diagnosis of personality.* New York: Ronald Press.

Lee, S., Gray, R., Gournay, K., Wright, S., Parr, A. M., & Sayer, J. (2003). Views of nursing staff on the use of physical restraint. *Journal of Psychiatric and Mental Health Nursing, 10*, 425-430.

Linder. J. R., Wener, N. E., & Lyle, K. A. (2010). Automatic and controlled social information processing and relational aggression in young adults. *Personality and Individual Differences, 49,* 778-783.

Lion, J. R. (1972). *Evaluation and Management of the Violent Patient.* Charles C Thomas, Springfield, IL.

Lion, J. R., Snyder, W., & Merrill, G. L. (1981). Underreporting of assaults on staff in a state hospital. *Hospital & Community Psychiatry, 32*, 497-498.

Lobbestael, J., Cima, M., & Arntz, A. (2013). The relationship between adult reactive and proactive aggression, hostile interpretation bias, and antisocial personality disorder. *Journal of Personality Disorders, 27,* 53-66.

Lowry, M. (2016). De-escalating anger: a new model for practice. *Nursing Times, 112*(4), 4-7.

Lu, C-H., Wang, T-F, & Liu, C-Y. (2007). Psychiatric nurses' reactions to assault upon them by inpatients: a survey in Taiwan. *Psychological Reports, 100,* 777-782.

Marangos-Frost, S., & Wells, D. (2000). Psychiatric nurses' thoughts and feelings about restraint use: a decision dilemma. *Journal of Advanced Nursing, 31*(2), 362-369.

Mason, T. (2002). Forensic psychiatric nursing: a literature review and thematic analysis of role tensions. *Journal of Psychiatric and Mental Health Nursing, 9*(5), 511-520.

McDermott, B. E., Edens, J. F., Quanbeck, C. D., Busse, D., & Scott, C. L. (2008). Examining the role of static and dynamic risk factors in the prediction of inpatient violence: variable-and person-focused analyses. *Law Hum Behav, 32,* 325-338.

McDermott, B. E., Quanbeck, C. D., Busse, D., Yastro, & Scott, C. L. (2008). The accuracy of risk assessment instruments in the prediction of impulsive versus predatory aggression. *Behavioural sciences and the law, 26,* 759-777.

McGuinness, D., Dowling, M., & Trimble, T. (2013). Experiences of involuntary admission in an approved mental health centre. *Journal of Psychiatric and Mental Health Nursing, 20*, 726-734.

McKenna, B. G., Smith, N. A., Poole, S. J., & Coverdale, J. H. (2003). Horizontal violence: experiences of registered nurses in their first year of practice. *Journal of Advanced Nursing, 42*(1), 90-96.

McNeil, D. E., & Binder, R. L. (1995). Correlates of accuracy in the assessment of psychiatric inpatients' risk of violence. *Am J Psychiatry, 152*(6), 901- 906.

Miller, S. L., & Brodsky, S. L. (2011). Risky business: addressing the consequences of predicting violence. *J Am Acad Psychiatry Law, 39,* 396-401.

MIND. (2013). *Mental Health Crisis Care: Physical restraint in crisis; A report on physical restraint in hospital settings in England.* Retrieved 13 October 2016 from: http://www.mind.org.uk/media/197120/physical_restraint_final_web_version.pdf

Moher, D. Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *BMJ,* 339:b2535

Monahan, J. (1992). Mental disorder and violent behaviour: perceptions and evidence. *American Psychological Association, 47*(4), 511-521.

Monahan, J., & Skeem, J. L. (2014). The evolution of violence risk assessment. *Cambridge University Press,* 1-6.

Monahan, J., Steadman, H. J., Robbins, P. C., Appelbaum, P., Banks, S., Grisso, T., Heilbrun, K., Mulvey, E. P., Roth, L., & Silver, E. (2005). An actuarial model of violence risk assessment for persons with mental disorders. *Psychiatric Services, 56*(7), 810-815.

Moors, A., & De Houwer, J. (2006). Automaticity: a theoretical and conceptual analysis. *Psychological Bulletin, 132*(2), 297-326.

Morrison, E. F. (1992). A hierarchy of aggressive and violent behaviours among psychiatric inpatients. *Hosp Community Psychiatry, 43,* 505-506.

Morrison, E., Morman, G., Bonner, G., Taylor, C., Abraham, I., & Lathan, L. (2002). Reducing staff injuries and violence in a forensic psychiatric setting. *Archives of Psychiatric Nursing, 16*(3), 108-117.

Morse, J. M. (1991). Negotiating commitment and involvement in the nurse-patient relationship. *Journal of Advanced Nursing, 16,* 455-468.

Murray, M. G., & Snyder, J. C. (1991). When staff are assaulted: a nursing consultation support service. *Journal of Psychosocial Nursing & Mental Health Services, 29*(7), 24-29.

National Audit Office. (2003). Protecting NHS hospital and ambulance staff from violence and aggression: a safer place to work. Retrieved 30 October 2016 from: https://www.nao.org.uk/report/a-safer-place-to-work-protecting-nhs-hospital-and-ambulance-staff-from-violence-and-aggression/

National Health Service England. (2015). The Five Year Forward View Mental Health Taskforce: Public engagement findings. Retrieved 13 October 2016 from: https://www.england.nhs.uk/mentalhealth/wp-content/uploads/sites/29/2015/09/fyfv-mental-hlth-taskforce.pdf

National Institute for Clinical Excellence (2015). *Violence and aggression: short-term management in mental health, health and community settings.* London, National Institute for Clinical Excellence.

Needham, I., Abderhalden, C., Halfens, R. J. G., Dassen, T., Haug, H. J., & Fischer, J. E. (2005). The effect of a training course in aggression management on mental health nurses' perceptions of aggression: a cluster randomised controlled trial. *International Journal of Nursing Studies, 42,* 649-655.

Needham, I., Abderhalden, C., Halfens, R. J. G., Fischer, J. E., & Dassen, T. (2005). Non-somatic effects of patient aggression on nurses: a systematic review. *Journal of Advanced Nursing, 49*(3), 283-296.

Nijman, H. L. I. (2002). A model of aggression in psychiatric hospitals. *Acta Psychiatrica Scandinavica*, *106*, 142–143.

Nolan, P. Soares, J., Dallender, J., Thomsen, S., & Arnetz, B. (2001). A comparative study of the experiences of violence of English and Swedish mental health nurses. *International Journal of Nursing Studies, 38*, 419-426.

Nolan, K. A., Volavka, J., Czobor, P., Sheitman, B., Lindenmayer, J., Citrome, L. L., McEvoy, J., & Lieberman, J. A. (2005). Aggression and psychopathology in treatment-resistant inpatients with schizophrenia and schizoaffective disorder. *Journal of Psychiatric Research, 39,* 109-115.

Nonstad, K., Nesset, M. B., Kroppan, E., Pedersen, T. W., Nottestad, J., Almvik, R., & Palmstierna, T. (2010). Predictive validity and other psychometric properties of the short-term assessment of risk and treatability (START) in a Norwegian high secure hospital. *International Journal of Forensic Mental Health, 9,* 294-299.

Norlander, B., Eckhardt, C. (2005). Anger, hostility, and male perpetrators of intimate partner violence: a meta-analytic review. *Clin psychol rev, 25*(2), 119-152.

Novaco, R.W. (1994). Anger as a risk factor for violence among the mentally disordered. In J. Monahan & H. Steadman (Eds.), *Violence and mental disorder: Developments in risk assessment*. University of Chicago Press.

Novaco, R. W. (1995). Ward Anger Rating Scale (WARS). University of California, Irvine.

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

Novaco, R. W. (2010) Anger and Psychopathology. In Potegal,M., Stemmler, G., & Spielberger, C. (Eds.). *International Handbook of Anger: Constituent and Concomitant Biological, Psychological, and Social Processes* (pp. 465-497). New York: Springer.

Novaco, R. W. (2011). Anger dysregulation: driver of violent offending. *The Journal of Forensic Psychiatry & Psychology*, 22(5), 650-668.

Oelofsen, N. (2012). Using reflective practice in frontline nursing. *Nursing Times, 108*(24), 22-24.

Ogloff, J. R. P., & Daffern, M. (2006). The dynamic appraisal of situational aggression: an instrument to assess risk for imminent aggression in psychiatric inpatients. *Behavioural Sciences and the Law, 24,* 799-813.

O'Shea, L. E., Mitchell, A. E., Picchioni, M. M., & Dickens, G. L. (2013). Moderators of the predictive efficacy of the historical, clinical and risk management-20 for aggression in psychiatric facilities: systematic review and meta-analysis. *Aggression and Violent Behavior, 18,* 255-270.

Oud, N. (2000). *The Perception of Prevalence of Aggression Scale (POPAS) Questionnaire*. Netherlands: CONNECTING.

Overall, J. E., & Gorham, D. R. (1962). The Brief Psychiatric Rating Scale. *Psychological Reports, 10,* 799-812.

Owen, C., Tarantello, C., & Jones, M. (1998). Violence and aggression in psychiatric units. *Psychiatric Services, 49*, 1452-1457.

Pai, H., & Lee, S. (2011). Risk factors for workplace violence in clinical registered nurses in Taiwan. *Journal of Clinical Nursing, 20,* 1405-1412.

Papadopoulos, C, Stewart, R. J., Dack, C., James, K., Bowers, L. (2012). The antecedents of violence and aggression within psychiatric in-patient settings. *Acta Psychiatr Scand, 125,* 425-439.

Paparella, G. (2015). *Understanding staff wellbeing, its impact on patient experience and healthcare quality.* Oxford: Picker Institute Europe. Retrieved 13 October 2016 from: http://www.pickereurope.org/wp-content/uploads/2015/06/2015-06-10-StaffWellbeingBriefing.pdf

Parkes, J. (2003). The nature and management of aggressive incidents in a medium secure unit. *Medicine, Science & the Law, 43*, 69-74.

Paterson, B., & McIntosh, I., Wilkinson, D., McComish, S., & Smith, I. (2013). Corrupted cultures in mental health inpatient settings. Is restraint reduction the answer? *Journal of Psychiatric and Mental Health Nursing, 20,* 228-235.

Paterson, B., Wilkinson, D., Leadbetter, D., Bradley, P., Bowie, V., & Martin, A. (2011). How corrupted cultures lead to abuse of restraint interventions. *Learning Disability Practice, 14*(7), 24-28.

Peduzzi, P.N., et al. (1996). A simulation study of the number of events per variable in logistic regression analysis. *Journal of Clinical Epidemiology, 49*, 1373-1379.

Peters, M. D., Godfrey, C. M., Khalil, H., McInerney, P. Parker, D., & Soares, C. B. (2015). Guidance for conducting systematic scoping reviews. *Int J Evid Based Healthc, 13*, 141-146.

Podubinski, T., Daffern, M., & Lee, S. (2012). A prospective examination of the stability of hostile-dominance and its relationship to paranoia over a one-year follow-up. *Personality and Individual Differences, 52,* 586-590.

Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., Britten, N., Roen, K., & Duffy, S. (2006). *Guidance on the conduct of narrative synthesis in system reviews.* Retrieved 21 October 2016 from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.178.3100&rep=rep1&type=pdf

Posner, M. I., & Rothbart, M. K. (2000). Developing mechanisms of self-regulation. *Development and Psychopathology, 12,* 427-441.

Potegal, M., Stemmler, G., & Spielberger, C. (Eds.) (2010). *International Handbook of Anger: Constituent and Concomitant Biological, Psychological, and Social Processes.* New York: Springer.

Price, O., Baker, J., Bee, P., & Lovell, K. (2015). Learning and performance outcomes of mental health staff training in de-escalation techniques for the management of violence and aggression. *The British Journal of Psychiatry, 206*, 447-455.

Price, S. A., Beech, A. R., Mitchell, I. J., & Humphreys, G. W. (2012). The promises and perils of the emotional stroop task: a general review and considerations for use with forensic samples. *Journal of Sexual Aggression, 18*(3), 253-268.

Quanbeck, C. D., McDermott, B. E., Scott, C. L., Eggelston, C. F., Lam, J., Eisenstark, H., & Sokolov, G. (2007). Categorization of assaultive acts committed by chronically aggressive state hospital patient. *Psychiatric Services, 58,* 521-528.

Quinsey, V. L., Harris, G. T., Rice, M. E., & Cormier, C. A. (1998). *Violent offenders: Appraising and managing risk*. Washington, DC: American psychological Association.

Rahman, M. M., & Govindarajulu, Z. (1997). A modification of the test of Shapiro and Wilk for normality. *Journal of Applied Statistics, 24*(2), 219-235.

Raja, M., & Azzoni, A. (2005). Hostility and violence of acute psychiatric inpatients. *Clinical Practice and Epidemiology in Mental Health, 11*(1), 1-9.

Reagu, S., Jones, R., Kumari, V., & Taylor, P. (2013). Angry affect and violence in the context of a psychotic illness: a systematic review and meta-analysis of the literature. *Schizophrenia Research, 146,* 46-52.

Roaldset, J. O., & Bjorkly, S. (2010). Patients' own statements of their future risk for violent and self-harm behaviour: A prospective inpatient and post-discharge follow-up study in an acute psychiatric unit. *Psychiatry Research, 178,* 153-159.

Robbe, M. D., De Vogel, V., Wever, E., Douglas, K. S., & Nijman, H. L. I. (2016). Risk and protective factors for inpatient aggression. *Criminal Justice and Behavior, 43*(10), 1364-1385.

Rolstad, S., Adler, J., & Ryden, A. (2011). Response burden and questionnaire length: is shorter better? A review and meta-analysis. *Value in Health, 14*(8), 1101-1108.

Royal College of Nursing. (2006). *Counselling for staff in health service settings: a guide for employers and managers.* London: RCN.

Rice, M. E., & Harris, G. T. (2005). Comparing effect sizes in follow-up studies: ROC area, Cohen's d, and r. *Law and Human Behaviour, 29*(5), 615-620.

Richter, D., & Berger, K. (2006). Post-traumatic stress disorder following patient assaults among staff members of mental health hospitals: a prospective longitudinal study. *BMC Psychiatry, 6*, 15.

Rippon, T. J. (2000). Aggression and violence in health care professions. *Journal of Advanced Nursing*, 31(2), 452-460.

Ritsner, M., Modai, I., Gibel, A., Leschiner, S., Silver, H., Tsinovoy, G., Weizman, A., & Gavish, M. (2003). *Journal of psychiatric research, 37,* 549-556.

Rogers, R. (2000). The uncritical acceptance of risk assessment in forensic practice. *Law and Human Behavior, 24*(5), 595-605.

Rosnow, R. L., & Rosenthal, R. (2005). *Beginning behavioural research: A conceptual primer* (5th Eds.). Upper Saddle River, NJ: Pearson Hall.

Royal College of Psychiatrists. (2007). *Healthcare Commission National Audit of Violence*. London: RCP.

Royal College of Nursing. (2008). *Let's talk about restraint.* London. RCN.

Rutherford, M., & Duggan, S. (2007). *The Sainsbury Centre for Mental Health: Forensic Mental Health Services: Facts and figures on current provision.* Retrieved November 18 2013 from http://www.centreformentalhealth.org.uk/pdfs/scmh_forensic_factfile_2007.pdf

Ryan, J. A., & Poster, E. C. (1989). The assaulted nurse: short-term and long-term responses. *Archives of Psychiatric Nursing, 3,* 323-331.

Sacks, M. H., & Walton, M. F. (2014). Seclusion and restraint as measures of the quality of hospital care: any exceptions? *Psychiatric Services, 65*(11), 1373-1375.

Scott, C. L., & Resnick, P. J. (2006). Violence risk assessment in persons with mental illness. *Aggression and Violent Behavior, 11,* 598-611.

Seeman, K., Yesavage, J., & Widrow, L. A. (1985). Correlations of self-directed violence in acute schizophrenics with clinical ratings and personality measures. *The journal of nervous and mental disease, 173*(5), 298-302.

Sequeira, H., & Halstead, S. (2004). The psychological effects on nursing staff of administering physical restraint in a secure psychiatric hospital: 'when I go home, it's then that I think about'. *The British Journal of Forensic Practice, 6*(1), 3-15.

Serban, G., & Grdynski, C. B. (1975). Differentiating criteria for acute-chronic distinction in schizophrenia. *Arch Gen Psychiatry, 32,* 705-712.

Serper, M., Beech, D. R., Harvey, P. D., & Dill, C. (2008). Neuropsychological and symptom predictors of aggression on the psychiatric inpatient service. *Journal of Clinical and Experimental Neuropsychology, 30*(6), 700-709.

Silver, J., & Yudofsky, S. (1991). The Overt Aggression Scale: Overview and guiding principles. *The Journal of Neuropsychiatry and Clinical Neurosciences, 3,* 222-224.

Singh, J. P., Desmarais, S. L., & Van Dorn, R. A. (2013). Measurement of predictive validity in violence risk assessment studies: A second-order systematic review. *Behavioral Sciences & the Law, 31*(1), 55-73

Singh, J. P., Grann, M., & Fazel, S. (2011). A comparative study of violence risk assessment tools: A systematic review and metaregression analysis of 68 studies involving 25,980 participants. *Clinical Psychology Review, 31,* 499-513.

Skeem, J. L., Manchak, S. M., Lidz, C. W., & Mulvey, E. P. (2013). The utility of patients' self-perceptions of violence risk: consider asking the person who may know best. *Psychiatric Services, 64*(5), 410-415.

Smith, P., & Gray, D. (2000). The emotional labour of nursing: how student and qualified nurses learn to care. London: South Bank University.

Smith, P., & Waterman, M. (2003). Processing bias for aggression words in forensic and nonforensic samples. *Cognition and Emotion, 17*(5), 681-701.

Smith, P., Waterman, M. (2005). Sex differences in processing aggression words using the emotional Stroop task. *Aggressive Behavior, 31,* 271-282.

Spector, P. E., Zhou, Z. E., & Che, X. X. (2014). Nurse exposure to physical and nonphysical violence, bullying, and sexual harassment: a quantitative review. *International Journal of Nursing Studies, 51,* 72-84.

Song, H., & Min, S. K. (2009). Aggressive behaviour model in schizophrenia patients. *Psychiatry research, 167,* 58-65.

Sorgi, P., Ratey, J., Knoelder, D. W., Markert, R. J., & Reichman, M. (1991). Rating aggression in the clinical setting: A retrospective adaptation of the Overt Aggression Scale: preliminary results. *Journal of Neuropsychiatry and Clinical Neuro-Sciences, 3*(2), 52-56.

Spielberger, C. D. (1988). *Manual for the State-Trait Anger Expression Inventory.* Odessa, FL: Psychological Assessment Resources.

Speilberger, C. D. (1999). *State-Trait Anger Expression Inventory-2 (STAXI-2); Professional Manual*. Odessa, FL: Psychological Assessment Resources, Inc.

Spielberger, C. D., Reheiser, E. C., & Sydeman, S. J. (1995). Measuring the experience, expression, and control of anger. In Kassinove (Eds.). *Anger Disorders* (pp. 49-67). USA: Taylor & Francis.

Stewart, D., Bowers, L., Simpson, A., Ryan, C., & Tziggili, M. (2009). Manual restraint of adult psychiatric inpatients: a literature review. *Journal of Psychiatric and Mental Health Nursing, 16*(8), 749-757.

Stockman, C. (2005). A literature review of the progress of the psychiatric nurse-patient relationship as described by peplau. *Issues in Mental Health Nursing, 26*, 911-919.

Strack, F., & Deutsch, R. (2004). Reflective and impulsive determinants of social behaviour. *Personality and Social Psychology Review, 8*(3), 220-247.

Suen, L. K. P., Lai, C. K. Y., Wong, T. K. S., Chow, S. K. Y., Kong, S. K. F., Ho, J. Y. L., Kong, T. K., Leung, J. S. C., & Wong, I. Y. C. (2006). Use of physical restraints in rehabilitation settings: staff knowledge, attitudes and predictors. *Journal of Advanced Nursing, 55*(1), 20-28.

Sullivan, H. S. (1953). *The interpersonal theory of psychiatry.* New York: W. W. Norton.

Sugden, S. G., Kile, S. J., & Hendren, R. L. (2006). Neurodevelopmental pathways to aggression: A model to understand and target treatment in youth. *The Journal of Neuropsychiatry and Clinical Neurosciences, 18,* 302-317.

Sukhodolsky, D. G., Golub, A., Cromwell, E. N. (2001). Development and validation of the anger rumination scale. *Personality and Individual Differences, 31,* 689-700.

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). USA: Pearson.

Tait, L., & Lester, H. (2005). Encouraging user involvement in mental health services. *Advances in Psychiatric Treatment, 11,* 168-175.

Tenneij, N., Didden, R., Veltkamp, E. & Koot, H. M. (2009). Reliability and validity of the HoNOS-LD and HoNOS in a sample of individuals with mild to borderline intellectual disability and severe emotional and behaviour disorders. *Journal of Mental Health Research in Intellectual Disabilities, 2,* 188-200.

Troisi, A., Kustermann, S., Di Genio, M., & Siracusano, A. (2003). Hostility during admission interview as a short-term predictor of aggression in acute psychiatric male inpatients. *J Clin Psychiatry, 64*(12), 1460-1464.

Tully, A. (2004). Stress, source of stress and ways of coping among psychiatric nursing students. *Journal of Psychiatric and Mental Health Nursing, 11,* 43-47.

UK National Statistics: Patients in Mental Health Hospitals and Units (2012). Retrieved November 18 from http://wales.gov.uk/statistics-and-research/patients-mental-health-hospitals-units/?lang=en

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

Vaaler, A. E., Iversen, V. C., Morken, G., Flovig, J. C., Palmstierna, T., & Linaker, O. M. (2011). Short-term prediction of threatening and violent behaviour in an acute psychiatric intensive care unit based on patient and environment characteristics. *BMC Psychiatry, 11,* 44.

Vassar. M., & Hale, W. (2009). Reliability reporting across studies using the Buss Durke Hostility Inventory. *Journal of Interpersonal Violence, 24*(1), 20-37.

Vitacco, M. J., Van Rybroek, G. J., Rogstad, J. E., Yahr, L. E., Tomony, J. D., & Saewert, E. (2009). Predicting short-term institutional aggression in forensic patients: a multi-trait method for understanding subtypes of aggression. *Law Hum Behav, 33,* 308-319

Watson, D., & Clark. L. A. (1994). *The PANAS-X; Manual for the Positive and Negative Affect Schedule – Expanded Form.* US: The University of Iowa.

Wang, E. W., & Diamond, P. M. (1999). Empirically identifying factors related to violence risk in corrections. *Behavioural Sciences and the Law, 17,* 377-389.

Webster, C. D., Douglas, K. S., Eaves, D., & Hart, S. D. (1997). *HCR-20: Assessing risk of violence.* Vancouver: Mental Health Law and Policy Institute, Simon Fraser University.

Webster, C. D., Martin, M., Brink, J., Nicholls, T. L., & Desmarais, S. L. (2009) *Short-term Assessment of Risk and Treatability (START) Version 1.1.* BC Mental Health and Addiction Services, Coquitlam, British Columbia, Canada and St Joseph's Healthcare Hamilton, Ontario, Canada.

Webster, C. D., Martin, M. L., Brink, J. H., Nicholls, T. L., & Middleton, C. (2004). *Short-Term Assessment Risk and Treatability (START).* St. Joseph's Healthcare, BC: Forensic Psychiatric Services Commission.

Wentura, D., Rothermund, K., & Bak, P. (2000). Automatic vigilance: the attention-grabbing power of approach and avoidance-related social information. *Journal of Personality and Social Psychology, 78*(6), 1024-1037.

Werner, N. E., & Nixon, C. L. (2005). Normative beliefs and relational aggression: An investigation of the cognitive bases of adolescent aggressive behaviour. *Journal of Youth and Adolescence, 34,* 229-243.

White, B. A., & Turner, K. A. (2014). Anger rumination and effortful control: mediation effects on reactive but not proactive aggression. *Personality and Individual Differences, 56,* 186-189.

Whittington, R. (1994). Violence in psychiatric hospitals. In Wykes, T. (Eds.). *Violence and Health Care Professionals* (pp. 23-43).London: Chapman & Hall.

Whittington, R., Bowers, L., Nolan, P., Simpson, A., & Neil, L. (2009). Approval Ratings of Inpatient Coercive Interventions in a National Sample of Mental Health Service Users and Staff in England. *Psychiatric Services, 60*(6), 792-798.

Whittington, R., Lancaster, G., Meehan, C., Lane, S., & Riley, D. (2006). Physical restraint of patients in acute mental health care settings: patient, staff, and environmental factors associated with the use of a horizontal restraint position. *The Journal of Forensic Psychiatry & Psychology, 17*(2), 253-265.

Whittington, R., Leitner, M., Barr, W., Lancaster, G., & McGuire, J. (2012). Longitudinal trends in using physical interventions to manage aggression and self-harm in mental health services. *Psychiatric Services, 63*(5), 488-492.

Whittington, R., & Richter, D. (2005). Interactional aspects of violent behaviour on acute psychiatric wards. *Psychology, crime & law, 11*(4), 377-388.

Whittington, R., & Wykes, T. (1991). Coping strategies used by staff following assault by a patient: an exploratory study. *Work & Stress, 5*(1), 37-48.

Whittington, R., & Wykes, T. (1992). Staff strain and social support in a psychiatric hospital following assault by a patient. *Journal of Advanced Nursing, 17,* 480-486.

Whittington, R., & Wykes, T. (1994). An observational study of associations between nurse behaviour and violence in psychiatric hospitals. *Journal of Psychiatric and Mental Health Nursing, 1*, 85-92.

Wilkowski, B. M., & Robinson, M. D. (2008). The cognitive basis of trait anger and reactive aggression: an integrative analysis. *Personality and Social Psychology Review, 12*, 3-21.

Wilkowski, B. M., & Robinson, M. D. (2010). The Anatomy of Anger: An Integrative Cognitive Model of Trait Anger and Reactive Aggression. *Journal of Personality*, 78(1), 9-38.

Williams, J. M. G., Mathews, A., & MacLeod, C. (1996). The Emotional Stroop Task and Psychopathology. *Psychological Bulletin, 120*(1), 3-24.

Witt, K., van Dorn, R., & Fazel, S. (2013). Risk factors for violence in psychosis: systematic review and meta-regression analysis of 110 studies. *Plos one, 8*(2), 1-15.

World Health Organisation. (2000). Mental health and work: impact, issues and good practices. Retrieved 13 October 2016 from: http://www.who.int/mental_health/media/en/712.pdf

World Health Organisation. (2011). *ICD-10 Classifications of Mental and Behavioural Disorder: Clinical Descriptions and Diagnostic Guidelines*. Geneva: World Health Organisation.

Wright, S. (1999). Physical restraint in the management of violence and aggression in in-patient settings: A review of issues. *Journal of Mental Health, 8*(5), 459-472.

Wykes, T., & Whittington, R. (1998). Prevalence and predictors of early traumatic stress reactions in assaulted nurses. *Journal of Forensic Psychiatry, 9*, 643-658.

Yesavage, J. A. (1983). Relationships between measures of direct and indirect hostility and self-destructive behaviour by hospitalized schizophrenics. *Brit. J. Psychiat, 143,* 173-176.

Yesavage, J. A., Werner, P. D., Becker, J., Holman, C., & Mills, M. (1981). Inpatient evaluation of aggression in psychiatric patients. *The journal of nervous and mental disease, 169*(5), 299-302.

Yudofsky, S., Silver, J, M., Jackson, W., Endicott, J., & Williams, D. (1986). The overt aggression scale for the objective rating of verbal and physical aggression. *Am J Psychiatry, 143*, 35-39.

Zijlmans, L. J. M., Embregts, P. J. C. M., Bosman, A. M. T., & Willems, A. P. A. M. (2012). The relationship among attributions, emotions, and interpersonal styles of staff working with clients with intellectual disabilities and challenging behaviour. *Research in Developmental Disabilities, 33,* 1484-1494.

Patient anger: quantitative studies reviewed against checklist https://www.nice.org.uk/process/pmg4/chapter/appendix-g-quality-appraisal-checklist-quantitative-studies-reporting-correlations-and

	Population			Method of selection					Outcomes					Analyses				Summary	
	1.1	**1.2**	**1.3**	**2.1**	**2.2**	**2.3**	**2.4**	**2.5**	**3.1**	**3.2**	**3.3**	**3.4**	**3.5**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**5.2**
Amore et al (2008)	+	++	++	+	+	NA	NR	+	++	++	NA	NA	+	NR	+	++	++	++	++
Cookson et al (2012)	++	+	+	+	++	NA	NR	+	++	++	NA	NA	+	NR	++	++	++	++	++
Craig (1982)	NR	+	+	++	+	NA	NR	+	+	+	NA	NA	NA	NR	+	++	+	+	+
Daffern & Howells (2009)	NR	NR	+	-	+	NA	NR	++	++	++	NA	NA	-	NR	++	+	+	+	+
Daffern et al (2005)	++	+	++	+	++	NA	NR	+	++	++	NA	NA	+	NR	++	++	+	+	++
Daffern et al (2010)	++	++	+	+	++	NA	NR	+	++	++	NA	NA	+	NR	++	++	+	+	++
Doyle & Dolan (2006)	+	+	+	++	++	NA	+	++	++	+	NA	NA	++	NR	++	++	++	++	++

Ferguson et al (2005)	+	+	+	+	++	NA	NR	+	-	+	NA	NA	-	NR	++	++	+	+	+
Goldberg et al (2007)	+	+	+	+	-	NA	NR	+	++	+	NA	NA	+	NA	++	++	+	+	+
Konomi (2008)	NR	+	-	-	++	NA	NR	+	+	++	NA	NA	NR	NR	++	++	+	+	+
Kim et al (2010)	-	+	+	+	+	+	NR	+	+	+	NR	NR	NA	NR	++	+	+	+	+
McDermot et al (2008)	++	++	++	+	++	NA	NR	+	++	++	NA	NA	++	NR	++	++	+	++	++
McNeil & Binder (1995)	+	-	+	+	+	NA	NR	+	++	++	NR	NA	+	NA	+	++	++	+	+
Nolan et al (2005)	+	+	+	+	+	NA	NR	+	++	-	NA	NA	+	NR	+	+	+	+	+
Raja & Azzoni (2005)	+	+	+	+	+	NA	NR	+	-	++	NA	NA	NA	NR	+	+	+	+	+
Ritsner et al (2003)	+	+	+	++	+	+	NR	+	-	+	NA	+	+	+	+	+	+	+	+

Seeman et al (1985)	++	-	-	+	+	NA	NR	+	+	++	NA	NA	+	NR	+	++	-	+	+
Song & Min (2009)	+	+	+	+	++	NA	-	+	+	+	NA	NA	+	NR	++	++	+	+	+
Troisi et al (2003)	+	+	+	+	+	NA	NR	+	+	++	NA	NA	-	NR	+	++	+	+	+
Vitacco et al (2008)	+	++	+	+	++	NA	NR	+	++	++	NA	NA	+	++	++	++	+	++	++
Waldheter et al (2005)	+	+	+	+	++	NA	NR	+	++	++	NA	NA	++	NR	++	++	+	+	+
Wang & Diamond (1999)	-	+	-	+	++	NA	NR	+	+	++	NA	NA	+	NR	+	++	++	+	+
Yesavage (1983)	+	+	+	+	+	NA	+	+	+	++	NA	NA	++	NR	++	++	+	++	+
Yesavage et al (1981)	+	+	+	-	+	NA	NR	+	+	++	NA	NA	+	NR	+	++	-	+	+

Nursing staff anger: qualitative studies reviewed against checklist https://www.nice.org.uk/process/pmg4/chapter/appendix-h-quality-appraisal-checklist-qualitative-studies

	Theoretical approach		Study design	Data collection	Validity		Analysis				Ethics	
	Qualitative approach appropriate	**Study clear in what it seeks to do**	**How defensible is the research design**	**How well was the data collection carried out**	**Context clearly described**	**Methods reliable**	**Data rich**	**Analysis reliable**	**Findings convincing**	**Conclusions adequate**	**Study approved by ethics committee**	**Role of researcher clearly described**
Sequiera & Halstead (2004)	Appropriate	Clear	Defensible	Appropriate	Clear	Reliable	Rich	Reliable	Convincing	Not sure	Not reported	Not reported
Bimenyimana et al (2009)	Appropriate	Clear	Defensible	Appropriate	Clear	Reliable	Rich	Not sure	Convincing	Adequate	Not sure	Not clear
Engqvist et al (2009)	Appropriate	Clear	Defensible	Appropriate	Clear	Not sure	Rich	Not sure	Convincing	Adequate	Yes	Clear

Nursing staff anger: quantitative studies reviewed against checklist https://www.nice.org.uk/process/pmg4/chapter/appendix-g-quality-appraisal-checklist-quantitative-studies-reporting-correlations-and

	Population			Method of selection					Outcomes					Analyses				Summary	
	1.1	**1.2**	**1.3**	**2.1**	**2.2**	**2.3**	**2.4**	**2.5**	**3.1**	**3.2**	**3.3**	**3.4**	**3.5**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**5.2**
Lanza (1983)	+	+	+	-	++	NA	-	+	NR	+	NA	NA	NA	NR	+	NR	NR	+	+
Ryan & Poster (1989)	+	++	++	+	++	NA	+	+	++	+	NA	NA	++	NR	+	+	NR	+	+
Murray & Synder (1991)	+	+	+	+	-	NA	NR	+	-	-	NA	NA	+	NR	NR	+	NA	+	+
Engin & Cam (2006)	+	+	NR	+	++	NA	NR	+	+	+	NA	NA	NA	NR	+	++	+	+	+
Bowers et al (2007)	+	+	+	+	++	NA	NR	++	++	+	NA	NA	NA	NR	++	+	+	+	+
Lu et al (2007)	+	+	+	+	++	NA	NR	+	NR	+	NA	NA	NA	NR	+	++	+	+	+
De Benedictis et al (2011)	+	+	NR	+	++	NA	NR	+	++	+	NA	NA	+	NR	++	++	++	+	+

APPENDIX B

Studies revealing non-significant association between aspects of patient anger and form of inpatient aggression

Scale	Verbal aggression	Physical aggression objects	Physical aggression against self	Physical aggression against Others	Non-specified
IMI: Hostility			Daffern et al, 2010		Violent – Daffern et al, 2010
IMI: Hostile-dominance					Aggressive – Cookson et al, 2012
IMI: Hostile-submissive			Daffern et al, 2010		Aggressive – Cookson et al, 2012; Violent – Daffern et al, 2010
BPRS: Paranoid disturbance			Daffern et al, 2010		Aggressive – Cookson et al, 2012; Violent – Daffern et al, 2010
BPRS: Hostility	Yesavage et al, 1981	Troisi et al, 2003		Yesavage et al, 1981; Troisi et al, 2003	
NAS: Cognitive	Daffern et al, 2005			Daffern et al, 2005;	
NAS: Behavioural	Daffern et al, 2005			Daffern et al, 2005;	
NAS: Arousal	Daffern et al, 2005			Daffern et al, 2005	
CPRS: feelings of hostility (self-report)				Seeman et al, 1985	
CPRS: hostility (Clinician-rated)				Seeman et al, 1985	
BSI: Hostile					Aggressive – Ferguson et al, 2005
BDHI: Covert (indirect) hostility				Yesavage et al, 1981	

APPENDIX C

National Health Service research ethics approval letter

NHS
Health Research Authority

NRES Committee East Midlands - Northampton
The Old Chapel
Royal Standard Place
Nottingham
NG1 6FS

Telephone: 0115 8839135
Facsimile: 0115 8839291

13 February 2013

Dr Geoff Dickens
Research Manager
St Andrew's Group of Hospitals
Braye Centre
St Andrew's Hospital, Billing Road
Northampton
NN1 5DG

Dear Dr Dickens

Study title:	**Patient aggression and violence in secure mental health services: The role of anger in patients and staff**
REC reference:	**13/EM/0020**
IRAS project ID:	**120833**

Thank you for your letter of 07 February 2013, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the NRES website, together with your contact details, unless you expressly withhold permission to do so. Publication will be no earlier than three months from the date of this favourable opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to withhold permission to publish, please contact the Co-ordinator Miss Georgia Copeland, NRESCommittee.EastMidlands-Northampton@nhs.net.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

The University of Northampton research ethics approval letter

THE UNIVERSITY OF NORTHAMPTON

The Graduate School
The University of Northampton
Boughton Green Road
Northampton
NN2 7AL

Rahul Jalil
Postgraduate Research Student
Faculty of Health and Society

19 October 2016

Dear Rahul

I can confirm that on the 16th April 2013, the University Research Ethics Committee received a letter from the NRES Committee East Midlands – Northampton confirming a favourable opinion for the research project 'Patient aggression and violence in secure mental health services: The role of anger in patients and staff'.

On the basis that you would conduct the research for your research degree, the Research Ethics committee gave full ethical approval for your research degree programme.

If I can provide any further information, please do not hesitate to contact me.

Yours sincerely

David Watson
Postgraduate Research Manager

APPENDIX D

Patient and nursing staff consent forms

Consent form (patient)

The role of anger in inpatient aggression and violence

Participant ID: .....

If you have come to the decision to enter the study after carefully considering the information provided, please read this form and initial the boxes.

Initial box

1. I confirm that I have read the information sheet dated _____ and I have been given a copy. I was given the opportunity to consider the information and ask questions. ☐
2. I understand that my participation is voluntary and I am free to withdraw from any part of the study at any time without giving a reason, and without my medical treatment or legal rights being affected. ☐
3. I give permission for my medical records to be looked at and data collected during this study to be analysed in strict confidence by responsible professional staff from the research team. ☐
4. I agree that the information gathered about me in anonymised form can be used in future research about this topic. I understand that any future research will be subject to further review by a research ethics committee. ☐
5. I agree to take part in this study. ☐

.....	.....	.....
Name of participant	Date	Signature
.....	.....	.....
Name of researcher	Date	Signature

Contact details
Rahul Jalil
St Andrew's Healthcare
Academic Centre, Priory Cottage
Telephone: 01604 616779
Email: RJalil@standrew.co.uk

St Andrew's Academic Centre

Consent form (Staff)

The role of anger in inpatient aggression and violence

Participant ID: .....

If you have come to the decision to enter the study after carefully considering the information provided, please read this form and initial the boxes. **Initial box**

1. I confirm that I have read the information sheet dated _____ and I have been given a copy. I was given the opportunity to consider the information and ask questions. ☐
2. I understand that my participation is voluntary and I am free to withdraw from any part of the study at any time without giving a reason. ☐
3. I agree that the information gathered about me in anonymised form can be used in future research about this topic. I understand that any future research will be subject to further review by a research ethics committee. ☐
4. I agree to take part in this study. ☐

.....	.....	.....
Name of participant	Date	Signature
.....	.....	.....
Name of researcher	Date	Signature

Contact details
Rahul Jalil
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APPENDIX E

Short-Term Assessment of Risk and Treatability (START: Webster, Martin, Brink, Nicholls & Desmarais, 2009) items.

Strengths			START Items	Vulnerabilities		
2	1	0		0	1	2
			1. Social Skills			
			2. Relationships			
			3. Occupational			
			4. Recreational			
			5. Self-Care			
			6. Mental State			
			7. Emotional State			
			8. Substance Use			
			9. Impulse Control			
			10. External Triggers			
			11. Social Support			
			12. Material Resources			
			13. Attitudes			
			14. Med. Adherence			
			15. Rule Adherence			
			16. Conduct			
			17. Insight			
			18. Plans			
			19. Coping			
			20. Treatability			

APPENDIX F

Impact Message Inventory-Circumplex (Kiesler & Schmidt, 2006)

Axis scores measure the two dimensions that constitute the axes of the interpersonal circle: Control (dominance-submission) and Affiliation (friendless-hostility). The following mathematical formulas are applied using the subscale scores to calculate the axis scores:

CONTROL = Dominance – Submissive + .707(Hostile-dominance + Friendly-dominant) - .707(Hostile-submissive + Friendly-submissive)

AFFILIATION = Friendly – Hostile + .707(Friendly-dominance + Friendly-submissive) - .707(Hostile-dominance + Hostile-submissive)

The Control and Affiliation axis scores for each individual in the dyad are used to calculate a complementarity score in the following two steps:

Step 1. Absolute scores (ABS) on control and affiliation for each individual are calculated. Subscripts ^{1} and ^{2} refer to the IMI-C scores of each individual.

ABSc = ABS ($CONTROL^{1}$ + $CONTROL^{2}$)
= ABS [($DOMINANCE^{1}$ - $SUBMISSIVE^{1}$) + ($DOMINANCE^{2}$ - $SUBMISSIVE^{2}$)]

ABSa = ABS ($AFFILIATION^{1}$ - $AFFILIATION^{2}$)
= ABS [($FRIENDLY^{1}$ - $HOSTILE^{1}$) – ($FRIENDLY^{2}$ - $HOSTILE^{2}$)]

Step 2. The absolute scores from the previous step are used to calculate the three complementarity scores: control, affiliation and total.

COMPc = ABSc
= ABS ($CONTROL^{1}$ + $CONTROL^{2}$)

COMPa = ABSa
= ABS ($AFFILIATION^{1}$ - $AFFILIATION^{2}$)

COMPtot = ABSc + ABSa