

**Traumatic brain injury in
indeterminate sentenced prisoners**

Portfolio submitted to the University of Leicester Faculty of Medicine and
Biological Sciences, Department of Neuroscience,
Psychology and Behaviour

In fulfilment of the requirements of the degree of
Doctorate in Applied Psychology (PsyD)

Naomi Budd
September 2019

Declaration

I confirm that the systematic literature review, research report and critical appraisal contained within this thesis are original pieces of work and have not been submitted for any other degree or to any other institution.

This work was completed under the guidance and supervision of Dr Emma Palmer,
Department of Psychology, University of Leicester.

Acknowledgements

I would like to thank my employers in HMPPS for their support throughout this degree.

I would also like to thank my colleague Oliver Barnes for his assistance with practical aspects of this research.

On a personal level, huge gratitude goes to my mother Mrs Thelma Budd and my partner Mr David Owen for their unwavering support and encouragement.

Thesis Abstract

There has been a recent increase in attention focussing on acquired brain injury (ABI) within a forensic population. This thesis specifically concerns traumatic brain injury (TBI) in prisoners in England and Wales. A systematic review of the literature on screening and assessment of TBI and offence-related treatment of prisoners in England and Wales was completed. This yielded 16 papers for inclusion, leading to discussion in three areas: 1. Routine screening for TBI, 2. Research on links between TBI and behaviour or progress in prison and post-release success and 3. Adaptations needed to standard offending behaviour programmes and other rehabilitation programmes for offenders with specific neurodisabilities including TBI. There was found to be a reasonable amount of research on prevalence of TBI, however more widespread use of a standardised screening tool would be beneficial, as would consideration of TBI in intervention programmes. The research component of the portfolio looked at progression in relation to the Parole process of prisoners serving indeterminate sentences for public protection (IPP sentences). A multiple case study design was used which included interviews, assessments and review of file data for six participants. Investigation of the information identified seven relevant conceptual categories; impaired functioning, treatment problems, lack of support, IPP sentence issues, emotional problems, substance misuse problems and behavioural problems. An individualised approach to the varying needs of indeterminate sentenced prisoners with suspected acquired brain injury was recommended, as was early identification of TBI in individuals in contact with the criminal justice system. Further consideration is likely to be needed regarding the suitability of current offending behaviour programmes for prisoners with TBI, and how additional support and offence-related treatment may need to be tailored to better support brain injured prisoners. The final section of the portfolio consists of a critical appraisal of the doctorate degree.

Word Count

<u>Section</u>	<u>Abstract</u>	<u>Text</u>	<u>Appendices</u>
1. Systematic Review	290	7,887*	5,271
2. Research Report	299	18,660*	12,833
3. Critical Appraisal	-	5,416	-
Total text word count =		31,963**	

*word count does not include separate quotations, text boxes or tables

**permission was granted to increase the overall word limit to 32,000

Table of Contents

Section	Page
Declaration	2
Acknowledgements	3
Thesis Abstract	4
Word Count	5
Table of Contents	6
List of Tables	7
List of Figures	8
List of Appendices	9
Table of Abbreviations	10
Part 1 – Systematic Review	13
Abstract	14
Introduction	15
Method	22
Results	28
Discussion	31
Conclusion	39
References	40
Appendices	46
Part 2 – Research Report	75
Abstract	76
Introduction	77
Methods	92
Findings	112
Discussion	128
References	144
Appendices	153
Part 3 – Critical Appraisal	212
References	227

List of Tables

Part 1 – Systematic Review	Page
Table 1. Search terms	22

List of Figures

Part 1 – Systematic review	Page
Figure 1. Selection and exclusion of articles and publications	25
Part 2 – Research Report	Page
Figure 1. The lobes and functions of the brain	79
Figure 2. The six stages of a case study approach	95
Figure 3. Types of case study designs	96
Figure 4. Interrelationships between conceptual categories	114

List of Appendices

Part 1 – Systematic Review	Page
Appendix A. Protocol and search strategy	46
Appendix B. Documents selected for full text review and reasons for exclusion	50
Appendix C. Mixed Methods Appraisal Tool (MMAT) template	54
Appendix D. Summary of MMAT scoring	55
Appendix E. Data extraction template	56
Appendix F. Summary of data from key articles	57
Part 2 – Research Report	Page
Appendix A. Position of researcher	153
Appendix B. Completed case study protocols	156
Appendix C. Summary of information table	174
Appendix D. Issues and categories table	179
Appendix E. Participant information sheet	184
Appendix F. Participant invitation letter	188
Appendix G. Participant consent form	189
Appendix H. Blank IPP interview	190
Appendix I. Blank brain injury screening interview	192
Appendix J. Participant debrief sheet	195
Appendix K. Blank BISI form	196
Appendix L. SPANS indices and subtests	198
Appendix M. Correspondence in relation to ethical approval	201

Abbreviations / Glossary

ABI	Acquired Brain Injury
ACCT	Assessment, Care in Custody and Teamwork
ADHD	Attention Deficit and Hyperactivity Disorder
AIP	Alcohol Intervention Programme
AP	Approved Premises (Probation hostel)
APD	Anti-Social Personality Disorder
ART	Aggression Replacement Training
ARV	Alcohol Related Violence programme
ASD	Autistic Spectrum Disorder
BI	Brain Injury
BIRT	Brain Injury Rehabilitation Trust
BIS-11	Barratt's Impulsivity Scale - 11
BISI	Brain Injury Screening Index
BNM	Becoming New Me (an adapted SOTP course)
BPD	Borderline Personality Disorder
BPS	British Psychological Society
CALM	Controlling Anger and Learning to Manage it
CASP	Critical Appraisal Skills Programme
CBT	Cognitive Behavioural Therapy
CD	Conduct Disorder
CHAT	Comprehensive Health Assessment Tool
CJS	Criminal Justice System
CNS	Central Nervous System
COREQ	Consolidated criteria for reporting qualitative research
CSB	Cognitive Skills Booster programme
CSF	Cerebrospinal fluid
C-SOTP	Core Sex Offender Treatment Programme
CSU	Care and Separation Unit
CTE	Chronic Traumatic Encephalopathy
DART	A substance misuse programme
DHS	Depression and Hopelessness Scale
DSM-5	Diagnostic and Statistical Manual, version 5
DSM-III	Diagnostic and Statistical Manual, version III

DSM-IV	Diagnostic and Statistical Manual, version IV
EE	Enabling Environment
E-SOTP	Extended Sex Offender Treatment Programme
ETS	Enhanced Thinking Skills programme
FSIQ	Full Scale IQ
HMP	Her Majesty's Prison
HMPPS	Her Majesty's Prison and Probation Services
HSF	Healthy Sexual Functioning programme (replaced by HSP)
HSP	Healthy Sex Programme
IEP	Incentive and Earned Privileges scheme
IPDE	International Personality Disorder Examination
IPP/ISPP	Indeterminate sentence for Public Protection
IQ	Intelligence Quotient
IRAS	Integrated Research Application System
ISP	Indeterminate Sentenced Prisoner
LD	Learning Disability
LOC	Loss of Consciousness
MAPPA	Multi-Agency Public Protection Arrangements
MH	Mental health
MMAT	Mixed Methods Appraisal Tool
mTBI	Mild Traumatic Brain Injury
NFL	National Football League
NIR	Neuropsychologically Informed Rehabilitation
NOMS	National Offender Management Service
NPS	New Psycho-active Substance
NRC	National Research Committee
OBP	Offending Behaviour Programme
OCEBM	Oxford Centre for Evidence Based Medicine
OH	Oral Hearing
OM	Offender Manager (community based)
OMU	Offender Management Unit
OS	Offender Supervisor (prison based)
OSU-TBI-ID	Ohio State University Traumatic Brain Injury Identification Method
PAROM 1	Parole assessment report by Offender Manager
PB	Parole Board
PBR	Parole Board Review
PCL-R	Psychopathy Checklist - Revised

PD	Personality Disorder
PD/OPD pathway	Personality Disorder / Offender Personality Disorder pathway
PFC	Prefrontal Cortex
PIPE	Psychologically Informed Planned Environment
PNS	Peripheral Nervous System
PPR	Post Programme Review
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-analyses
RaPT	A substance misuse programme
RDR	Resettlement Day Release
RM2000	Risk Matrix 2000 (a static risk assessment used with sex offenders)
R-N-R	Risk-Need-Responsivity principles
ROR	Resettlement Overnight Release
ROTL	Release On Temporary Licence
RPQ/RPSQ	Rivermead Post-concussion Symptoms Questionnaire
SARN	Structured Assessment of Risk and Need (sex offending assessment)
SASH	Suicide And Self Harm
SCP	The Self-Change Programme (for violent men)
SOPO	Sexual Offending Prevention Order
SOR	Sex Offenders Register
SOTP	Sex Offender Treatment Programme
SPANS	Short Parallel Assessments of Neuropsychological Status
Spice	Slang term for a New Psycho-active Substance
SPRE	Risk assessment report for the Parole Board by psychologist
SPRL	Risk assessment report for the Parole Board by OS
SR	Systematic Review
TBI	Traumatic Brain Injury
TBIQ	Traumatic Brain Injury Questionnaire
TC	Therapeutic Community
TC+	An adapted Therapeutic Community
TSP	Thinking Skills Programme
UK	United Kingdom
UKABIF	United Kingdom Acquired Brain Injury Forum
YJB	Youth Justice Board
YOI	Young offender Institute
YOT	Youth Offending Team

Part One – Systematic Literature Review

Are we doing enough to support prisoners with traumatic brain injury in England and Wales: A systematic review of the literature on screening and assessment of traumatic brain injury, and offence-related treatment of prisoners with traumatic brain injury in England and Wales.

Naomi Budd

ABSTRACT

Background: Traumatic brain injury (TBI) in prisoners has been given increasing attention in recent years. Much of this research has focused on the investigation of causal links between TBI and criminal behaviour, as well as establishing the prevalence of TBI in offender populations. The current systematic review aims to look at the extent to which TBI in prisoners is being identified and researched in England and Wales and what recommendations are being made for specialised support services or interventions. **Method:** A systematic review of the literature from 1997 to July 2017 was undertaken following PRISMA guidelines. Six databases were searched using a pre-determined search protocol. Additional reference list and grey literature searches were undertaken, and 34 publications were identified for full text review. Of these 16 met the criteria for inclusion and are discussed in this review. **Results:** Data were extracted using a standardised template, and were collated under three main areas; 1. Routine screening for TBI, 2. Research on links between TBI and behaviour or progress in prison and post-release success and 3. Adaptations needed to standard offending behaviour programmes and other rehabilitation programmes for offenders with TBI. **Conclusions:** TBI was found to be fairly well researched, although more widespread and standardised screening was identified as a need. Further research which includes the wider categories of acquired brain injury is, however, still needed. Little research has been undertaken on links between TBI and prison behaviour or progress, and further research in this area is likely to inform better support services, although there are notable examples of good practice. There needs to be more specialised training for staff working with offenders with TBI and greater consideration of neurodisabilities in treatment and rehabilitation programmes has been highlighted as an ongoing need.

1. INTRODUCTION

1.1 Background

The terms acquired brain injury (ABI) and traumatic brain injury (TBI) are often used interchangeably. However, there are important distinctions between the two, as described by Lowings and Wicks;

The term 'acquired brain injury' means an injury to the brain after birth and the immediate neo-natal period and can be classed as either a traumatic brain injury (caused by physical injury to the structure of the brain) or non-traumatic injury (caused, for instance, by illness, oxygen deprivation or toxicity). (Lowings & Wicks, 2016, p. xi)

Whilst ABI is the more inclusive term most research with offenders refers to and focuses on assessment of TBI. The current review and search strategy will therefore focus solely on TBI given the established links between TBI and offending.

The brain can be considered the most important organ of the human body, controlling basic bodily functions as well as our emotions, thinking and cognitive processes. Functions of the brain are localised to different areas, and damage to a certain area may lead to impairment of the specific function associated with that area of the brain. Of particular interest to this topic is damage to the frontal lobe, including the prefrontal cortex (PFC), and temporal lobes. These areas are particularly susceptible to damage from TBI (Pass & Dean, 2010), and are also responsible for functions with direct relevance to behaviours linked to criminality (Bannon, Salis, & O'Leary, 2015). The frontal lobes deal with the cognitive processes of executive function, attention, memory and language, including skills such as thinking and reasoning, problem solving, impulse control and consideration of consequences and therefore play an important role in the processes underlying personality and social and moral awareness and reasoning (Chayer & Freedman 2001).

Damage to the frontal lobe and prefrontal cortex has been associated with increases in impulsivity, irritability, aggressive outbursts and a lack of consideration of the

consequences of behaviour (Brower & Price, 2001; Pass & Dean, 2010) and there is a growing body of research linking TBI with subsequent aggression (Baguley, Cooper, & Felmingham, 2006; Farrer, Frost, & Hedges, 2012). Evidence is also seen for a correlation between sexual offending and TBI (Simpson, Blaszczyński, & Hodgkinson 1999), intimate partner violence and TBI (Rosenbaum et al., 1994) as well as between general criminality and anti-social behaviour and head injury (Diamond, Harzke, Magaletta, Cummins, & Frankowski, 2007).

TBI is generally discussed in terms of severity level according to the duration of loss of consciousness (LOC, Buckley, Kaye, Stork, Heinze, & Eckner, 2017) and a number of different screening tools are currently used to assess both likely presence and severity, including the Brain Injury Screening Index (BISI: Pitman, Haddlesey, Ramos, Oddy, & Fortescue, 2015; The Disabilities Trust, 2014), Traumatic Brain Injury Questionnaire (TBIQ: Diamond et al., 2007), the Ohio State University Traumatic Brain Injury Identification method (OSU-TBI-ID: Bogner & Corrigan, 2007) and the Mayo classification system for TBI (Malec et al., 2007). There is currently no standardised screening process for TBI in adult offenders across all prisons in England and Wales, and many regions and establishments undertake no screening or assessment for TBI at all.

The lack of identification and awareness of TBI in the prison population implies that there will be a sizeable group of prisoners living with a degree of neuropsychological impairment which is not recognised, and for which they receive no additional support. This is likely to have particular relevance for those prisoners subject to the Parole process. A large number of high-risk offenders in prison are serving indeterminate sentences, either mandatory or discretionary life sentences, or the now obsolete indeterminate sentence imposed for public protection (IPP sentences). Whilst the IPP sentence was abolished in 2012, as of September 2017 there were still over 3,000 prisoners in Her Majesty's Prison and Probation Service (HMPPS) custody serving this type of sentence. Offenders serving indeterminate sentences must serve a minimum specified time (tariff) before they are eligible to be considered for release. In order to

progress to conditions of lower security and therefore to eventual release, indeterminate sentenced prisoners must be able to demonstrate a reduction in risk of re-offending, as well as an acceptable standard of behaviour whilst in prison. Prisoners with impairments due to TBI may find it harder to demonstrate consistently good custodial behaviour due to behavioural factors such as increased impulsivity, verbal outbursts, rule violations and poor emotional control (Piccolino & Solberg, 2014), and therefore progression through an indeterminate sentence may take longer, or stall completely. Prisoners subject to the Parole process will need to not only demonstrate consistently good behaviour but also be able to give a good account of themselves and their progress in relation to risk reduction to the Parole Board, usually at a formal Oral Hearing, in order to be considered for a move to conditions of lower security, or release. Cognitive impairments in relation to memory and language skills may create an additional barrier to this effective demonstration of risk reduction and suitability for release. There has been a marked improvement in the support given to prisoners with learning difficulties or disabilities, or those diagnosed with autistic spectrum disorder (ASD), in particular in relation to adaptations needed to standardised treatment programmes, awareness training for key personnel such as Parole Board members or additional support and consideration throughout the parole process. However, the same is not yet true for prisoners suspected of, or diagnosed with, TBI. One of the aims of the current review is to investigate what literature and published evidence there is in relation to routine screening of offenders for TBI, what further assessments may be undertaken, and whether there is additional support in place to ensure that offenders who may have undiagnosed TBI are not disadvantaged in terms of sentence management and progression.

Consideration of diagnosis is also important. TBI, in particular mild traumatic brain injury (mTBI) often goes undiagnosed within the general population (Buck, 2011) even when patients attend a hospital setting following injury (Cassidy et al., 2004; Rutland-Brown et al., 2007) and this is likely to be a more widespread problem in an offender population where medical attention may be less likely to be sought (Ray, Sapp, & Kincaid, 2014; Schofield, Butler, Hollis, & D'Este, 2011). The lack of awareness of TBI

and its symptoms has led to it being described as ‘a silent epidemic’ within health services (Buck, 2011; Ray & Richardson, 2017). Symptoms of mTBI such as impairments to memory and concentration, increased irritability, impulsiveness and aggression (Bannon et al., 2015; Dixon et al., 2005) may go unnoticed (Buck, 2011) and these symptoms may be more unremarkable in offenders who are more likely to already exhibit these traits (Perron & Howard, 2008; Williams, Cordon, Mewse, Tonks, & Burgess, 2010). Pitman et al. (2015) state that as individuals may not recognise that they have sustained a TBI it is often the case that both they and others fail to attribute subsequent deficits such as irritability, fatigue or poor memory to the injury sustained.

Young males with lower socioeconomic status are most likely to receive a TBI (Yates, Williams, Harris, Round, & Jenkins, 2006), and common sequelae of brain injury such as impulsivity, poor emotional regulation and a lack of consequential thinking in this group may be attributed to general delinquency and criminality rather than to neurodisability (Williams et al., 2010). Young males with TBI are more likely to have been misusing substances from an early age (Fishbein, Dariotis, Ferguson, & Pickelsimer, 2016), have prior criminality and be described as impulsive or fearless (Perron & Howard, 2008).

Common causes of TBI include impact from falls, assaults, vehicle accidents and fights, as well as from sports such as football, American football, hockey and boxing (Colantonio et al., 2014; Moser et al., 2007). The particular traumatic event does not need to be severe in order for damage to occur and to be long-lasting. TBI can be caused by repeated low level blows to the head, none of which may be given much attention at the point of injury, either by the individual themselves, or by medical professionals, but which over time have a cumulative and detrimental effect on functioning and behaviour (Piccolino & Solberg, 2007).

Research into ABI, and in particular TBI, in relation to offenders has been increasing over the last decade (e.g. Hughes et al., 2015; Shiroma, Ferguson, & Pickelsimer, 2012; Slaughter, Fann, & Ehde, 2003). Prevalence ratings of TBI in offender populations vary, with findings ranging between 32% (Williams et al., 2010) and 72% (Davies, Williams,

Hinder, Burgess, & Mounce, 2012). Much of this research has focused on the investigation of causal links between ABI/TBI and criminal behaviour and the presence of TBI as a predictor of later criminality (e.g. Fazel, Lichtenstein, Grann, & Långström, 2011; Timonen et al., 2002), as well as attempting to establish the prevalence of brain injury in offender populations (Pitman et al., 2015; Williams et al., 2010). However, it appears that less attention has been paid to how criminal justice organisations could provide further support to prisoners with previously undiagnosed TBI (Williams, 2013; Williams, McAuliffe, Cohen, Parsonage, & Ramsbotham, 2015).

The links between TBI and criminality are complex (Hughes et al., 2015; Williams et al., 2015) with many effects and pre-cursors co-occurring. Effects of TBI can include impulsivity, impaired social functioning (Tonks et al., 2008), poor emotional control often leading to aggressive outbursts or behaviour (Baguley et al., 2006) and cognitive deficits such as poor memory and problems with expressive language (Wszalek & Turkstra, 2015). These and other consequences of TBI such as poor consequential thinking and problem solving (Lowings & Wicks, 2016) are likely to increase the chances of rule breaking and anti-social behaviour leading to offending (Williams, 2013). Young people who experience TBI are likely to experience disruption to the maturation of the brain, in particular the developing 'social brain network' (Williams et al., 2015). This may lead to a loss of function in the systems designed to regulate behaviour and promote effective social interaction, such as the ability to recognise and respond appropriately to emotions in others and to inhibit aggressive or anti-social behaviour (Williams et al., 2015). Young people in general are more likely to experience interpersonal conflict, and their potential poor emotional control and reduced language skills following TBI (Baguley et al., 2006; Wszalek & Turkstra, 2015) may increase the probability of situations being resolved by the use of violence or aggression. Williams et al. (2010) state that the consequences of TBI such as increased impulsivity or reduced consequential thinking may make it harder for young people in particular to live law-abiding lives. Likewise, involvement in anti-social and criminal lifestyles due to other factors such as geographical and socio-economic considerations, may increase the chances of receiving a brain injury due to a higher likelihood of

involvement in assaults, road traffic accidents and with the added complication of a greater likelihood of excessive or early onset drug and alcohol use (Perron & Howard 2008; Williams et al., 2010). Individuals sustaining TBI from an offending related cause (violent behaviour, reckless driving etc.) may also be less likely to seek medical treatment for the injury, increasing the resulting damage to the brain (Horn & Lutz, 2016; Ray et al., 2014; Schofield et al., 2011).

Due to the inter-relatedness of factors that could be either a cause or a consequence of brain injury, it is difficult to establish the nature of the relationship between the two. Young people who are already engaged in a criminal and antisocial lifestyle are arguably more likely to receive a brain injury through their behaviours, and less likely to seek appropriate treatment for it, often exacerbating the impact of the injury, in particular on a young and still developing brain (Horn & Lutz, 2016). As indicated above, research has shown that individuals with TBI may be more likely to become involved in anti-social, reckless or criminal behaviour due to the effects of the injury on their functioning. Whilst there has been an increasing focus on research examining links between TBI and crime and prevalence of TBI in offending populations, there appears to have been less consideration of the impact of TBI on offender treatment, rehabilitation and subsequent risk of re-offending.

1.2 Rationale

This review aims to investigate whether there is a need for more widespread and standardised screening for TBI in prisoners in England and Wales. It will also consider what literature is available in relation to any work being done to support offenders with TBI in terms of both progress in prison and following release. Given the increased risk of rule infractions in prison (Piccolino & Solberg, 2014) and re-offending after release (Williams, Mewse, et al., 2010) in prisoners with TBI, this review also aims to consider what, if any, consideration has been given to the suitability of current standard offending behaviour programmes and/or rehabilitative services for prisoners with TBI, and whether professionals working within the criminal justice system (CJS)

have sufficient knowledge of the effects of TBI in prisoners and are able to offer effective support.

The scope of this review is limited to literature relating to prisoners in England and Wales. Her Majesty's Prison and Probation Service (HMPPS) is responsible for all prisons within England and Wales; Scotland and Northern Ireland have independent criminal justice systems, and so have been excluded from this study as any findings or recommendations will not be generalisable across the whole of the United Kingdom (UK). Likewise, the current review has focussed solely on adolescent and adult prisoners, rather than including children under 13 years old, inpatients or forensic psychiatric samples, as rates of screening, identification and consideration of the impact of TBI are likely to differ significantly in these more medically or educationally oriented establishments.

1.3 Objectives

The current review aims to collate research from the last 20 years in relation to TBI in prisoners within HMPPS. Consideration will be given to what screening tools or assessments (if any) are used, and how widespread routine screening of prisoners for TBI is. It will also look at what recommendations are or have been made for specialised support services, treatment or offending behaviour related interventions, and what future directions in relation to research areas or service development are proposed. The following research question will be considered;

“Are we doing enough to support prisoners with traumatic brain injury in England and Wales?”

2. METHOD

2.1 Identification of studies

2.1.1 Search strategy

This systematic review is based on the guidance contained in the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement (Moher, Liberati, Tetzlaff, & Altman, 2009; Moher et al., 2015), although not all stages of the published checklist were relevant to this review. Three key concepts were identified from the research question “Are we doing enough to support prisoners with traumatic brain injury in England and Wales”; ‘traumatic brain injury’, ‘prisoners’, and ‘treatment’. Key words and phrases were generated from the concepts and widened using synonym searches. From the resulting list, those most pertinent to the concept in the context of the research question were selected for inclusion in the final search strategy and protocol (see Appendix A). Terms within each key concept were combined using OR, and the resulting key concept searches were combined using AND (see Table 1).

Table 1: Search terms

Search Terms		
Traumatic brain injury	Prisoners	Treatment
<i>ABI</i> <i>TBI</i> <i>brain injur*</i> <i>head injur*</i> <i>head trauma*</i> <i>brain trauma*</i> <i>“undiagnosed brain injur*”</i>	<i>prison*</i> <i>offend*</i> <i>inmate*</i> <i>convict*</i> <i>lifer*</i> <i>crim*</i> <i>felon*</i> <i>detain*</i> <i>IPP*</i> <i>ISP*</i> <i>ISPP*</i> <i>“indeterminate sentence for public protection”</i> <i>“life sentence”</i> <i>jail*</i>	<i>treatment*</i> <i>therap*</i> <i>intervention*</i> <i>program*</i> <i>rehabilit*</i> <i>counsel#ing</i> <i>CBT</i> <i>“cognitive behavio#r therapy”</i> <i>“treatment outcome”</i> <i>“behavio#r management”</i> <i>OBP*</i> <i>“offending behavio#r program*”</i> <i>“behavio#r modification”</i>

A literature search of six electronically held psychological, medical and criminological databases (PsycINFO, Web of Science Core Collection, Criminal Justice Abstracts, PsycEXTRA, ASSIA and Medline) was made. The databases were chosen for the search strategy on the basis of relevance, and to achieve breadth. Alerts were created for each of the database searches in order that additional studies could be identified within the time period of the research. The date range was limited to publications after 1997 and excluded those not written in English. Additional exclusions were applied at the screening stage as described below.

2.1.2 Inclusion and exclusion criteria

Inclusion and exclusion criteria were chosen to ensure the most relevant studies were identified. The inclusion criteria were:

- Publications from 1997 onwards, in order that publications over the last 20 years were included
- All methodologies
- Publications identified as relevant to the three key concepts of 'traumatic brain injury', 'prisoners' and 'treatment' using the specified search terms
- Other publications identified from reference list searches and searches of grey literature

The following exclusion criteria were applied, either at the database search or title and abstract review stages:

- Languages other than English
- Non-England and Wales prison populations
- Dates earlier than 1997
- Studies with children under 13 years
- Studies focusing solely on TBI as a predictor of offending

- Studies on patients or community samples, unless prisoners were included as a comparator
- Forensic psychiatric samples, e.g. special hospitals
- Studies with military veterans or military prisoners
- Books, book chapters and editorials
- Failure to meet minimum quality appraisal level

It was not possible to identify all possible exclusion criteria for some studies at the title/abstract review stage, and so a number of studies were excluded at the full text review stage, mostly due to focussing on a non-England and Wales prison population.

The initial search stage identified 987¹ potential studies or publications for inclusion which were combined into a single list and checked for duplicates. In addition to the database searches detailed above, other relevant documents were identified via a review of the references cited in the key articles identified at the full text review stage, and by a search of available grey literature, to check specifically for conference proceedings, relevant theses, ongoing and unpublished work. This resulted in a further 11 studies being identified. Many of the studies identified via the database searches were not relevant to the research question, being purely medical in nature, or focussing on non-prison participants. Initial screening therefore took place in two stages; initially via a simple title screen, followed by a review of the abstract.

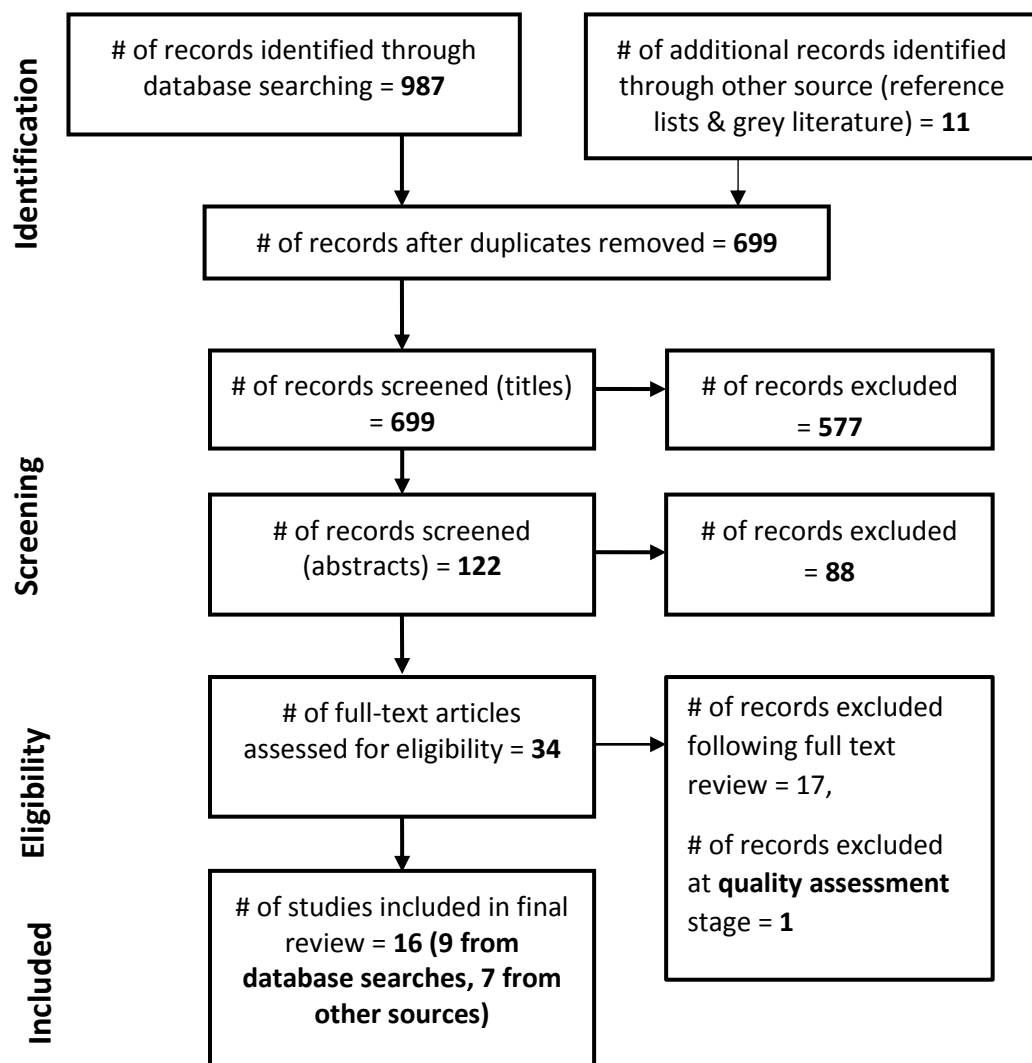
The process of selection and exclusion of studies is documented in Figure 1 below. As well as consideration of exclusion criteria, studies were checked for relevance in relation to the three key issues identified from the research question;

1. Screening / assessment of TBI in a prison population in England and Wales

¹ **Psych INFO** = 266 results, **Web of Science core collection** = 278 results, **Criminal Justice Abstracts** = 86 results, **Psych EXTRA** = 13 results, **ASSIA** = 76 results, **Medline** = 268 results

2. Consideration of progress through their sentence of prisoners with traumatic brain injury in prison and/or post release success (e.g. behaviour, rule infractions, licence breach)
3. Consideration of offending related treatment or rehabilitation of prisoners with traumatic brain injury (e.g. offending behaviour programmes)

Figure 1. Selection and exclusion of articles and publications (from Moher et al., 2009)



A total of 34 studies or publications were identified for review of the full text, and of these 16 were included for data extraction (see Figure 1, above). Of those excluded at the full text review stage, one was not a prison sample, 12 were not studies in England and Wales and four were not relevant to the research question. The paper excluded at quality assessment stage did not meet the screening questions of the Mixed Methods Appraisal Tool (MMAT: Pluye et al., 2011, see section 2.2 below). Publications selected for full text review against the eligibility criteria, and reasons for exclusion are given in Appendix B.

2.2 Quality assessment

The current review yielded a mix of qualitative and quantitative studies, including one meta-analysis, as well as published and non-published academic articles and non-academic publications. This made the process of quality assessment of documents difficult. Previous papers have commented on the challenges of quality assessment for non-experimental data (see Jarde, Losilla, & Vives, 2012) and the mixed methodology and type of papers identified in the current review added to this difficulty. A number of quality assessment tools and guidance were considered for use, including the Oxford Centre for Evidence Based Medicine guidelines (OCEBM: 2009), the consolidated criteria for reporting qualitative research (COREQ) checklist (Tong, Sainsbury, & Craig, 2007) and the Critical Appraisal Skills Programme (CASP) measures (Institute of Health Science, Oxford). Due to the variety of methods used in the studies included in the current review, it was decided that the Mixed Methods Appraisal Tool (MMAT: Pluye et al., 2011) was the single most appropriate method of quality assessment in this case. All 17 publications identified from the previous search stages were assessed using the MMAT criteria (see Appendix C for the MMAT template). Publications were first screened using the two screening questions, and those passing the screening had scores awarded for each relevant section according to the number of criteria met, ranging from 0% to 100%². The MMAT awards scores according to type

² A score of 25% was awarded for each question per section answered as 'yes'

of method used, with mixed method publications being scored on each methodology, on the premise that the overall assessed quality cannot exceed the quality of the weakest component. As such, the lowest score awarded for a mixed method approach is taken as the final indicator of quality. A cut-off score of 75% for any individual publication was decided on, in order that any publication with more than one poor quality indicator was excluded, and a summary of the MMAT scores for each publication is given in Appendix D. Of the 17 studies examined, one did not meet the criteria in the screening questions and so was excluded at this stage, giving a final sample of 16. The remaining studies scored either 75% or 100% and were deemed to be of sufficient quality for inclusion.

The majority of publications included in the review were from peer reviewed journals (10 out of the final 16 publications) or were documents published or commissioned by government departments, UK universities or well-established UK charities and were written by a small number of main researchers in this area. In a number of cases the publication or research was funded by government bodies, charities or organisations otherwise involved in the field. Information on the funding source or other affiliations of the publication or author was recorded alongside the assessment of quality. This latter information was included in order that assessment of bias could be considered at individual publication and review-wide level. Any potential bias, as well as limitations of some studies identified as part of the quality assurance process, will be discussed in section 4 later.

2.3 Data extraction and analysis

A narrative system of data extraction and analysis was used, due to the wide-ranging differences in types of study and publication. Data (including quality assurance indicators) were extracted and recorded from the previously identified documents using a standardised template (see Appendix E) drafted by the current author and adapted from Jones (2007) which incorporates an assessment of quality according to the Mixed Methods Appraisal Tool (MMAT: Pluye et al., 2011) as described above. Any relevant information relating to funding sources or other affiliations of the authors was

recorded, as were any quality limitations for further consideration or discussion. Data were recorded in relation to the four key areas previously identified as relevant to the research questions. In addition, information on any suggestions for future research or recommendations for changes to policy, service direction or scope was recorded. A summary of data in relation to each key area is given in section 3.

3. RESULTS

3.1 Sample information

The documents included in the review were 10 articles published in academic journals, four publications by charities and other groups, one published systematic review and a position paper published by the British Psychological Society (BPS). Although the search criteria included publications from 1997 onwards, all the articles included were published from 2010 onwards. Participants were prisoners held in either adult prisons (including Category B and C establishments) or young offender institutions (YOIs) in England and Wales and were predominantly male, with only two papers reporting data on female prisoners. Ages of participants ranged from 15 years to adult, with a marked emphasis on studies with young offenders. Six of the studies focused solely on young offenders, whilst a further three reported data on both young offenders and adults. Some studies may have included non-convicted prisoners held on remand within their sample, but this was often not clear from the data reported. The studies included used various sampling techniques and methodologies, including wide scale screening, self-report measures, semi-structured interviews, focus groups and case studies.

3.2 Information in relation to the key issues

The studies are discussed in relation to the three key issues identified from the research question; routine screening for TBI; research on links between TBI and

behaviour or progress in prison/post-release success; and adaptations needed to standard offending behaviour programmes and other rehabilitation programmes.

Some studies covered more than one issue. In addition, information was recorded in relation to suggestions and recommendations for further research, future directions or scope of policy and service provision and this is discussed in section 4 below. A summary of the key articles including information relating to the three identified themes is given in Appendix F.

3.2.1 Screening / assessment of TBI in a prison population in England and Wales

A number of different screening and assessment measures were used, the most common being the Brain Injury Screening Index (BISI: The Disabilities Trust, 2014 see Pitman et al., 2015, used or recommended by six articles) and the Comprehensive Health Assessment Tool (CHAT: Chitsabesan et al., 2014, used or recommended by four articles) which includes a screen for neurodisabilities, including TBI. The CHAT was piloted with young people in contact with the CJS via the Youth Justice Board (YJB) and has since been included as a standardised measure for young people in contact with the CJS. The BISI is a self-report measure that is used as part of the assessment and referral process for the Linkworker scheme available in some prisons and young offender institutes and was developed by The Disabilities Trust as part of their work with acquired and traumatic brain injury. Other screening and assessment measures used included interviews with researchers, with one publication also commenting on the use of the Ohio State University TBI identification method (OSU-TBI-ID) and the Traumatic Brain Injury Questionnaire (TBIQ). Researchers (e.g. Allely, 2016) commented on the lack of a widespread standardised measure which would improve the quality of research. All authors agreed that early and routine screening of prisoners (including adults) for TBI is needed as it would ensure best outcomes for prisoners.

3.2.2 Consideration of progress of prisoners with TBI in prison and/or post release success (e.g. behaviour, rule infractions, licence breach)

Fewer articles focused on this issue, and the majority of those that did were in relation to the Linkworker service piloted in a small number of prisons and YOIs in England and Wales (Fortescue, Ramos, & Oddy, 2017; Ramos, Oddy, Liddement, & Fortescue, 2017; Williams & Chitsabesan, 2016). Pitman et al. (2015) highlighted the need to consider the impact of TBI when considering support mechanisms for prisoners after release, and Williams et al. (2010) stated that the findings in relation to offenders with brain injury and repeat offending rates indicate a need to consider that neurocognitive factors may impact on the ability to change behaviour. Williams and Chitsabesan (2016) also consider the impact of TBI in relation to number of rule infractions in prison, stating that effective management of TBI may improve forensic rehabilitation outcomes, and the report by The Disabilities Trust (2016) on the prison Linkworker service indicates that offering an enhanced level of support to prisoners with TBI enables them to comply more effectively with their sentence plan. In addition, Hughes et al. (2012) highlight the importance of continuity of care, in particular for young offenders, as they transition between community and custody settings (sometimes many times), and from child to adult services or settings. Overall, there were few practical suggestions, other than the Linkworker service, which had considered this area of need.

3.2.3 Consideration of offending related treatment or rehabilitation of prisoners with TBI (e.g. offending behaviour programmes)

Findings from the research undertaken indicates a need to consider the effects of TBI in relation to rehabilitation and treatment designed to reduce re-offending. None of the articles included in this review put forward any concrete suggestions for ways in which the impact of TBI might be taken into consideration in relation to offending behaviour programmes or rehabilitation initiatives, although a number of them indicated that they felt this was an important area for future research and service development (e.g. Williams, 2013). For instance, Fortescue et al. (2017) highlighted

that brain injury is likely to affect a person's ability to engage in a rehabilitation programme, and Pitman et al. (2015) felt that specialised support and intervention should be offered to prisoners with TBI, in particular after release. Ramos et al. (2017) discussed how the Linkworker service offers an example of good practice as it provides links to other agencies who may be able to offer help to prisoners after release and allows them to maintain ties and receive support from their Linkworker once they leave prison. They, along with Williams et al. (2010, 2015) also highlight that prisoners with TBI are likely to have significant difficulties which may reduce their ability to benefit from standard offender rehabilitation approaches, leading to an increased risk of recidivism, and echo the point made by Hughes et al. (2012) and The Disabilities Trust (2016) that interventions need to be designed to be responsive to the individual profile of impairment for offenders with more severe TBI.

4. DISCUSSION

4.1 Key findings

As can be seen from the information drawn from the studies reviewed above, the issue of TBI in prisoners in England and Wales is receiving increased consideration by researchers and professionals, in particular in relation to prevalence. Various methods of assessment are used, including self-report screening measures and clinical interviews. However, there is little research on how TBI impacts on the progress of prisoners and how TBI might impact on the treatment and rehabilitation of prisoners.

Whilst this review did not aim to collate information on prevalence rates of TBI in prisoners, the publications included indicate that prevalence of TBI is substantially higher within an offending population with findings ranging from 5–24% of the general population (BPS, 2015; Farrer, Frost, & Hedges, 2013) to up to 70% (Davies et al., 2012) and 82% (Chitsabesan et al., 2015) of young offenders in a prison sample. However, it is clear that there is a need for more widespread and routine screening of all prisoners to identify affected individuals. Given the lack of a widespread approach to screening

or identification of TBI it is likely that a large percentage of offenders with brain injury are currently undiagnosed, and as such will not be receiving any additional support. Where brain injury is more severe, with a greater observable effect, offenders may have been referred to healthcare services for further assessment or support. However, occurrences of mild brain injury with less observable impact and fewer obvious symptoms are unlikely to be flagged for any such intervention. Studies with adult offenders indicate that undiagnosed brain injury is also likely to be an issue post-release, with many returning to prison following release due to further offending or breaches of licence or supervision requirements or being involved in a higher rate of rule infractions, adjudications or problematic behaviour whilst in prison (Piccolino & Solberg, 2014; Williams et al., 2010).

There is a lack of agreement in relation to what screening tool may be best suited to any implementation of a wide scale screening approach. The BISI (The Disabilities Trust, 2014) has no age limitations, is described as brief and easy to score, and requires no specific training for assessors. Due in part to the use of the BISI in the Linkworker scheme (discussed below) it is becoming more well-known in prison settings, and it is not unusual now to see the results of the BISI reported in psychological risk reports on prisoners. A small number of adult prisons in England and Wales have implemented a prison-wide screening and assessment scheme for brain injury using the BISI (The Disabilities Trust, 2014, 2016), and this has allowed effective identification of those prisoners who are likely to benefit from additional support both during their sentence and after release. Wider use of screening for brain injury at an early point in an individual's sentence, rather than only when problems become apparent, is likely to improve outcomes both for individuals and the prison. The use of a screening measure such as the BISI (The Disabilities Trust, 2014), which could be incorporated into existing offender management and assessment processes (for instance by offender supervisors, psychology or healthcare staff) carries a comparatively low resource implication. This is particularly true when compared to the potential benefit of a more complete understanding of the problems likely to affect individuals with undiagnosed TBI, and it is hoped that more prisons will adopt an early screening approach to

identification of brain injury in adult offenders. Some recommendations in relation to screening and assessment of young people in contact with criminal justice agencies are beginning to be acted upon, with the Comprehensive Health Assessment Tool (CHAT: Chitsabesan et al., 2014) now being used routinely with young offenders at the point of admission to a secure facility, including YOI's. The BPS report Children and Young People with Neuro-disabilities in the Criminal Justice System (BPS, 2015) has suggested that the CHAT is appropriate to use with offenders up to age 25 rather than only with young offenders, and recommends that this, or a similar screening system is used with all adult prisoners.

The studies included in this review used a variety of screening methods, including self-report measures and more formal assessments such as the CHAT (Chitsabesan et al., 2014) and BISI (The Disabilities Trust, 2014). One study reported use of the Ohio State University TBI identification method (OSU-TBI-ID) and the Traumatic Brain Injury Questionnaire (TBIQ). The reliability and validity of both these measures have been examined, and are rated as acceptable to high (Allely, 2016; Diamond et al., 2007). A recent study into the development of the BISI (Ramos, Liddement, Addicott, Fortescue, & Oddy, 2018), which was used or recommended by the majority of papers in this review has indicated that it has acceptable levels of reliability and validity when used as an initial screen for TBI, however the results showed poor to moderate inter-rater reliability whilst test-retest reliability was described as generally good. It recommends that further development of the assessment is conducted.

The current review identified a lack of specialised support in relation to in-prison behaviour, and rehabilitation following release for prisoners with TBI, as noted by Hughes et al. (2012) and Williams and his colleagues (e.g. Williams, 2013; Williams, Mewse et al., 2010). One notable exception to this was the Linkworker scheme set up in a small number of adult prisons and YOIs by the Disabilities Trust. This scheme screens prisoners for brain injury and offers information, support or intervention depending on the severity of the injury and the individual's need. Support is offered by an assigned Linkworker both before and after release, and links are made with

external agencies that can continue to provide help following release. Providing consistency in terms of the Linkworker assigned to a case both prior to, and post-release appears to be particularly beneficial for the individual. Support offered by the Linkworker may include helping the client to remember appointments, helping with practical arrangements, or providing therapeutic support. A full description of the Linkworker scheme is outside of the remit of this review, but information can be found in Fortescue et al. (2017), Ramos et al. (2017) and the Linkworker service report published by The Disabilities Trust Foundation in 2016. The scheme is described as being relatively low cost, but having a big impact for individual offenders, and it is hoped that it will be extended to other prisons over time.

A number of articles covered in this review (e.g. Fortescue et al, 2017; Ramos et al., 2018; Williams et al., 2015) stated that offenders with brain injury are more likely to struggle with specific aspects of involvement in the legal process, such as understanding why they have been arrested and what their rights are. Wszalek and Turkstra (2015) review language impairments commonly seen in young people with TBI and describe how these impairments to communication may have an adverse impact on their legal encounters. Additional support could therefore usefully be provided for brain injured prisoners in relation to understanding licence and supervision requirements, complying with prison rules and routines, managing their time and communicating appropriately and effectively with staff and other professionals. Prisoners serving extended or indeterminate sentences may find it hard to understand the Parole process, or to communicate or engage effectively with staff involved in their sentence. Whilst increasing consideration has been given to the needs of intellectually disabled prisoners in recent years (Fazel, Xenitidis, & Powell, 2008; Lindsay et al., 2007) the same has not yet been seen for prisoners with neurodisabilities such as brain injury.

Undertaking offending behaviour programmes as part of an offender's sentence plan is commonplace within HMPPS and programmes based on cognitive behavioural therapy (CBT) principles have been shown to reduce re-offending rates (Palmer et al., 2007).

However, there is a paucity of research into programme completion rates for brain injured offenders, or consideration of the effects of TBI on engagement, comprehension of materials, and ability to retain and use skills learnt during programmes. Brain injured offenders may struggle to remember, verbalise or utilise learning from treatment programmes, and may have a higher rate of treatment interfering behaviours, such as impulsivity or verbal outbursts (Davies et al., 2012). This suggestion is supported by studies such as that by Fortescue et al. (2017), which highlights that brain injury can affect a person's ability to engage in rehabilitation. Not completing offending behaviour programmes and/or not being able to demonstrate learning from them is also likely to have an impact on judgements relating to risk and subsequent decisions regarding progression or release. As a result, other authors (e.g. Lowings & Wicks, 2016; Pitman et al., 2015; Williams & Chitsabesan, 2016) propose that interventions for brain injured offenders should be individualised and specialised in order to improve engagement in forensic rehabilitation, and so reduce recidivism. Williams and Chitsabesan (2016) state that there is little research into the effectiveness of interventions with brain injured offenders, and that the evidence base for guiding intervention design, development and implementation of interventions with this population is inadequate. Fortescue et al. (2017) call for a universal review of offending behaviour programmes within the National Offender Management Service (NOMS, now HMPPS) to consider appropriateness of interventions with brain injured prisoners. Given that TBI in prisoners is likely to be undiagnosed (Buck, 2011) it is probable that high numbers of offenders with some level of brain injury have participated in treatment programmes. These prisoners will be expected to demonstrate effective learning and risk reduction following treatment, but for some this may be more difficult due to the effects of their injury. Those offenders whose custodial behaviour remains poor following treatment, or who go on to re-offend may fall into a group of people for whom standardised treatment programmes are unlikely to be successful due to undiagnosed brain injury, which does not necessarily need to be assessed as severe in order to have a detrimental effect on their engagement in, and ability to benefit from offending behaviour programmes.

4.2 Limitations

Some limitations of the studies included in this review were identified. Studies were hampered by differing definitions of TBI, a lack of consistency of screening or assessment measure used, a lack of information on severity of TBI and in many cases a lack of control groups. Studies also included different sample groups, and some had comparatively small sample sizes.

Most studies used self-report measures to assess TBI. This is likely to lead to some response bias, and the accuracy of self-report in offending populations has been queried (Fortescue et al., 2017). However, a study by Schofield et al. (2011) found high rates of consistency between self-report measures of TBI and medical records, while Pitman et al. (2015) indicated that there was good agreement between self-report measures, clinical interviews and performance on neuropsychological tests.

Bias can affect the quality of a systematic review in a number of ways, either from individual studies or across a selection of studies or publications, although this is often more apparent in systematic reviews of experimental studies. The current review has not included a systematic assessment of bias, although quality of studies has been considered as described in section 2.2 above. Key issues in relation to bias in this review include the selection of studies, and assessment of relevance. Selection of studies included in the current review highlights a marked bias towards publications by key authors in this field, notably Williams, Chitsabesan and Fortescue. Reports and articles affiliated with the Disabilities Trust Foundation and the University of Exeter were also frequently found, reflecting the work settings of these key authors. However, the final selection of studies covered a number of different types of publication and numerous different authors, and included studies undertaken in prisons as well as reports by researchers associated with universities, forums, charities and government departments. Studies included were assessed for relevance to the research question by the author of the current review. It was not possible for independent assessment of relevance to be undertaken by a second researcher, and so there is the possibility of bias in relation to decisions regarding relevance.

This review aimed to collate information in relation to three key areas; routine screening for TBI, research on links between TBI and behaviour or progress in prison/post-release success and adaptations needed to standard offending behaviour programmes and other rehabilitation programmes for offenders with TBI. As such, a variety of different types of paper were included in the review, such as reports of empirical studies, presentation papers, systematic reviews and meta-analyses. Each type of paper added value in its own right, with some more focused on reporting various assessment and screening measures and some considering how service delivery and policy may be changed to improve outcomes for prisoners with TBI. The papers were presented together rather than being reported separately by type as it was felt that there was a lot of overlap in terms of areas covered, and this approach would help avoid repetition. Meta-analyses were explicitly not excluded in order that the fullest range of information was available, although this may have made the reporting of the information included less clear.

4.3 Practical implications

Many of the points raised have particular implications for prisoners who are managed under the Parole process. Indeterminate or long term offenders will be monitored and managed by probation services after release, and high-risk offenders or those convicted of sexual offences may also be managed under the Multi-Agency for Public Protection Arrangements (MAPPA) process or be subject to additional reporting restrictions such as the Sex Offenders Register (SOR) or risk management processes such as a Sexual Offending Prevention Order (SOPO). These processes require the individual to attend meetings, report changes in circumstances or address and may also include ongoing participation in further treatment or supervision. Failure to comply with reporting requirements and supervision or treatment requirements can lead to an offender being recalled to prison and offenders with TBI may find it harder to succeed with additional reporting requirements post release.

Some prisoners may also find that they have a reduced level of support following release, or that the professionals involved in their management following release are not aware of specific issues they may face. Multi-agency working and a consistency of approach is likely to be pivotal to success after release for brain injured prisoners and continuity of support and rehabilitation services following release or at other periods of transition such as a move from youth to adult service is paramount.

4.4 Future research and directions

Suggestions and recommendations for further research and development of services or interventions were made by the majority of authors. It is important to note that the current review focused on TBI, and so further examination, using similar principles, of the wider categories of ABI (for instance, damage caused by illness such as strokes, epilepsy or meningitis, rather than due to impact trauma) should be undertaken. There is a general consensus regarding the need for greater identification of TBI in prisoners via effective screening at an early stage, as well as for specialised training for staff working with prisoners in relation to increasing awareness of TBI, its symptoms and likely effect on behaviour, and how problematic behaviour can be managed and brain injured prisoners better supported. There is a need for further research into and development of a screening measure for TBI which can be adopted throughout the CJS. Consideration into how programmes could be adapted for those with TBI and what further support may be required to help maximise learning and recall from treatment programmes is suggested. A greater focus on neurodisability in relation to currently available or new interventions and in relation to rehabilitation and offending behaviour would be beneficial, as would more use of multi-agency approaches, especially at transition periods such as the move from custodial to community settings. Lastly, more research into evaluations of existing specialised services such as the Linkworker scheme, ABI/TBI in female offenders (Allely, 2016) and the rehabilitative and offending related needs of brain injured prisoners would be useful.

5. CONCLUSION

The current review has identified that whilst prisoners are more likely than non-offenders to report previous instances of acquired or traumatic brain injury, including with a loss of consciousness (LOC), more could be done to routinely screen for the presence of TBI in adult prisoners. Current screening initiatives occur in some areas, or with particular groups of prisoners such as young offenders but are not available across the whole prison estate. Where screening for TBI does occur, a number of different screening and assessment tools are used, making comparisons difficult. The use of a standardised screening measure and definition of TBI, including severity ranges which take into consideration the length of time an individual suffered loss of consciousness, would increase the usefulness and comparability of such screening measures. Brain injury does not need to be classed as severe to have a detrimental impact on the individual, and it is those people with lower level or mild TBI who are more likely to go undiagnosed, with ongoing issues in relation to problematic behaviour or cognitive functioning often being attributed to general criminality or a lack of desire to comply with rules and regulations.

The current review highlighted a lack of consideration of the impact of TBI on standardised offending behaviour programmes indicating that many prisoners may not be benefitting from these as much as would be hoped. More research into, and consideration of, neurodisabilities in relation to offending behaviour programmes or other treatment approaches for prisoners with brain injury is recommended. It is also important to note that the current review focussed only on TBI, and that it would be beneficial for future research to also consider other types of acquired brain injury.

REFERENCES

- Allely, C.S. (2016). Prevalence and assessment of traumatic brain injury on prison inmates: A systematic PRISMA review. *Brain Injury, 30*(10), 1161-1180.
- Baguley, I. J., Cooper, J., & Felmingham, K. (2006). Aggressive behaviour following traumatic brain injury: How common is common? *The Journal of Head Trauma Rehabilitation, 21*(1), 45-56.
- Bannon, S.M., Salis, K.L., & O'Leary, D. (2010). Structural brain abnormalities in aggression and violent behaviour. *Aggression and Violent Behavior, 25*, 323-331.
- Bogner, J.D., & Corrigan, J. (2007). Initial reliability and validity of the Ohio State University TBI identification method. *The Journal of Head Trauma Rehabilitation, 22*(6), 318-329.
- Brower, M.C., & Price, B.H. (2001). Neuropsychiatry of frontal lobe dysfunction in violent and criminal behaviour: a critical review. *Journal of Neurology, Neurosurgery and Psychiatry, 71*, 720-726.
- Buck, P. W. (2011). Mild traumatic brain injury: A silent epidemic in our practices. *Health & Social Work, 36*(4), 299-302.
- Buckley, L., Kaye, S., Stork, R.P., Heinze, J.E., & Eckner, J.T. (2017) Traumatic brain injury and aggression: A systematic review and future directions using community samples. *Aggression and Violent Behavior, 37*, 26-34.
- Cassidy, J.D., Carroll, L.J., Peloso, P.M., Borg, J., von Holst, H., Holm, L., Kraus, J., & Coronado, V.G. (2004). Incidence, risk factors and prevention of mild traumatic brain injury: Results of the WHO collaborating centre task force on mild traumatic brain injury. *Journal of Rehabilitation Medicine, Supplement, 43*, 28-60.
- Chayer, C., & Freedman, M. (2001). Frontal lobe functions. *Current Neurology and Neuroscience Reports, 1*, 547-552.
- Chitsabesan, P., Lennox, C., Theodosiou, L., Law, H., Bailey, S., & Shaw, J. (2014). The development of the comprehensive health assessment tool for young offenders within the secure estate. *Journal of Forensic Psychiatry and Psychology, 25*(1), 1-25.
- Chitsabesan, P., Lennox, C., Williams, H., Tariq, O., & Shaw, J. (2015). Traumatic brain injury in juvenile offenders: Findings from the comprehensive health assessment tool study and the development of a specialist linkworker service. *The Journal of Head Trauma Rehabilitation, 30*(2), 106-115.

- Colantonio, A., Kim, H., Allen, S., Asbridge, M., Petgrave, J., & Brochu, S. (2014). Traumatic brain injury and early life experiences among men and women in a prison population. *Journal of Correctional Health Care*, 20(4), 271-279.
- Critical Appraisal Skills Programme (CASP), Public Health Resource Unit, Institute of Health Science, Oxford.
- Davies, R. C., Williams, W. H., Hinder, D., Burgess, C. N. W., & Mounce, L. T. A. (2012). Self-reported traumatic brain injury and post-concussion symptoms in incarcerated youth. *The Journal of Head Trauma Rehabilitation*, 27(30), 21-27.
- Diamond, P.M., Harzke, A.J., Magaletta, P.R., Cummins, A.G., & Frankowski, R. (2007). Screening for traumatic brain injury in an offender sample: A first look at the reliability and validity of the traumatic brain injury questionnaire. *The Journal of Head Trauma Rehabilitation*, 22(6), 330-338.
- Dixon, M.R., Jacobs, E.A., Sanders, S., Guercio, J.M., Soldner, J., Parker-Singler, S., Robinson, A., Small, S., & Dillen, J.E. (2005). Impulsivity, self-control, and delay discounting in persons with acquired brain injury. *Behavioral Interventions*, 20 101-120.
- Farrer, T.J., Frost, R.B., & Hedges, D.W. (2012). Prevalence of traumatic brain injury in intimate partner violence offenders compared to the general population: A meta-analysis. *Trauma, Violence and Abuse* 13(2), 77-82.
- Farrer, T.J., Frost, R.B., & Hedges, D.W. (2013). Prevalence of traumatic brain injury in juvenile offenders: A meta-analysis. *Child Neuropsychology*, 19(3), 225-234.
- Fazel, S., Lichtenstein, P., Grann, M., & Långström, N. (2011). Risk of violent crime in individuals with epilepsy and traumatic brain injury: A 35 year Swedish population study. *PLoS Medicine*, 8, 1-8.
- Fazel, S., Xenitidis, K., & Powell, J. (2008). The prevalence of intellectual disabilities among 12,000 prisoners – A systematic review. *International Journal of Law and Psychiatry*, 31(4), 369-373.
- Fishbein, D., Dariotis, J.K., Ferguson, P.L., & Pickelsimer, E.E. (2016). Relationships between traumatic brain injury and illicit drug use and their association with aggression in inmates. *International Journal of Offender Therapy and Comparative Criminology* 60(5), 575-597.

- Fortescue, D., Ramos, S. D. S., & Oddy, M. (2017). Implementing a brain injury offender strategy through the introduction of a specialist support service in prison. *Prison Service Journal*, 230, 21-24.
- Horn, M.L., & Lutz, D.J. (2016). Traumatic brain injury in the criminal justice system: Identification and response to neurological trauma. *Applied Psychology in Criminal Justice*, 12(2), 71-86.
- Hughes, N., Williams, W. H., Chitsabesan, P., Davies, R., & Mounce, L. (2012) *Nobody made the connection: The prevalence of neurodisability in young people who offend*. London, United Kingdom: Office of the Children's Commissioner for England.
- Hughes, N., Williams, W. H., Chitsabesan, P., Walesby, R. C., Mounce, L. T. A., & Clasby, B. (2015). The prevalence of traumatic brain injury among young offenders in custody: A systematic review. *The Journal of Head Trauma Rehabilitation*, 30(2), 94-105.
- Jarde, A., Losilla, J. M., & Vives, J. (2012). Methodological quality assessment tools of non-experimental studies: A systematic review. *Anales de Psicología* 2, 617-628.
- Jones, K. (2007). Doing a literature review in health. Retrieved from http://www.sagepub.com/upm-data/13615_03_Saks_ch03.pdf
- King, N., Crawford, S., Wenden, F., Moss, N., & Wade, D. (1995). The Rivermead Post Concussion Symptoms questionnaire: A measure of symptoms commonly experienced after head injury and its reliability. *Journal of Neurology*, 242(9), 587-592.
- Lindsay, W.R., Hogue, T.E., Taylor, J.L., Steptoe, L., Mooney, P., O'Brien, G., Johnston, S., & Smith, A.H.W. (2007). Risk assessment in offenders with intellectual disability: A comparison across three levels of security. *International Journal of Offender Therapy and Comparative Criminology*, 52(1), 90-111.
- Lowings, G., & Wicks, B. (2016). *Effective learning after brain injury. A practical guide to support adults with neurological conditions*. London: Routledge.
- Malec, J.F., Brown, A.W., Leibson, C.L., Testa, J., Jayawant, F., Mandrekar, N., Diehl, N.N., & Perkins, P.K. (2007). The Mayo classification system for traumatic brain injury severity. *Journal of Neurotrauma*, 24(9). DOI: 10.1089/neu.2006.0245
- Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P., Stewart, L.A., and PRISMA-P Group (2015). *Systematic Reviews*, 4(1).

- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D.G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *British Medical Journal*, 339, DOI: 10.1136/bmj.b2535.
- Moser, R.S., Iverson, G.L., Echemendia, R.J., Lovell, M.R., Schatz, P., Webbe, F.M., Ruff, R.M., & Barth, J.T. (2007). Neuropsychological evaluation in the diagnosis and management of sports-related concussion. *Archives of Clinical Neuropsychology*, 22, 909-916.
- Oxford Centre for Evidence-Based Medicine – Levels of evidence. (March 2009). Retrieved from: www.cebm.net/oxford-centre-evidence-based-medicinelevels-evidence.
- Palmer, E.J., McGuire, J., Hounsborne, J.C., Hatcher, R.M., Bilby, C.A.L., & Hollin, C.R. (2007). Offending behaviour programmes in the community: The effects on reconviction of three programmes with adult male offenders. *Legal and Criminological Psychology*, 12, 251-264.
- Pass, L.A., & Dean, R.S. (2010). In *The Handbook of Forensic Neuropsychology*, 2nd Ed. New York: Springer..
- Perron, B.E., & Howard, M.O. (2008). Prevalence and correlates of traumatic brain injury among delinquent youths. *Criminal Behaviour and Mental Health*, 18(4), 243-255.
- Piccolino, A.L., & Solberg, K.B. (2014). The impact of traumatic brain injury on prison health services and offender management. *Journal of Correctional Health Care*, 20(3), 203-212.
- Pitman, I., Haddlesey, C., Ramos, S. D. S., Oddy, M., & Fortescue, D. (2015). The association between neuropsychological performance and self-reported traumatic brain injury in a sample of adult male prisoners in the UK. *Neuropsychological Rehabilitation*, 25(5), 763-779.
- Pluye, P., Robert, E., Cargo, M., Bartlett, G., O’Cathain, A., Griffiths, F., Boardman, F., Gagnon, M.P., & Rousseau, M.C. (2011). *Proposal: A mixed methods appraisal tool for systematic mixed studies reviews*. Department of Family Medicine, McGill University, Montreal, Canada. Retrieved from <http://mixedmethodsappraisaltoolpublic.pbworks.com>.
- Ramos, S. D. S., Liddement, J., Addicott, C., Fortescue, D., & Oddy, M. (2018). The development of the Brain Injury Screening Index (BISI): A self-report measure. *Neuropsychological Rehabilitation*, DOI: 10.1080/09602001.2018.1526692

- Ramos, S. D. S., Oddy, M., Liddement, J. & Fortescue, D. (2017). Brain injury and offending: The development and field testing of a Linkworker intervention. *International Journal of Offender Therapy and Comparative Criminology*, 62(7), 1854-1868.
- Ray, B., & Richardson, N.J. (2017). Traumatic brain injury and recidivism among returning inmates. *Criminal Justice and Behavior*, 44(3), 472-486.
- Ray, B., Sapp, D., & Kincaid, A. (2014). Traumatic brain injury among Indian State prisoners. *Journal of Forensic Science*, 59(5), 1248-1253.
- Rosenbaum, A., Hoge, S.K., Adelman, S.A., Warnken, W.J., Fletcher, K.E., & Kane, R.L. (1994). Head injury in partner abusive men. *Journal of Consulting and Clinical Psychology*, 62(6), 1187-1193.
- Rutland-Brown, W., Langlois, J.A., Nicaj, N., Thomas, R.G., Wilt, S.A., & Bazarian, J.J. (2007). Traumatic brain injuries after mass-casualty incidents: Lessons from the 11 September 2001 World Trade Center attacks. *Prehospital and Disaster Medicine*, 22(3), 157-164.
- Schofield, P., Butler, T., Hollis, S., & D'Este, C. (2011). Are prisoners reliable survey respondents? A validation of self-reported traumatic brain injury (TBI) against hospital medical records. *Brain Injury*, 25(1), 74-82.
- Shiroma, E. J., Ferguson, P. L., & Pickelsimer, E. E. (2012). Prevalence of traumatic brain injury in an offender population: A meta-analysis. *The Journal of Head Trauma Rehabilitation*, 27(3), 1-10.
- Simpson, G., Blaszczyński, A., & Hodgkinson, A. (1999). Sex offending as a psychosocial sequel of traumatic brain injury. *The Journal of Head Trauma Rehabilitation*, 14(6), 567-580.
- Slaughter, B., Fann, J. R., & Ehde, D. (2003). Traumatic brain injury in a county jail population: Prevalence, neuropsychological functioning and psychiatric disorders. *Brain Injury*, 17(9), 731-741.
- Timonen, M., Miettunen, J., Hakko, H., Zitting, P., Veijola, J., von Wendt, L., & Rasanen, P. (2002). The association of preceding traumatic brain injury with mental disorders, alcoholism and criminality: The Northern Finland 1966 Birth Cohort Study. *Psychiatry Res* 113(3), 217-226.
- The British Psychological Society (2015). *Children and young people with neuro-disabilities in the criminal justice system*.

- The Disabilities Trust Foundation (2014). The Brain Injury Screening Index
www.thedtgroup.org/foundation/brain-injury-screening-index
- The Disabilities Trust Foundation (2016). Prison Linkworker Service
www.thedtgroup.org/foundation
- Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ); A 32 item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, 19(6), 349-357.
- Tonks, J., Slater, A., Frampton, I., Wall, S.E., Yates, P., & Williams, W.H. (2008). The development of emotion and empathy skills after childhood brain injury. *Developmental Medicine & Child Neurology*. 51 8-16.
- Williams, W.H. (2013) *Repairing Shattered Lives: Brain Injury and Its Implications for Criminal Justice*. London, United Kingdom: Transition to Adulthood Alliance.
- Williams, W. H., & Chitsabesan, P. (2016). *Young People with Traumatic Brain Injury in Custody; An evaluation of a Linkworker Service*. London, United Kingdom. The Barrow Cadbury Trust and the Disabilities Trust.
- Williams, W. H., Cordan, G., Mewse, A. J., Tonks, J., & Burgess, C. N. W. (2010). Self-reported traumatic brain injury in male young offenders: A risk factor for re-offending, poor mental health and violence? *Neuropsychological Rehabilitation*, 20(6), 801-812.
- Williams, W. H., McAuliffe, K. A., Cohen, M. H., Parsonage, M., & Ramsbotham, D. J. (2015). Traumatic brain injury and juvenile offending: Complex causal links offer multiple targets to reduce crime. *The Journal of Head Trauma Rehabilitation*, 30(2), 69-74.
- Williams, W. H., Mewse, A. J., Tonks, J., Mills, S., Burgess, C. N. W., & Cordan, G. (2010). Traumatic brain injury in a prison population: Prevalence and risk for re-offending. *Brain Injury*, 24(10), 1184-1188.
- Wszalek, J. A., & Turkstra, L. S. (2015). Language impairments in youths with traumatic brain injury: Implications for participation in criminal proceedings. *The Journal of Head Trauma Rehabilitation*, 30(2), 86-93.
- Yates, P.J., Williams, W.H., Harris, A., Round, A., & Jenkins, R. (2006). An epidemiological study of head injuries in a UK population attending an emergency department. *Journal of Neurology, Neurosurgery and Psychiatry*, 77, 699-701.

Appendix A- Protocol and search strategy

Key words / phrases;

Key words and phrases were generated by initially brainstorming the concept word, then searching for synonyms of these. Synonyms of the generated words were also considered. From the resulting list, those most pertinent to the concept in the context of the research question were selected for inclusion in the search strategy (in bold). Keyword searches used truncation where necessary to generate all variants.

1. Traumatic Brain Injury

Acquired Brain Injury	Traumatic Brain Injury	ABI	TBI
Brain Injury	Head Injury	Head trauma	Brain trauma
Acquired brain damage		Lesion	Wound
Undiagnosed brain injury			

2. Prisoners

Prisoner/s	Offender/s	Inmate/s	Convict/s
Lifer/s	Criminal/s	Delinquent/s	Felon/s
Malefactor/s	Internee/s	Detainee/s	IPP/s
ISP/s	Indeterminate	Jail	ISPP

3. Treatment

Treatment	Therapy	Improvement	Intervention
Program/mme/s	Individual treatment	Group treatment	Group work
Correctional	Recovery	Rehabilitation	Teaching
Counselling	Change	Development	CBT
Treatment outcome	Behaviour management	Course/s	OBP's
Offending behaviour programmes		Cognitive Behaviour Therapy	
Behaviour modification		Individual / 1:1 / 121 work	

Keywords not adding content to the search were excluded from the final search strategy. Six databases were searched using identical search terms. Search terms used are given below;

Each concept was combined with OR

All three concepts were then combined with AND

Selection of databases

- Psych INFO
- Web of Science – core collection
- Criminal Justice Abstracts
- Psych EXTRA
- ASSIA
- Medline (accessed via Web of Science)

Search Terms		
Traumatic brain injury	Prisoners	Treatment
<i>ABI</i>	<i>prison*</i>	<i>treatment*</i>
<i>TBI</i>	<i>offend*</i>	<i>therap*</i>
<i>brain injur*</i>	<i>inmate*</i>	<i>intervention*</i>
<i>head injur*</i>	<i>convict*</i>	<i>program*</i>
<i>head trauma*</i>	<i>lifer*</i>	<i>rehabilit*</i>
<i>brain trauma*</i>	<i>crim*</i>	<i>counsel#ing</i>
<i>“undiagnosed brain injur*”</i>	<i>felon*</i>	<i>CBT</i>
	<i>detain*</i>	<i>“cognitive behavio#r</i>
	<i>IPP*</i>	<i>therapy”</i>
	<i>ISP*</i>	<i>“treatment outcome”</i>
	<i>ISPP*</i>	<i>“behavio#r management”</i>
	<i>“indeterminate sentence for</i>	<i>OBP*</i>
	<i>public protection”</i>	<i>“offending behavio#r</i>
	<i>“life sentence”</i>	<i>program*”</i>
	<i>jail*</i>	<i>“behavio#r modification”</i>

Check for existing systematic reviews

The Cochrane database of systematic reviews was searched for existing systematic reviews covering the two main concepts of 'brain injury' and 'prisoners' using a keyword search. There were no results for;

- acquired brain injury AND prisoners OR prison OR convicts OR conviction OR inmates OR detainee
- traumatic brain injury AND prison OR convicts OR conviction OR inmates OR detainee
- brain injury AND offenders OR prisoners OR prison OR convicts OR conviction OR inmates OR detainee
- brain trauma AND offenders OR prisoners OR prison OR convicts OR conviction OR inmates OR detainee
- brain damage AND offenders OR prisoners OR prison OR convicts OR conviction OR inmates OR detainee
- 1 result was found for 'acquired brain injury AND offenders' and 'traumatic brain injury AND offenders':

[Technological aids for the rehabilitation of memory and executive functioning in children and adolescents with **acquired brain injury**](#)

Mark Linden, Carol Hawley, Bronagh Blackwood, Jonathan Evans, Vicki Anderson and Conall O'Rourke

Online Publication Date: July 2016

- 1 result was found for 'brain damage AND crime';

[Functional MRI detection of deception after committing a mock sabotage crime](#)

Kozel FA, Johnson KA, Grenesko EL, Laken SJ, Kose S, Lu X, Pollina D, Ryan A and George MS
Journal of forensic sciences, 2009, 54(1), 220

Online Publication Date: 2012

- 2 results were found for 'brain injury AND criminals', the second study was also found under the 'traumatic brain injury AND prisoner' search;

[The high burden of traumatic **brain injury** and comorbidities amongst homeless adults with mental illness](#)

Topolovec-Vranic J, Schuler A, Gozdzik A, Somers J, Bourque P-E, Frankish CJ, Jbilou J, Pakzad S, Palma Lazgare LI and Hwang SW
Journal of psychiatric research, 2017, 87, 53
Online Publication Date: 2017

[Healthcare Utilization, Legal Incidents, and Victimization Following Traumatic Brain Injury in Homeless and Vulnerably Housed Individuals: A Prospective Cohort Study.](#)

To MJ, O'Brien K, Palepu A, Hubley AM, Farrell S, Aubry T, Gogosis E, Muckle W and Hwang SW
Journal of head trauma rehabilitation, 2015, 30(4), 270
Online Publication Date: 2015

None of the above reviews appear to be similar in context to the current proposed systematic review.

The PROSPERO International register of systematic reviews was also search using a keyword search. No existing (completed or ongoing) reviews were found using any combination of the key words;

offenders / prisoners / brain injury

Appendix B – Documents selected for full text review and reasons for exclusion

Reference	Relevance			Reason for exclusion								Included in final selection
	Prison	Relevant	MMAT Score	Not English	Before 1997	Not Engl / Wales	Under 13	Pub type	Pred only	Patients	Military	Y/N
PUBLICATIONS IDENTIFIED FROM DATABASE SEARCHES												
1. Carswell et al., 2004	N	Y	-									N
2. Chitsabesan et al., 2015	Y	Y	75%									Y
3. Clarke, 2013	Y	Y	-			x						N
4. Davies et al., 2012	Y	Y	100%									Y
5. Diamond et al., 2007	Y	Y	-			x						N
6. Fortescue et al., 2017	Y	Y	75%									Y
7. Horn & Lutz, 2016	Y	Y	-			x						N
8. Hughes et al., 2015	Y	Y	-									Y
9. Marsh & Martinovich, 2006	N	Y	-			x						N

Reference	Relevance			Reason for exclusion								Included in final selection
	Prison	Relevant	MMAT Score	Not English	Before 1997	Not Engl / Wales	Under 13	Pub type	Pred only	Patients	Military	Y/N
10. Morrell et al., 1998	Y	Y	-			x						N
11. Mullin & Simpson, 2007	Y	N	-									N
12. O'Sullivan et al., 2015	N	Y	-			x						N
13. Piccolino & Solberg, 2014	Y	Y	-			x						N
14. Pitman et al., 2015	Y	Y	100%									Y
15. Ramos et al., 2017	Y	Y	100%									Y
16. Ross & Hoaken, 2010	Y	Y	-			x						N
17. Shiroma et al., 2012	Y	Y	-			x						N
18. Slaughter et al., 2003	Y	Y	-			x						N
19. Walker et al., 2001	Y	Y	-			x						N
20. Williams et al., 2015	Y	Y	75%									Y

Reference	Relevance			Reason for exclusion								Included in final selection
	Prison	Relevant	MMAT Score	Not English	Before 1997	Not Engl / Wales	Under 13	Pub type	Pred only	Patients	Military	Y/N
21. Williams, Cordon et al., 2010	Y	Y	100%									Y
22. Williams, Mewse et al., 2010	Y	Y	75%									Y
23. Yuhasz, 2013	Y	Y	-			x						N
PUBLICATIONS IDENTIFIED FROM REFERENCE LISTS AND GREY LITERATURE SEARCHES												
24. Allely, 2016	Y	Y	100%									Y
25. BPS, 2015	Y	Y	75%									Y
26. The Disabilities Trust, 2016	Y	Y	100%									Y
27. Farrer, Frost & Hedges, 2013	Y	Y	100%									Y
28. Hughes et al., 2012	Y	Y	75%									Y

Reference	Relevance			Reason for exclusion								Included in final selection
	Prison	Relevant	MMAT Score	Not English	Before 1997	Not Engl / Wales	Under 13	Pub type	Pred only	Patients	Military	Y/N
29. Minutes of Parliamentary Group, 2012	Y	N	-									N
30. Read, S. (ND)	Y	N	-									N
31. Williams, 2013	Y	Y	100%									Y
32. Williams et al., 2015	Y	Y	0									N
33. Williams & Chitsabesan, 2016	Y	Y	100%									Y
34. Uncovering the facts: brain injury and the CJS, 2015	Y	N	-									N

Appendix C – Mixed Methods Appraisal Tool (MMAT) template

Types of mixed methods study components or primary studies	Methodological quality criteria (see tutorial for definitions and examples)	Responses			
		Yes	No	Can't tell	Comments
Screening questions (for all types)	• Are there clear qualitative and quantitative research questions (or objectives*), or a clear mixed methods question (or objective*)?				
	• Do the collected data allow address the research question (objective)? E.g., consider whether the follow-up period is long enough for the outcome to occur (for longitudinal studies or study components).				
<i>Further appraisal may be not feasible or appropriate when the answer is 'No' or 'Can't tell' to one or both screening questions.</i>					
1. Qualitative	1.1. Are the sources of qualitative data (archives, documents, informants, observations) relevant to address the research question (objective)?				
	1.2. Is the process for analyzing qualitative data relevant to address the research question (objective)?				
	1.3. Is appropriate consideration given to how findings relate to the context, e.g., the setting, in which the data were collected?				
	1.4. Is appropriate consideration given to how findings relate to researchers' influence, e.g., through their interactions with participants?				
2. Quantitative randomized controlled (trials)	2.1. Is there a clear description of the randomization (or an appropriate sequence generation)?				
	2.2. Is there a clear description of the allocation concealment (or blinding when applicable)?				
	2.3. Are there complete outcome data (80% or above)?				
	2.4. Is there low withdrawal/drop-out (below 20%)?				
3. Quantitative non-randomized	3.1. Are participants (organizations) recruited in a way that minimizes selection bias?				
	3.2. Are measurements appropriate (clear origin, or validity known, or standard instrument; and absence of contamination between groups when appropriate) regarding the exposure/intervention and outcomes?				
	3.3. In the groups being compared (exposed vs. non-exposed; with intervention vs. without; cases vs. controls), are the participants comparable, or do researchers take into account (control for) the difference between these groups?				
	3.4. Are there complete outcome data (80% or above), and, when applicable, an acceptable response rate (60% or above), or an acceptable follow-up rate for cohort studies (depending on the duration of follow-up)?				
4. Quantitative descriptive	4.1. Is the sampling strategy relevant to address the quantitative research question (quantitative aspect of the mixed methods question)?				
	4.2. Is the sample representative of the population understudy?				
	4.3. Are measurements appropriate (clear origin, or validity known, or standard instrument)?				
	4.4. Is there an acceptable response rate (60% or above)?				
5. Mixed methods	5.1. Is the mixed methods research design relevant to address the qualitative and quantitative research questions (or objectives), or the qualitative and quantitative aspects of the mixed methods question (or objective)?				
	5.2. Is the integration of qualitative and quantitative data (or results*) relevant to address the research question (objective)?				
	5.3. Is appropriate consideration given to the limitations associated with this integration, e.g., the divergence of qualitative and quantitative data (or results*) in a triangulation design?				

Criteria for the qualitative component (1.1 to 1.4), and appropriate criteria for the quantitative component (2.1 to 2.4, or 3.1 to 3.4, or 4.1 to 4.4), must be also applied.

*These two items are not considered as double-barreled items since in mixed methods research, (1) there may be research questions (quantitative research) or research objectives (qualitative research), and (2) data may be integrated, and/or qualitative findings and quantitative results can be integrated.

Appendix D – Summary of Mixed Methods Appraisal Tool (MMAT) scoring

	Screen OK	Qualitative				Quantitative -RCT				Quantitative non-randomised				Quantitative -descriptive				Mixed Methods					
Ref		1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	5.1	5.2	5.3	5.4	Lowest Score	Qual OK?
2.	Y													Y	Y	Y	N					75%	Y
4.	Y													Y	Y	Y	Y					100%	Y
6.	Y	Y	Y	Y	?																	75%	Y
8.	Y	Y	Y	Y	Y																	100%	Y
14.	Y									Y	Y	Y	Y									100%	Y
15.	Y	Y	Y	Y	Y																	100%	Y
20.	Y	Y	Y	Y	?																	75%	Y
21.	Y													Y	Y	Y	Y					100%	Y
22.	Y													Y	Y	Y	N					75%	Y
24.	Y	Y	Y	Y	Y																	100%	Y
25.	Y	Y	Y	Y	?																	75%	Y
26.	Y	Y	Y	Y	Y																	100%	Y
27.	Y	Y	Y	Y	Y																	100%	Y
28.	Y	Y	Y	Y	?																	75%	Y
31.	Y	Y	Y	Y	Y																	100%	Y
32.	N																					0	N
33.	Y	Y	Y	Y	Y																	100%	Y

Appendix E – Data extraction template

Quality assessment and data extraction template

DOCUMENT DETAILS	
Author/s	
Title	
Publication Date	
Publication Type	
Journal name (if applicable)	
Within scope of current review?	
Relevant to current review?	
Meets quality indicators?	

QUALITY INDICATORS	Notes
MMAT screening ok?	Y / N
Lowest MMAT score	
Meets MMAT minimum level?	Y / N
Funding source / other affiliation or bias	
Quality limitations for discussion?	

KEY AREA	Notes
Screening / assessment of ABI/TBI in a UK prison population	
Part of / is a meta-analysis or systematic review?	
Consideration of progress in prison and/or post release success	
Consideration of offending related treatment or risk in or after prison	
Future research or recommendations made	

Appendix F – Article details and summary of key information in relation to the three main areas: 1. Screening / assessment of TBI in a prison population in England and Wales, 2. Consideration of progress of prisoners with TBI in prison and/or post release success (e.g. behaviour, rule infractions, licence breach) and 3. Consideration of offending related treatment or rehabilitation of prisoners with TBI (e.g. offending behaviour programmes)

Document	Methodology / assessment details	Participant / context information	Summary of key information
Chitsabesan, P., Lennox, C., Williams, H., Tariq, O., & Shaw, J. (2015). Traumatic brain injury in juvenile offenders: Findings from the comprehensive health assessment tool study and the development of a specialist Linkworker service. <i>The Journal of Head Trauma</i>	Journal Article. <u>Aim:</u> 1. Prevalence study of TBI in a sample of juvenile offenders. 2. Description of the Linkworker service. <u>Assessment:</u> 1. CHAT and RPQ. 2. Description and evaluation of the development of the Linkworker service. <u>Methodology:</u> 1. Data were analysed using SPSS	Prevalence study undertaken with 93 male juvenile offenders with TBI, aged between 15 and 18 years who were admitted to a secure custodial facility in England (Young Offenders Institution). The sample was taken from consecutive admissions. The evaluation of the Linkworker Service took	<u>Screening:</u> The prevalence study reported in this article used the Rivermead post-concussion symptoms questionnaire (RPQ, King et al., 1995) and the Comprehensive Health Assessment Tool (CHAT). The evaluation of the Linkworker Service reported that screening for TBI was initially completed using the CHAT, which is completed within 10 days of admission. Those identified with a relevant need from the CHAT were referred to the Linkworker Service and were further screened using the Brain Injury Screening Index (BISI). <u>Progress:</u> Describes the Linkworker Service. Young people in the CJS have high rates of vulnerabilities and are at

Document	Methodology / assessment details	Participant / context information	Summary of key information
<i>Rehabilitation, 30 (2), 106-115.</i>	however group comparisons were not possible and the study only reports descriptive statistics.	place across two custodial facilities in the England.	increased risk of TBI. The Linkworker Service aims to provide additional support to those referred and accepted in order to maximise chances of success post-release. This support can continue after release, with continuity of Linkworkers. Further referrals to specialist TBI rehabilitation services on release can be made, and this is likely to have a positive impact post-release.
Davies, R. C., Williams, W. H., Hinder, D., Burgess, C. N. W., & Mounce, L. T. A. (2012). Self-reported traumatic brain injury and post-concussion symptoms in incarcerated youth. <i>The Journal of Head Trauma</i>	Journal Article. <u>Aim:</u> To investigate frequency and severity of self-reported TBI and post-concussion symptoms. <u>Assessment:</u> Frequency and severity of TBI were measured using a structured interview based on the work of Williams et	61 male juvenile offenders between 16 and 18 years were included. Their average age was 16.87 years. Participants were resident at a Young Offenders Institute (YOI) in England. This study used an opportunistic sample with participants being asked to take part.	<u>Screening:</u> Frequency and severity of TBI were recorded following a structured interview approach. In addition, a modified version of the Rivermead Post-Concussion Symptoms Questionnaire was used. <u>Progress:</u> TBI has not been routinely considered in the past with offender populations, although the correlation between TBI and offending has been made. It is suggested that professionals need to account for TBI in offender populations in managing care needs.

Document	Methodology / assessment details	Participant / context information	Summary of key information
<i>Rehabilitation, 27(30), 21-27.</i>	<p>al. 2010. Post-concussion symptoms were measured using a modified version of the RPQ.</p> <p><u>Methodology:</u> Between-subjects design.</p>	<p>The response rate was 92% and the inclusion rate from this sample 98.3%</p>	<p><u>Treatment:</u> The authors conclude that there is a need to consider issues of forgetfulness, irritability and impulsivity in forensic rehabilitation. TBI is also reported to be an important factor which should be targeted by rehabilitation programmes, which may therefore decrease further the rate of offending.</p>
<p>Fortescue, D., Ramos, S. D. S., & Oddy, M. (2017). Implementing a brain injury offender strategy through the introduction of a specialist support service in prison. <i>Prison Service Journal, 230</i>, 21-24.</p>	<p>Journal Article.</p> <p><u>Aim:</u> Description of the implementation of a brain injury offender strategy in prisons.</p> <p><u>Assessment:</u> The Brain Injury Screening Index (BISI)</p> <p><u>Methodology:</u> This paper describes the implementation of a</p>	<p>This article reported information from adult and young offender establishments (HMP and YOI), including males and females. Prison-wide screening was undertaken in the pilot sites, with no specific figures reported.</p>	<p><u>Screening:</u> A previous study by Pitman et al. led to the development of a screening tool, the Brain Injury Screening Index. The strategy reported here uses the BISI at reception into prison.</p> <p><u>Progress:</u> The strategy implemented a model of service for those with TBI, both prior to and post release. This identifies the individual's problems, provides an individualised support programme and gives ongoing Linkworker involvement.</p> <p><u>Treatment:</u> The article highlights that brain injury likely affects a person's ability to engage in a rehabilitation</p>

Document	Methodology / assessment details	Participant / context information	Summary of key information
	special support service for offenders with TBI in prisons and the development of a specific brain injury strategy. Pilot studies were initially carried out in an adult male prison, and these were then widened to include female and young offender establishments.		programme and is therefore likely to impede rehabilitation. Those receiving 1:1 support are helped to identify problems associated with TBI such as anger and memory/attention difficulties, impulsivity, disinhibition etc. These problems should be taken into account in relation to forensic rehabilitation to ensure that the rehabilitative approach is appropriate to their needs.
Hughes, N., Williams, W. H., Chitsabesan, P., Walesby, R. C., Mounce, L. T. A., & Clasby, B. (2015). The prevalence of traumatic brain injury	Journal Article reporting a Systematic Review. <u>Aim:</u> To examine the prevalence of TBI in young offenders compared to the general population.	Young offenders held in a YOI. 10 studies were reported, 4 of which had control groups. Sample sizes ranged from 61 to 753. Only one study	<u>Screening:</u> This article reports a SR looking specifically at young offenders in custody. The paper was included as it gives a useful discussion of definition and identification of TBI and the variations in this across different studies. Recommendations are made in relation to the need for effective screening and assessment of TBI in young

Document	Methodology / assessment details	Participant / context information	Summary of key information
among young offenders in custody: A systematic review. <i>The Journal of Head Trauma Rehabilitation</i> , 30(2), 94-105.	<p><u>Assessment:</u> Studies included used semi-structured interviews and self-administered questionnaires.</p> <p><u>Methodology:</u> Systematic Review</p>	reported was conducted in the UK (Davies et al., 2012, see above).	<p>offenders, which in turn can inform the development of specialist forensic services, not only in custody, but also at police interviewing and courtroom stages and in community sentences.</p> <p><u>Treatment:</u> The article highlights that better support and interventions are needed for young offenders with TBI and recommends that specialist support services are developed for this group. In addition, the authors state that consideration of TBI in interventions and practices will mean that these are better able to meet the needs of young people with TBI in custody.</p>
Pitman, I., Haddlesey, C., Ramos, S. D. S., Oddy, M., & Fortescue, D. (2015). The association between neuropsychological	<p>Journal Article.</p> <p><u>Aim:</u> Investigation of the association between TBI and impaired cognitive performance.</p>	Adult males residing within a UK prison. 139 prisoners with TBI and 50 prisoners without TBI.	<p><u>Screening:</u> The study used self-report measures of TBI, as well as further screening using the BISI. The authors conclude that screening for TBI61 is an important first step in effective management of offenders with TBI.</p> <p><u>Progress:</u> The results of the BISI were seen to be strongly correlated with on-going cognitive and behavioural deficits</p>

Document	Methodology / assessment details	Participant / context information	Summary of key information
performance and self-reported traumatic brain injury in a sample of adult male prisoners in the UK. <i>Neuropsychological Rehabilitation</i> , 25(5), 763-779.	<p><u>Assessment:</u> Potential TBI was assessed using the BISI.</p> <p><u>Methodology:</u> A correlational and group comparison design was used to examine the association between neuropsychological performance and TBI, identified according to a self-report measure plus screening using the BISI. Cognitive performance was measured using standardised questionnaires and</p>		<p>that can interfere with an individual's functioning. TBI should be considered in relation to post-release success rates. Wider training to raise awareness of TBI in staff is recommended, in particular in prisons where an individual's poor behaviour may be due to TBI rather than being an indication that the prisoner is being deliberately defiant.</p> <p><u>Treatment:</u> Specialised support /intervention is identified as needed, especially post-release. In addition, those offenders with TBI may find it harder to engage effectively with offence-focused rehabilitation programmes, due to the specific effects of TBI such as poorer concentration, reduced information processing capabilities or disinhibited behaviour. Increasing awareness and understanding in staff regarding TBI is likely to improve staff/prisoner relationships by decreasing negative interactions and tailoring interventions and support to more effectively meet the needs of TBI offenders.</p>

Document	Methodology / assessment details	Participant / context information	Summary of key information
	neuropsychological assessments. Follow-up interviews were undertaken to provide additional data.		
Ramos, S. D. S., Oddy, M., Liddement, J., & Fortescue, D. (2017). Brain injury and offending: The development and field testing of a Linkworker intervention. <i>International Journal of Offender Therapy and Comparative Criminology</i> , 62(7), 1854-1868.	<p>Journal Article.</p> <p><u>Aim:</u> To develop, implement and evaluate a brain injury Linkworker approach to provide support for prisoners with TBIs.</p> <p><u>Assessment:</u> Screening uses the BISI. Confirmatory evidence of brain injury was then sought from medical records.</p>	Three case studies of adult male offenders residing within a UK prison. The men were aged between 22 and 47 years, serving sentence for both violent and non-violent offences.	<p><u>Screening:</u> The Linkworker scheme described in the article uses the Brain Injury Screening Index (BISI) to identify those with a potential TBI.</p> <p><u>Progress:</u> Not explicitly covered, however the article describes the implementation of a model of service for those with TBI, both prior to and post release.</p> <p><u>Treatment:</u> The case studies indicate that prisoners with TBI had significant difficulties that reduced their ability to benefit from standard offender rehabilitation approaches, which had the knock-on effect of increasing their risk of re-offending.</p>

Document	Methodology / assessment details	Participant / context information	Summary of key information
	<u>Methodology:</u> Case Study approach.		
Williams, W. H., McAuliffe, K. A., Cohen, M. H., Parsonage, M., & Ramsbotham, D. J. (2015). Traumatic brain injury and juvenile offending: Complex causal links offer multiple targets to reduce crime. <i>The Journal of Head Trauma Rehabilitation</i> , 30(2), 69-74.	Journal Article. <u>Aim:</u> To discuss the evidence that TBI is associated with criminal behaviour, and that children who survive TBI are more likely to experience behavioural problems as adults.	Reports on various research undertaken with juvenile offenders with TBI.	<u>Screening:</u> Reports various studies looking at screening and assessment of TBI. Studies discussed used the Rivermead post-concussion symptoms questionnaire (RPSQ) and the Comprehensive health assessment tool (CHAT). The article reaffirms that screening and assessment processes for TBI within custodial systems are important, in particular for juvenile offenders. <u>Progress:</u> The interconnectedness of multiple factors associated with TBI is discussed, and in particular how these come together to adversely impact the progression and success of this group of offenders. As well as TBI young people with TBI may have issues with drugs, alcohol, and show increased problematic behaviours. The group identified by Chitsabesan et al. had a range of co-morbid issues (29% ADHD, 36% speech and language impairments,

Document	Methodology / assessment details	Participant / context information	Summary of key information
			<p>66% alcohol and cannabis misuse problems, 50% at risk of SASH). Interruption of the development of the social brain may lead to increased problems with self-regulation and social interaction, leading to an increased likelihood of contact with the CJS, and poorer outcomes once in custody. Greater awareness of the needs and challenges of young people with TBI could lead to better outcomes in prison, for instance not being punished for forgetting or breaching rules, but instead helped to change their behaviour is likely to lead to greater success and compliance in custody.</p> <p><u>Treatment:</u> Identification of TBI could increase understanding of factors that may lead to offending and increased likelihood of recidivism and assist in identifying relevant interventions such as psychoeducation and rehabilitation programmes. Those with more severe TBI should be identified and provided with neurorehabilitation services. The article also looks at the potentially large</p>

Document	Methodology / assessment details	Participant / context information	Summary of key information
			benefit to the CJS and society as a whole if steps are taken to try to reduce the frequency of TBI in the first place. This could include increasing awareness and safety campaigns. In addition, early intervention with young people with TBI, who may then be at increased risk of offending and anti-social behaviour is important. For instance aiding a return to the education system, rather than dealing with anti-social juveniles via the CJS may bring longer term benefits. The article argues for policy change in relation to the management of young people who offend, with identification of TBI being taken into account.
Williams, W. H., Cordan, G., Mewse, A. J., Tonks, J., & Burgess, C. N. W. (2010). Self-reported traumatic brain injury in male young	Journal Article. <u>Aim:</u> To determine the rate of self-reported TBI in young offenders and to explore whether TBI was associated with number of	186 young offenders in England took part in the study, from a total of 197 who were approached and asked to participate. Ages ranged from 15 to 19 years,	<u>Screening:</u> This study investigated the rate of TBI in male juvenile offenders, and how this was related to mental health issues, violence and re-offending. TBI was identified using a self-report measure, including estimated LOC where applicable, and details of crimes committed, mental health issues and drug use were recorded.

Document	Methodology / assessment details	Participant / context information	Summary of key information
<p>offenders: A risk factor for re-offending, poor mental health and violence? <i>Neuropsychological Rehabilitation</i>, 20(6), 801-812.</p>	<p>convictions, violent offending, mental health problems and substance misuse.</p> <p><u>Assessment:</u> Self-report measures of TBI, crime history, mental health and drug use.</p> <p><u>Methodology:</u> Descriptive statistics including rates of self-report. ANCOVA used to investigate associations between factors.</p>	<p>and the mean age of participants was 16.8 years. The participants were either resident in a YOI, a special needs school or were being managed by a Youth Offending Team. This study excluded young people with severe mental health needs, and those with previous conditions that may effect cognitive functioning (strokes, epilepsy etc.). There was no control group used.</p>	<p><u>Progress:</u> The authors summarise that ‘findings related to repeat offending suggest that neurocognitive factors may be a possible factor in limiting the ability to change behaviour within custodial systems’. There are implications from this in terms of behavioural management of offenders with TBI in custody. The article concludes that increased neurorehabilitative input for young offenders with TBI is likely to be important in reducing re-offending and increasing positive outcomes.</p> <p><u>Treatment:</u> This study identifies that it is likely that neuropsychological sequelae (problems with attention, memory, and executive functions) would limit capacity to fully engage in forensic rehabilitation to enable behaviour change. Better integration of neuropsychological assessments and specific neurorehabilitative approaches into the planning and delivery of rehabilitation or treatment programmes with young people with TBI is required.</p>

Document	Methodology / assessment details	Participant / context information	Summary of key information
Williams, W. H., Mewse, A. J., Tonks, J., Mills, S., Burgess, C. N. W., & Cordan, G. (2010). Traumatic brain injury in a prison population: Prevalence and risk for re-offending. <i>Brain Injury</i> , 24(10), 1184-1188.	<p>Journal Article.</p> <p><u>Aim:</u> To establish the rate of different severities of TBI in adult offenders, and to look at patterns of custody associated with TBI.</p> <p><u>Assessment:</u> Self report measure of TBI and custodial information.</p> <p><u>Methodology:</u> Descriptive statistics and ANCOVA analysis of covariance.</p>	196 male prisoners aged 18-54 years resident within an English adult male Category C prison. A total of 453 offenders were asked to participate, with 43% responding. Participants were aged between 18 and 54 years old. There was no control group for this study.	<p><u>Screening:</u> History of TBI and custodial information was recorded using a self-report questionnaire. The authors note that in the UK a recent review of mental health needs (The Bradley Report) did not include references to TBI. They conclude that greater efforts to screen for head injury could indicate where particular input is needed.</p> <p><u>Progress:</u> Not covered in any detail, although the authors note there is a need to account for TBI in management of offenders serving custodial sentences. Increasing staff awareness of inappropriate behaviour in offenders with TBI and identifying alternative behaviour patterns is noted as being important.</p> <p><u>Treatment:</u> The researchers conclude that findings could be taken into account in the management and rehabilitation of offenders. Interventions which consider improving awareness of inappropriate behaviour and identifying alternative behaviour patterns may be particularly</p>

Document	Methodology / assessment details	Participant / context information	Summary of key information
			important. Neurorehabilitative approaches may also be particularly effective in reducing future re-offending.
Williams, W. H., & Chitsabesan, P. (2016). <i>Young People with Traumatic Brain Injury in Custody; An evaluation of a Linkworker Service</i> . London, United Kingdom. The Barrow Cadbury Trust and The Disabilities Trust.	<p>Evaluation Report.</p> <p><u>Aim:</u> To evaluate the Linkworker Service.</p> <p><u>Assessment:</u> The Linkworker scheme utilises the BISI screening tool and the Comprehensive health assessment tool (CHAT).</p> <p><u>Methodology:</u> Descriptive report.</p>	All residents of the male YOI pilot site were screening for referral to the Linkworker Service.	<p><u>Screening:</u> This report gives an overview of the topic area and evaluates the Linkworker Service as piloted in a YOI in England, following on from previous evaluation of the service in an adult prison. All young offenders within the pilot site had an initial assessment of health needs within 10 days of admission, using the Comprehensive Health Assessment Tool (CHAT) with a follow-up screening of TBI using the BISI.</p> <p><u>Progress:</u> The report indicates that the Linkworker Service was set up and appeared to fit the needs of the population, in providing additional specialist support to young people with TBI. The additional input was seen to lead to improved outcomes for young offenders. TBI is associated with higher rates of infractions in prisons and raising awareness of TBI and its implications for young people in custody is beneficial.</p>

Document	Methodology / assessment details	Participant / context information	Summary of key information
			<u>Treatment:</u> The report states that TBI would be expected to interfere with traditional methods of forensic rehabilitation, and that managing TBI may be important for improving engagement in forensic rehabilitation and reducing recidivism.
Farrer, T.J., Frost, R.B., & Hedges, D.W. (2012). Prevalence of traumatic brain injury in intimate partner violence offenders compared to the general population: A meta-analysis. <i>Trauma, Violence and Abuse</i> 13(2), 77-82.	Meta Analysis. <u>Aim:</u> To examine the prevalence of TBI in juvenile offenders. <u>Assessment:</u> Both the UK studies discussed here used self-report measures of TBI. <u>Methodology:</u> Meta analysis.	9 studies were reported, 5 of which had control groups. Two were UK studies and so were included here as they were not included from other articles in this systematic review; Carswell et al., N = 47 juvenile offenders, Williams et al., 2010, N = 186 juvenile offenders.	<u>Screening:</u> Both UK studies reported used self-report measures of TBI, either by researcher-led interview or via a questionnaire. Severity of TBI was not taken into account. <u>Treatment:</u> The authors state that better evaluation of neurocognitive deficits could guide more effective treatment and rehabilitation. Greater consideration of rehabilitation approaches for offenders with TBI is needed.

Document	Methodology / assessment details	Participant / context information	Summary of key information
The British Psychological Society (2015). <i>Children and young people with neuro-disabilities in the criminal justice system</i> .	Report. <u>Aim:</u> This is a position statement detailing the Society's views on children and young people with neurodisabilities who come into contact with the CJS. <u>Assessment:</u> Refers to the use of the Comprehensive Health Assessment Tool (CHAT).	Children and young people in contact with the CJS were considered in this report.	<u>Screening:</u> Young people entering the secure estate are assessed using the CHAT, which includes TBI identification. The report suggests the CHAT could be used with individuals up to the age of 25. It is currently only used with those classed as young offenders (up to age 18 years). Wider recognition and understanding of neurodisabilities in children and young people is needed and earlier assessment/screening is required. <u>Progress:</u> The paper calls for utilising neurodisability assessments when developing offender management plans with young offenders. <u>Treatment:</u> Appropriate neurorehabilitation should be routinely provided for those who need it.
Hughes, N., Williams, W. H., Chitsabesan, P., Davies, R., & Mounce, L. (2012) <i>Nobody made the</i>	Report. <u>Aim:</u> To examine the published evidence in relation to the prevalence	The report looked at young people (aged 15-18 years) who offend (those within the youth justice system secure	<u>Screening:</u> The Dept. of Health and the YJB commissioned the CHAT to screen for neurodisabilities in the YJS. The report advocates the use of the CHAT, which includes a section on neurodisability, including TBI.

Document	Methodology / assessment details	Participant / context information	Summary of key information
<i>connection: The prevalence of neurodisability in young people who offend.</i> London, United Kingdom: Office of the Children's Commissioner for England.	of neurodevelopmental disorders (including TBI) in young people within the secure estate, and to identify key issues for policy and practice. <u>Assessment:</u> The report advocates the use of the CHAT. <u>Methodology:</u> Report, focus groups.	estate in England and Wales). A focus group was undertaken with six young offenders resident within a YOI.	<u>Progress:</u> Poor continuity of care is a barrier to successful engagement when children transition between custody and the community and child / adult sites. <u>Treatment:</u> The identification of an underlying neurodisability allows for services that are responsive to specific needs and learning styles in order to successfully engage with young people with neurodisability. Multi-modal offender behaviour programmes and interventions should be developed which are responsive to the individual's profile of impairment.
The Disabilities Trust Foundation (2016). Prison Linkworker Service www.thedtgroup.org/foundation	Report. <u>Aim:</u> To provide an overview of the specialist brain injury Linkworker service.	Male offenders, in both the adult and young offender estate (HMP & YOI) were included. The YOI pilot site holds young offenders aged 15-18 yrs old, the HMP pilot	<u>Screening:</u> The report details the use of the BISI to assess prevalence as part of the Linkworker service. <u>Progress:</u> 15-18-year olds and 18-21-year olds were seen to have problems with memory, attention, language, anxiety and low mood. All of these are likely to have a detrimental effect on engagement with rehabilitation and education

Document	Methodology / assessment details	Participant / context information	Summary of key information
	<p><u>Assessment:</u> The Linkworker service uses the BISI to screen for TBI.</p> <p><u>Methodology:</u> Descriptive report.</p>	<p>site holds offenders aged between 18 and 21, and adults.</p>	<p>programmes. Working with other agencies maximised the chance of the prisoners' success following release. The Linkworker service provides prisoners with a previously undiagnosed brain injury effective support to cope and better comply with their sentence plan.</p> <p><u>Treatment:</u> The Linkworker service provides individual programmes to provide help managing anger, impulsivity, and memory problems.</p>
<p>Williams, W.H. (2013) <i>Repairing Shattered Lives: Brain Injury and Its Implications for Criminal Justice</i>. London, United Kingdom: Transition to Adulthood Alliance.</p>	<p>Report.</p> <p><u>Aim:</u> To explore the links between TBI and offending behaviour, and to provide a summary of action points to enable more effective management of brain injury in people within the CJS.</p>	<p>The issue of TBI in both adult and young offenders is covered. The report looks at the overall issue of ABI/TBI in offenders, and the wider implications for the CJS.</p>	<p><u>Screening:</u> The author identifies points to be considered in the development and use of a screening tool for TBI.</p> <p><u>Treatment:</u> The report identifies that young offenders with TBI are likely to have TBI-related problems that may interfere with their ability to effectively engage in forensic rehabilitation.</p>

Document	Methodology / assessment details	Participant / context information	Summary of key information
	<u>Methodology:</u> Descriptive report.		
Allely, C.S. (2016). Prevalence and assessment of traumatic brain injury on prison inmates: A systematic PRISMA review. <i>Brain Injury</i> , 30(10), 1161-1180.	<p>Systematic Review.</p> <p><u>Aim:</u> To look at the prevalence and assessment of TBI in prisoners.</p> <p><u>Assessment:</u> Various assessment and screening methods were considered.</p> <p><u>Methodology:</u> Systematic Review.</p>	Various studies of prisoners with TBI.	<p><u>Screening:</u> Studies reviewed used the Ohio State University TBI identification method (OSU-TBI-ID), the Traumatic Brain Injury Questionnaire (TBIQ) and the Brain Injury Screening Index (BISI).</p> <p><u>Treatment:</u> This systematic review focused on assessment and prevalence of TBI in prisoners, rather than looking at rehabilitation or offence-related intervention. However, the author states that consideration of TBI in treatment may help reduce offending behaviours and recommends more research be undertaken.</p>

Part Two – Research Report

An exploratory examination using a case study approach of six UK prisoners serving an indeterminate sentence for public protection, screened as having traumatic brain injury and who are failing to progress as expected through their sentence.

Naomi Budd

Abstract

Background: Research into acquired and traumatic brain injury (ABI/TBI) in prisoners has been increasing in recent years, however there has been little research examining the particular problems faced by prisoners with TBI who are serving indeterminate sentences. This study aimed to look in depth at the cases of a small number of prisoners serving an indeterminate sentence for public protection (IPP), screened as having at least a moderate level of TBI using the BISI (The Disabilities Trust, 2014), and who are failing to progress as expected through their sentence. **Method:** A qualitative case study approach was used. Six participants completed interviews regarding their sentence and previous head injuries and were assessed for impairments of neuropsychological functioning using the Short Parallel Assessments of Neuropsychological Status (SPANS: Burgess, 2014). Additional existing information was extracted from Parole Board dossiers from the point of sentence onwards. **Results:** Information was analysed following a three-stage process of consolidation, reduction and interpretation, and seven conceptual categories were identified; impaired functioning, treatment problems, lack of support, IPP sentence issues, emotional problems, substance misuse problems and behavioural problems. **Conclusions:** There are likely to be implications for non-progressing IPP prisoners who would benefit from an individualised approach which takes the possibility of TBI into account. Recommendations in relation to early identification of TBI and specific support for IPP prisoners with TBI have been made which it is hoped will lead to better outcomes for the individuals involved, as well as increased likelihood of success following release. Consideration is also given to the suitability of current offending behaviour programmes and whether additional support or adaptations are required to maximise treatment benefit with IPP prisoners with TBI. Lastly, recommendations are made specifically in relation to the prisoners' experience of the Parole process, and how they could be better supported through this.

1. INTRODUCTION

1.1 Background

There is currently a heightened interest in examining reasons why some high-risk prisoners serving an indeterminate sentence for public protection (IPP sentence) are not progressing well through their sentences. In some cases prisoners have served many times their minimum specified period (tariff) and have not progressed past closed conditions. The current research will look at six IPP prisoners with TBI who are failing to gain or maintain release to examine whether there are common themes or issues which warrant further consideration as to whether recommendations to inform future practice and research can be made.

1.2 Acquired and traumatic brain injury

The United Kingdom Acquired Brain Injury Forum (UKABIF) defines acquired brain injury (ABI) as non-degenerative and occurring after birth. It does not include damage occurring during the development of a foetus or birth of the child but does include damage resulting from later illnesses or exposure to toxins. The umbrella term ABI includes traumatic brain injuries (TBIs), defined as brain injuries caused by external force such as road traffic accidents, assaults, falling and strikes to the head (Aggarwal & Ford, 2013; Fortescue, Ramos, & Oddy, 2017).

There are many different causes of ABI, including, for instance cerebral vascular accidents (stroke), injuries from loss of oxygen to the brain (such as from strangulation, choking, seizure or drug overdose), from illnesses such as meningitis or Alzheimer's or from excessive use of alcohol or drugs. Buck (2011) stated that a less commonly recognised cause of TBI is the trauma resulting from the ricocheting of the brain inside the skull (a coup-contracoup injury), such as might be seen in shaken baby syndrome or as a result of whiplash following a car accident. Impact to the head can lead to either open (penetrating) or closed wounds, resulting in brain injury which is

commonly described by severity level as *mild*, *moderate* or *severe* or as *superficial* or *profound*.

Brain injury such as Chronic Traumatic Encephalopathy (CTE) can be caused by repeated low level impacts to the head, such as those received from playing football or rugby, or from contact sports such as boxing, even when head protection is used. The effects of CTE are progressive and can include emotional lability and an increased proneness to anger (Buck, 2011).

Brain injury can also be caused by less frequent blows to the head, such as from assaults or accidents which may have seemed unremarkable at the time. In many cases treatment for the brain injury is not sought when it occurred, either because the symptoms seemed insignificant, or because more urgent trauma injuries took precedence (Buck, 2011). Prevalence of TBI in offenders is higher than in the general public. Farrer and Hedges (2011) conducted a meta-analysis of studies of TBI in adults and adolescents in fully developed countries and found a significantly higher prevalence of TBI was reported in offenders than in the general public. A UK study by Williams, Cordon, Mewse, Tonks, and Burgess (2010) reported that 65.1% of the young offenders studied reported some form of TBI. Within a prison setting it is more likely that people will have mild or moderate levels of injury, as those with profound brain injuries which are likely to impact on day-to-day functioning should be managed outside of the criminal justice system (usually within the secure hospital system).

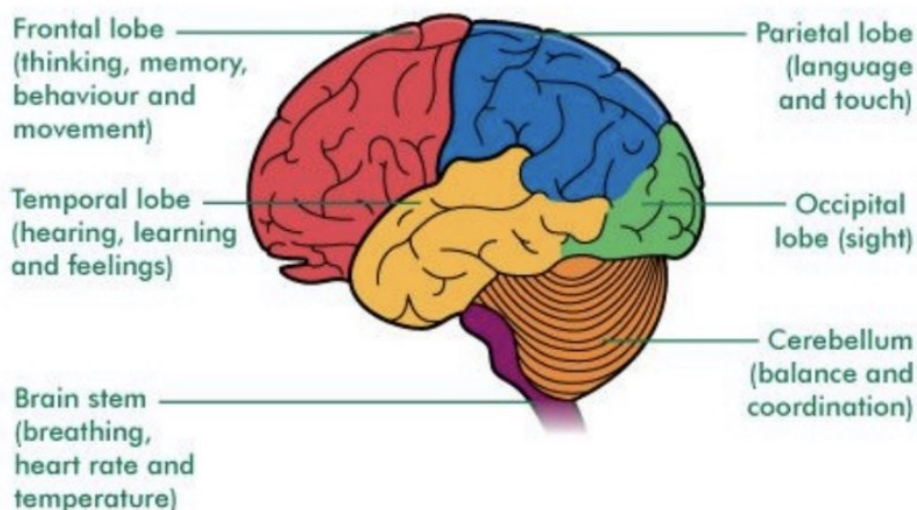
1.2.1 The structure and functions of the brain

The central nervous system (CNS) consisting of the brain and the spinal cord is responsible for carrying messages from the brain to various parts of the body. The importance of the brain and spinal cord can be inferred from the protection given to these structures by the body. They are encased within the skull and spine and protected by cerebrospinal fluid (CSF) which, amongst other functions, provides a buffer from the impact of knocks or blows to the head (Pass & Dean, 2010). Whilst the

bony structure of the skull generally protects the brain from trauma, in some cases of TBI the skull itself can contribute to damage to the brain. Following a high speed impact or blow to the head, the brain can move suddenly within the skull, and the rough contours and projections on the inner surface of the skull can cause damage to the delicate structure of the brain, and the membranes which cover it (Pass & Dean, 2010).

Different areas of the cerebral cortex have different functions, and this localisation of functions within the structure of the brain has relevance to the consequences of head trauma. Areas of the cerebral cortex are responsible for receiving and analysing sensory information, and for higher level cognitive functions, such as learning, planning and decision making (Pass & Dean, 2010). The cerebral cortex can be seen to be divided into a number of lobes or sections (see Figure 1, below), including the occipital lobe which deals with aspects of vision; the temporal lobe which is related to hearing and speech comprehension, as well as facial and object recognition; the parietal lobe which is involved in sensory responses and the frontal lobe which has implications for motor control and issues related to personality.

Figure 1. The lobes and functions of the brain.



1.2.2 The development of the brain

Development of the brain progresses from birth until adulthood, with the greatest rates of development occurring in childhood, and development of the frontal and parietal lobes peaking by the age of 12 (Giedd et al., 1999). Whilst it was previously believed that the brain was anatomically mature by the time a person reached adolescence (Dumantheil, 2015) information from magnetic resonance imaging (MRI) studies (e.g. Giedd et al., 1999; Shaw et al., 2008) now indicate that the structure of the brain continues to change throughout adolescence. Changes in social behaviour and functioning in adolescents that were previously believed to be due to hormonal changes, or as a response to changes in the social environment are now seen to be at least in part caused by the continuing development of the *social brain* which processes and interprets social signals (Dumantheil, 2015).

Adolescence is now seen as a critical period in terms of brain development as areas such as the prefrontal cortex, which are particularly involved in affect regulation, are undergoing substantial development and structural change (Ahmed, Bittencourt-Hewitt, & Sebastian, 2015). Any interruption to this development, such as from impact trauma or substance use, can have far-reaching effects on behaviour at a time when the individual is already more likely to experience the onset of problematic behaviours such as substance use and impulse control disorders (Dumantheil, 2015). As the brain is still developing, damage occurring during childhood and adolescence may have more of an impact than damage to an adult brain, as the acquisition of skills is likely to be interrupted (Horn & Lutz, 2016; Williams, 2013).

1.2.3 The effect of damage to the brain.

The impact of damage to the brain varies in relation to the area of the brain which is damaged. For instance, the main functions of the frontal lobe include decision making, problem solving, planning, impulse control and complex cognitive processing. Changes in social and sexual behaviour may be noted following frontal lobe damage (Pass &

Dean, 2010) and as damage to the frontal lobe has an adverse effect on judgment, reasoning and impulse control it could contribute to an increase in criminal behaviour (Chayer & Freedman, 2001). Brower and Price (2001) reported an increase in aggressive dyscontrol following brain injury involving the frontal lobes, although they note that few studies adequately control for psychosocial variables such as emotional stress, substance use or experience of abusive behaviours.

The prefrontal cortex (PFC) is the foremost part of the frontal lobe and plays a particular role in relation to personality and higher-level cognitive functions. The PFC has key roles in self-regulation, decision making and perspective taking (Durrant, 2018) and if damaged there can be resulting changes or impairment to personality, as well as an increased tendency towards aggressive behaviour and a reduced ability or inclination to avoid risk (Rotshtein & Mitchell, 2018). The results of such damage to the brain may therefore impact on treatment benefit in those with TBI. In particular, deficits and impairments associated with TBI such as impulsivity, an inability to delay gratification and control aggression, as well as other difficulties such as reduced empathy, may impact on the likely benefit gained from rehabilitation attempts with offenders (Fortescue et al., 2017).

1.2.4 ABI/TBI in the general population

Prevalence of ABI in the general population was reported as 30% in individuals aged up to 25 in a New Zealand study (McKinlay et al., 2008) and in the UK, a study by Yates, Williams, Harris, Round, and Jenkins (2006) found an overall rate of 453 per 100,000 presentations at a hospital emergency department were due to head injury. Individuals may have acquired some level of brain injury without being aware of it and having not felt the need to seek medical advice or treatment following the injury (Yates et al., 2006). In many cases the neurological deficits caused by the injury are mild, and often ignored (Buck, 2011), and it is likely that a large proportion of mild brain injury goes undiagnosed, both in prisons and in the wider community (Cantor et al., 2004).

The potential consequences of brain injury to the individual can be wide-ranging, depending on the severity of the injury. Some effects of TBI such as headaches, poor concentration, temporary loss of memory or reduced attention span are relatively mild and may not be given much consideration at the time (Blasingame, 2018). The term mild traumatic brain injury (mTBI) is often used interchangeably with 'concussion' (Buck, 2011; Buckley, Kaye, Stork, Heinze, & Eckner, 2017) and due to its prevalence in the general population where it is often undiagnosed mTBI has been referred to as 'a silent epidemic' within US health practices (Buck, 2011). The majority of TBI is classed as mild and will not result in hospital treatment (Cassidy et al., 2004). A UK study by Yates et al. (2006) found that being male, of a lower socio-economic group, and living in an urban area increased chances of receiving a head injury, as did being a child or adolescent. Cannella, McGary, and Ramirez (2019) also reported that risk of TBI in the US varies with age, with children between 0-4 years of age, adolescents aged 15-19 years, and adults over 65 years being at increased risk.

1.3 ABI/TBI and the criminal justice system

There is a growing body of research in relation to the issue of brain injury and crime, with emerging evidence of a link between the two, for instance as reported in an Australian study by Chan, Hudson, and Parmenter in 2004. In particular, attention is being given to the implications of TBI on cognition and behaviour and how this links to both criminal behaviour and engagement with all stages of the criminal justice system, including trial, custody and community supervision. A US paper by Denney and Wynkoop (2000) stated:

The persistent cognitive difficulties often associated with closed head injuries such as problems with sustained attention, information processing, recall of newly learned information, language, impulse control, motivation, problem

solving and judgement seem to form a common basis of concern for the criminal courts (Denney & Wynkoop, 2000, p. 805).

TBI can therefore be seen to have likely implications for involvement in crime, effective engagement with the trial process, behaviour in prison, and ability to comply with supervision requirements both in custody and post-release.

1.3.1 Prevalence of ABI/TBI in forensic populations

Researchers have highlighted a correlation between TBI and likelihood of involvement with the Criminal Justice System (CJS) and the prevalence of TBI in forensic populations has been shown to be greater than that of the general population. A number of UK studies (e.g. Davies, Williams, Hinder, Burgess, & Mounce, 2012; Williams et al., 2010) have shown that the prevalence of TBI in a prison population is greater than that in the general, non-offending population, with similar conclusions drawn in US research (e.g. see Horn & Lutz, 2016). A study by Slaughter, Fann, and Ehde (2003) of rates of TBI in a US county jail population reported a lifetime prevalence rate of 87% whilst an Australian prison study reported a prevalence rate of 65% (Schofield et al., 2006) compared to between five and 38 % of young males in the general (non-offending) population of New Zealand (McKinlay et al., 2008). A UK study by the Disabilities Trust Foundation (The Disabilities Trust, 2016) looked at 613 adult males located in an English adult category C prison who were initially screened using the Brain Injury Screening Index (BISI: The Disabilities Trust, 2014), of whom 47% self-reported a history of TBI. Of the TBI offenders, results showed that 70% were identified as having a mild TBI, 23% as moderate and 8% as severe, and that 70% reported their first TBI happened before their first offence.

1.3.2 ABI/TBI and criminal behaviour

Head injury has been reported to be associated with a general risk for criminality (Bannon, Salis, & O’Leary, 2015). The link between TBI and aggression and violence is well documented (see meta-analyses by Farrer & Hedges, 2011; Farrer, Frost, & Hedges 2012). In the US research has indicated a link between brain injury and sexual offending (Blasingame, 2018; DelBello et al., 1999; Simpson, Blaszczyński, & Hodgkinson, 1999) and between intimate partner violence (IPV) and brain injury (Rosenbaum et al., 1994). However, it should be noted that a recent study in Australia (Schofield, Mason, Nelson, Kenny, & Butler, 2019) found no association between past TBI and level of violent offending. The authors gave a number of possible explanations for this, and the inter-relatedness of possible causal factors makes the issue complex. In particular, the question as to whether presence of TBI increases likelihood of becoming involved in crime, or whether involvement in crime increases the likelihood of acquiring a brain injury is difficult. A study by Hux, Bond, Skinner, Belau, and Sanger (1998) found that young people displaying antisocial behaviour may be at increased risk for TBI and related functional impairments. They compared juvenile offenders (incarcerated in a midwestern US correctional institution) and juvenile non-offenders (enrolled in a midwestern US middle or high school) and found that 50% of the incarcerated youths they studied had experienced a TBI. As part of the study parents of participants were questioned, with 33% stating that they thought their child had suffered long-term adverse impairment following a TBI, such as a reduced ability to regulate behaviour and affect, and poorer attention, interpersonal skills, and performance at school. Differences as to the cause of the TBI were also seen in the groups studied, with sporting accidents found to be the leading cause of TBIs in non-delinquent groups (20% of the sample) whilst a large percentage of juvenile offenders had suffered TBI due to a fight (10%), road traffic accident (12.5%) or fall (13%). A large-scale study carried out in Sweden by Fazel, Lichtenstein, Grann, and Långström in 2011 looked at population registers and clinical records between 1973 and 2009. The researchers hypothesised that TBI was a moderate risk factor for crime and found that individuals with a recorded TBI had a significantly increased risk of committing violent

crime, even when compared to non-affected siblings with similar environmental risk factors (a risk increase of 5.8% in the TBI group compared to the control group).

Children and adolescents are likely to be at increased risk of involvement with the CJS following head trauma. As described by Luiselli, Arons, Marchese, Potoczny-Gray, and Rossi, following a survey of US children and adolescents, “because the effects of severe brain injury typically include an impairment of impulse control, diminished problem-solving abilities, and deficits that affect judgement, children and adolescents with TBI also may be at risk for the commission of law-violating behaviours” (Luiselli et al., 2000, p. 648).

Some emotional and behavioural changes evident in individuals following brain injury are particularly associated with criminality and antisocial behaviour, and this has led some researchers to coin the term ‘acquired sociopathy’ to describe those individuals who, following an acquired injury to the orbitofrontal cortex, would be seen to fulfil the (DSM-III, American Psychiatric Association, 1987) diagnostic criteria for ‘sociopathic disorder’ or the DSM-IV (American Psychiatric Association, 1994) criteria for conduct disorder (CD) or anti-social personality disorder (APD: Blair, 2001). Also relevant to the issue of TBI and criminality is the link between substance use and TBI (Corrigan, Bogner, & Holloman, 2012) as discussed in section 1.3.4 below.

1.3.3 ABI/TBI and behaviour in prison

Brain injury may lead to many different types of behaviours and impairments which are likely to be problematic within a prison setting, such as reduced executive functioning (Blasingame, 2018), increased aggression (Sabaz et al., 2014) and impulsivity (Dixon et al., 2005; Kocka & Gagnon, 2014) or a lack of consequential thinking (Bechara, Tranel, & Damasio, 2000). For instance, increased impulsivity and poor consequential thinking is likely to lead to repeated rule infringements and aggressive or unpredictable behaviours, and offenders with TBI have been seen to have higher rates of both rule infringement in prison and recidivism after release as

evidenced in US studies (Horn & Lutz, 2016; Piccolino & Solberg, 2014; Ray & Richardson, 2017) as well as in the UK (see Williams et al., 2018). Smeijers, Bulten, Buitelarr, and Verkes (2018) conducted a study of 963 outpatients in a Netherlands forensic psychiatric centre, and highlighted that impulsivity, defined as “the inability to withhold a response or thought, preference for immediate reward, acting without forethought, sensation seeking, and a tendency to engage in risky behaviour” (Smeijers et al., 2018, p. 3) is often associated with increased aggression and antisocial behaviour. A US study by Shiroma et al. (2010) also found that prisoners with a TBI had a significantly higher rate of prison rule infractions than those without a history of head injury. Impairments associated with TBI are also relevant when considering skills needed or expected in prisoners. Deficits in concentration or memory may contribute to inconsistent accounts of past behaviours such as offences, or reduced participation in and benefit from offending behaviour programmes (OBPs) as discussed by Fortescue et al. (2017, see section 1.4 below). In a Canadian study, individuals with TBI have also been seen to have specific cognitive-communication impairments characterised by “impoverished, vague, tangential or disorganised discourse (oral or written)”, (MacDonald & Wiseman-Hakes, 2010, p. 487.)

1.3.4 Interrelatedness of ABI/TBI, anti-social behaviour, criminality and substance use

It is difficult to be certain about why there seems to be a relationship between ABI/TBI and offending as the links are complex (Williams et al., 2018). It would seem that brain injury *may* make offending behaviour more likely, and that being involved in offending *may* make having a brain injury more likely. Perron and Howard (2008) interviewed 720 residents of 27 Missouri (US) Division of Youth Services rehabilitation facilities and stated that delinquent youths often participated in high-risk behaviours which increased the likelihood of serious injury, including to the head. TBI has been described as a condition that intersects many other factors that are related to offending, such as low socio-economic status and pre-existing behavioural problems

(Davies et al., 2012; Yates et al., 2006). An Australian study by Moore, Indig, and Haysom (2014) found that of the young (incarcerated) people studied, those with a history of TBI were more likely to have a history of bullying others, involvement in fights, problematic substance use, offending behaviours, psychological distress, and to have a diagnosis of mental health disorder.

There are links between TBI and substance use, in particular alcohol, whereby the interrelationship and direction of any relationship is hard to unpick (Weil & Karelina, 2017). A Canadian study by Colantonio et al. (2014) found that the majority of the prisoners they looked at reported a history of problematic substance use, and that this usually pre-dated their first TBI. Intoxication increases the chances of receiving a TBI as described in a US study by Corrigan et al. in 2012, and hazardous long-term drug or alcohol use may also be a direct cause of TBI and increase the likelihood of receiving further TBIs (Weil & Karelina, 2017). Fishbein, Dariotis, Ferguson, and Pickelsimer (2016) conducted interviews with correctional inmates in the US and reported that early experience of a TBI predicted both greater severity, and earlier onset, of drug use. Individuals with a disposition to abuse substances may also have a more reckless attitude towards other aspects of their safety and so may be more likely to receive a TBI, as reported in a study of admissions to a UK emergency medical department (Yates et al., 2006). Likewise, those with a history of TBI may be more likely to begin using, and continue to use, illicit substances (Fishbein et al., 2016). Findings by Cannella et al. (2019) described the increased rate of substance use disorders in US patients with TBI (37-66%, compared to 11% of the general population), and suggested that early-life TBI alters the brain's reward mechanisms, and so presents an increased risk of addiction to substances. A systematic review by Kennedy, Cohen, and Munafò (2017) looking at childhood brain injury indicated that participants who received a TBI were more likely to misuse alcohol and cannabis, to be in trouble with the police and to be reported by their parents as having conduct problems. Likewise, Weil and Karelina (2017) concluded that patients with a history of TBI were more likely to go on to develop alcohol use disorders, and that drinking after receiving a TBI was often seen

to reduce the success of rehabilitation programmes, and increase the likelihood of receiving further TBIs.

Men under 30 living in the UK who are from a lower social background and who are likely to be risk takers are more likely to suffer TBI than those from other backgrounds (Yates et al., 2006). They are also more likely to be involved in criminal behaviour, committing offences which may be impulsive, disinhibited or involving a loss of control. In addition, individuals sustaining head injuries as a result of criminal behaviour are less likely to seek prompt, or any, medical attention which is likely to increase the adverse effects of the injury (see Ray, Sapp, & Kincaid, 2014 in the US and Schofield, Butler, Hollis, & D'Este, 2011 in an Australian sample).

1.4 Offending behaviour programmes, treatment and intervention

Most medium and high-risk prisoners held within prisons in England and Wales would be expected to complete accredited offending behaviour programmes (OBPs) in order to address their criminogenic risk factors. For those serving an indeterminate sentence these courses are often a mandatory requirement in order for the prisoner to demonstrate a reduction in the risk they would pose, should they be released.

Prisoners are identified and assessed for inclusion on an OBP, Therapeutic Community (TC) or other intervention based on the Risk-Need-Responsivity principles (Andrews & Bonta, 2006; Andrews, Bonta, & Hoge, 1990) which matches intensity and style of treatment to the individual's needs. Following these principles means that prisoners should have been correctly assessed and selected for treatment and should therefore be able to demonstrate the required reduction in risk in order to progress through the prison system and to eventual release. However, it is possible that prisoners with undiagnosed TBI may find it harder to benefit from treatment programmes. The paper by Fortescue et al. (2017) examined the introduction of a specialist support service for those diagnosed with TBI in UK prisons. It highlighted cognitive and non-cognitive neurobehavioural deficits such as problems with memory, expressive communication, impulsivity and problems in forming beneficial relationships as potentially increasing

the likelihood of criminal behaviour. Fortescue et al. (2017) stated that these deficits were likely to impact on custodial behaviour as well as treatment success. Prisoners with TBI may struggle to remember course content, exhibit treatment interfering behaviours such as aggression, verbal outbursts and irritability, fail to consider the needs of others and disregard the (long and short-term) consequences of their actions, such as a lack of initiation (for instance of treatment) or deciding to cease treatment.

1.5 Indeterminate sentenced prisoners (IPPs)

Sentences of Imprisonment for Public Protection (IPP) were introduced in 2005 following the Criminal Justice Act of 2003. The aim of the sentence was to protect the public from further serious offences being committed by high risk offenders whose criminal behaviour fell below the threshold that would require a life sentence. At the point of sentencing a minimum period of time that prisoners are required to serve in custody (the 'tariff') is given. Once this period has been completed IPP prisoners are eligible to apply to the Parole Board of England and Wales for release. A panel of Parole Board members will convene and consider the prisoner's application for release. This can take place as a review of the files and current reports (a paper review) or by a formal meeting between the Parole Board members, the prisoner and his or her legal representative, plus other professionals such as the prisoner's offender manager or specialists such as a psychologist or psychiatrist (an oral hearing). Forensic psychologists will typically produce a comprehensive risk assessment report for the Parole Board, which will utilise a range of assessments specific to the nature of the offending, as well as other considerations such as cognitive functioning, protective factors, personality disorder and so on, working within a structured professional judgement framework. The Parole Board will only release a prisoner serving an indeterminate sentence once they are satisfied that the risk they pose can be safely managed in the community, whilst maintaining a balance between public protection and human rights of the prisoner. Once the tariff period has been served, indeterminate prisoners cannot be held in prison as a punishment, only if they are

deemed to still pose a risk to the public. Following release prisoners will be supervised on licence and can be recalled to prison if they commit further offences or demonstrate risk-increasing behaviours. In order to move towards release, the prisoner's behaviour needs to be consistently good enough to enable progression from conditions of higher security to lower security, including to a Category D/open prison, release on temporary licence (ROTL) and then eventual release. Offending-related risk should be reduced to a level whereby it is deemed to be manageable in the community, usually achieved by engagement with offence-related treatment programmes which are appropriate to the offender's level of risk and need, and which are responsive to their learning style and ability level. Benefit following treatment should be evident in the prisoner's day-to-day behaviour, and this, along with any subsequent perceived reduction in offence-related risk will need to be adequately communicated to the Parole Board by professionals, including psychologists and probation officers, and by the prisoner himself. Once release is granted, all requirements of licence, supervision, probation Approved Premises (such as appointments, restrictions on behaviour, curfews, exclusion zones etc.) will need to be met by the prisoner. Failure to comply with supervision and licence requirements may result in recall to prison, as may behaviour which indicates increasing or unmanageable risk, or further offences. The presence of specific impairments associated with TBI is therefore likely to impact negatively on the prisoners' ability to meet the specific conditions required to secure and maintain release as outlined above, as well as to effectively describe and communicate when risk reduction has occurred.

The IPP sentence was widely used after its introduction, and many IPP prisoners were given very short tariffs, in some cases of only 1 or 2 years, but have been unable to demonstrate the required reduction in risk in order to be released. Following a Government review (Ministry of Justice, 2011) which highlighted concerns regarding the inconsistency of application of the sentence it was abolished in 2012, although as

of March 2019 there were still about 2,500 prisoners in custody serving this type of sentence, many of whom had served many times their original tariff, on average being six years post-tariff (Ministry of Justice, 2019).

Consideration should be given to the fact that offenders with TBI are likely to find it harder to demonstrate consistently good custodial behaviour and to convince the Parole Board that they have been able to reduce the risk they pose to the public and are suitable for release on licence. Prisoners with TBI may also have neurological deficits which make rule infringements and re-offending more likely following release (Piccolino & Solberg, 2014; Williams, Mewse, et al., 2010), leading to their recall to prison under the terms of their IPP licence. A recent, unpublished study by Budd and Twomey (2018) in the HMPPS Midlands region was conducted to begin to explore these issues, examining brain injury, impulsiveness and hopelessness as potential barriers to progression in IPP prisoners. A sample of 53 adult prisoners (male = 51, female = 2, mean age = 46.4) serving indeterminate sentences and who were not progressing as expected through their sentence within the HMPPS Midlands region took part in this study. The results showed that two-thirds of the sample (66%) were screened using the Brain Injury Screening Index (BISI: The Disabilities Trust, 2014) as having potential TBI, of whom 28% reported having 4 or more head injuries. Moderate to severe injuries were seen in almost three quarters (71%) of the sample. These levels of brain injury are comparable with those found in other studies (for instance see Davies et al., 2012; Williams et al., 2010). The relationship between head injury (as recorded by the TBI index of the BISI) and impulsivity (as measured by the BIS-11, Patton, Stanford, & Barratt, 1995) was investigated using Spearman's correlation coefficients. This showed a significant correlation between TBI and motor impulsivity ($r_s = .312$, $n = 53$, $p < .005$) although correlations between TBI and attentional impulsivity and non-planning impulsivity did not reach significance. High levels of hopelessness as measured by the Depression and Hopelessness scale (DHS: Mills & Kroner 2004) were also reported.

1.6 Aims of the present study

Following on from the unpublished Budd and Twomey (2018) study that reported high levels of TBI in their sample of non-progressing IPP prisoners, it was felt that a more in-depth study of this group was needed to explore whether the presence of specific impairments associated with TBI might impact negatively on the prisoners' ability to meet the specific conditions required to secure and maintain release as outlined above, as well as to effectively describe and communicate when risk reduction has occurred. This may occur as a result of a variety of impairments to functioning that can be caused by acquired and traumatic brain injury, such as problems with memory or communication, as well as increased impulsivity or poor emotional regulation (Fortescue et al., 2017). The present study will use a qualitative interpretative case study approach to look in detail at a small number of IPP prisoners who have been screened as having at least a moderate level of TBI, and who are failing to progress well through their sentence. It will draw upon a range of sources, including interviews with participants, Parole Board dossiers, custodial records and specific assessment to give an indication of levels of neuropsychological impairment, to see if common themes can be identified. Where relevant common themes emerge recommendations to inform future practice and research will be made.

2 METHODS

2.1 Design

The present research uses a qualitative case study design methodology. Case study research enables the researcher to gain an in-depth understanding of a small number of real-life cases, embedded within a specific context. Cases studies frequently utilise data from multiple sources and allow a wide variation of topics to be covered within a single methodology. A useful definition of the case study approach is given by Crowe and colleagues;

A case study is a research approach that is used to generate an in-depth, multi-faceted understanding of a complex issue in its real-life context. It is an established research design that is used extensively in a wide variety of disciplines, particularly the social sciences. (Crowe et al., 2011, para. 2)

Three main approaches have driven case study design and methodology and have influenced the current study: those of Stake (1995), Merriam (1998) and Yin (2012, 2014). There are a number of similarities across the three approaches, although they differ in the level of flexibility offered, as well as the depth of detail given in relation to guidance and process. Merriam and Stake both feel that case study methodology is based on a constructivist epistemological position, believing that knowledge is “constructed rather than discovered” (Stake, 1995, p. 99). Yin (2014) was less forthcoming in relation to his epistemological position, but his focus on the four cornerstones of design quality; construct validity, internal validity, external validity and reliability in relation to case study methodology indicated a more positivist stance (Yazan, 2015).

Case study research has been described as going beyond a simple study of isolated variables (Yin, 2012) allowing the study of complex conditions which are integral to the case itself. The research usually takes place over a clearly defined period of time or at a single point in time (Gerring, 2004) and can provide the researcher with a deep holistic view of the research problem (Baxter & Jack, 2008). The case study itself may utilise an individual, organisation or event as its unit of study, and can be seen to enable the participant to give a narrative account or tell their story, in order that the researcher can gain a better understanding of the contextual variables involved in the case.

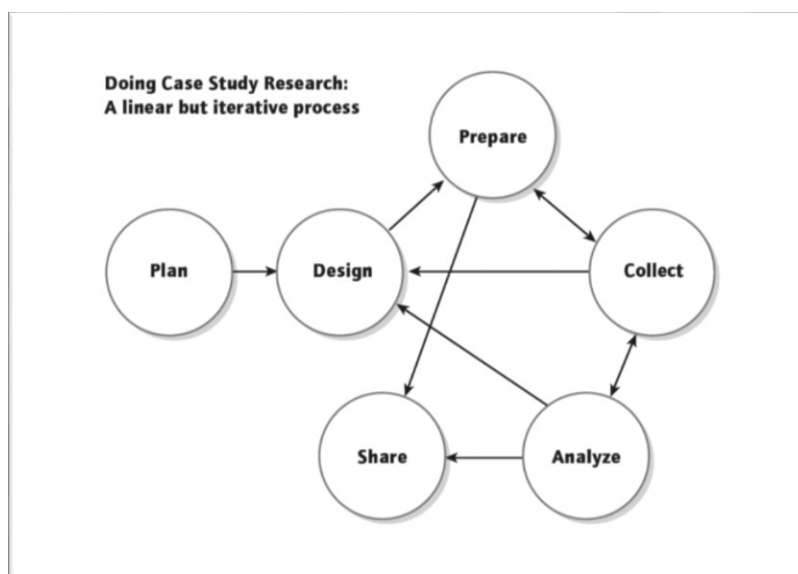
Yin (2012) stated that case study methodology is likely to be useful in a number of circumstances; firstly when the research addresses a descriptive question (e.g. *what* is happening or has happened) or explanatory question (e.g. *how* or *why* did something happen); secondly when you cannot manipulate the behaviour of those involved in the

study, thirdly; when you want to cover contextual conditions as they are believed to be relevant to the phenomenon under study and lastly when the boundaries between the context and the phenomenon under study are not clear (Baxter & Jack, 2008). He referred to case study design as a comprehensive research strategy, described it in terms of an empirical inquiry and placed high importance on the preliminary stages of case study design (Yazan, 2015). In contrast, Stake (1995) suggested a more flexible approach to case study design, whereby even major changes can be made to the design as the research progresses, providing that the initial research questions have been well-designed. For Stake, the stages of data collection and data analysis are not distinct but are interchangeable and can run in parallel. Merriam's position (Merriam, 1998) sits somewhere between those of Yin and Stake, as she offers more guidance on process than does Stake, but with more flexibility than Yin. Case study methodology has historically been seen by some researchers as a poor relation to other more commonly used methods, and whilst it does have a number of limitations (see section 2.1.2 below), its usefulness should not be discounted. When used appropriately it yields rich, in-depth and individualised data.

2.1.1 Advantages of a case study methodology

Case studies provide a rich, holistic and in-depth look at the research area under analysis. Following the widely accepted six-stage approach advocated by Yin (2014), of *plan, design, prepare, collect, analyse, share* (see Figure 2 below) can result in a clearly defined and well-thought out piece of work with high levels of validity and usefulness. The methodology is particularly suited to the study of complex phenomena in a real-life context using a variety of data sources and is widely used in health science research. In particular the approach is used to develop theory and to develop and evaluate interventions where its flexibility and rigorous approach is identified as a key strength (Baxter & Jack, 2008).

Figure 2. The six stages of a case study approach (from Yin, 2014)



Qualitative case study design is described as having four characteristics; a case study is *particularistic*, focusing on a particular situation, event or phenomenon;

descriptive, yielding a rich ‘thick’ description of the phenomenon being studied; *heuristic*, bringing about the discovery of new meaning; and *inductive*, in that concepts and generalisations emerge from the examination of the data (Merriam, 1998). As such the design is particularly useful when the researcher wants to achieve an in-depth understanding of the area being studied and be able to begin to identify patterns of relevant factors across different cases that can be used to form tentative hypotheses.

2.1.2 Limitations of a case study methodology

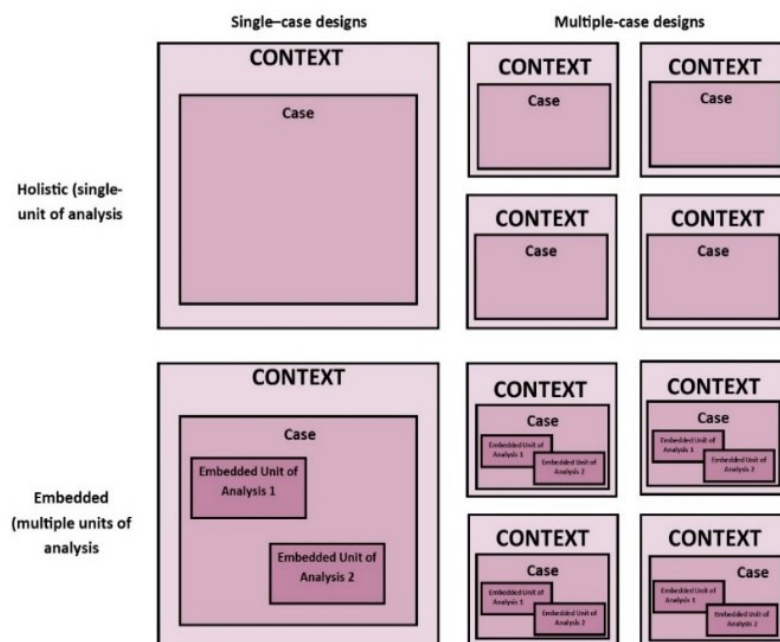
Case study methodology is sometimes described as lacking scientific rigour (Crowe et al., 2011) and is seen as more of a precursor to research proper. It is often described as being subjective, in particular in relation to the researcher’s particular bias, and to lack generalisability, and it is true that case study design when completed poorly can suffer from these issues (Yin, 2012). Primarily quantitative researchers may feel that case study methodology lacks sufficient robustness in relation to reliability, validity and generalisability when compared to more traditional quantitative and statistical procedures (Merriam, 1998). One practical limitation of a case study design, in

particular where multiple case studies are used, is that the methodology can be extremely time consuming, and therefore expensive (Merriam, 1998). Due to this, careful consideration should be given to the appropriateness of the research methodology and the associated resource implications.

2.1.3 Types of case study design

There are various different ways of categorising types of case study design. Yin (2012) described these as *explanatory* (used when the researcher is seeking the answer to a question), *exploratory* (used to explore situations) and *descriptive* (used to describe phenomena in real-life contexts). He later goes on to categorise them further as *single* or *multiple* cases, which can utilise a *holistic* or *embedded subset* design. Yin (2012, 2014) formalised these design types into a two by two matrix, leading to four different case study designs, although there may also be some overlap of the different types occurring where boundaries between cases and context are blurred. These are shown in Figure 3 below (Yin, 2014).

Figure 3. Types of case study designs.



Multiple-case study designs can be more complex to carry out, due to the greater amount of data sources and types. However, these are often seen to lead to higher quality research, whereby more confidence can be placed in the findings. The approach also allows different approaches to, or variations of, the research question to be considered. This allows for differing or opposing cases to be selected for inclusion as they demonstrate different conditions or outcomes which may increase the likelihood that the research can be replicated and so increase its usefulness. There is no specified number of cases that should be included in a multiple-case study approach; rather, this is determined by the individual circumstances of the study. As a general rule, the more cases which are included the greater confidence the researcher may have in their findings.

A different way of defining the various types of case study was put forward by Stake (1995) who categorised case studies as either *intrinsic*, *instrumental* or *collective*. An *intrinsic* case study is one where the researcher wants to gain a deeper understanding of the case, an *instrumental* case study is undertaken to provide insight and a *collective* case study consists of a number of separate cases undertaken to explore a phenomenon further (Zucker, 2009). In a similar vein, Merriam (1998) described case studies as *descriptive*, providing a detailed account of the phenomenon under study, *interpretative* whereby the descriptive data gained are “used to develop conceptual categories or to illustrate, support or challenge theoretical assumptions” (p. 28) and *evaluative* which involve description, explanation *and* judgement (Merriam, 1998).

2.2 The current study

The current study follows a case study methodology which combines different aspects of the approaches by Stake (1995), Merriam (1998) and Yin (2014). The study broadly follows the three-step method of case study design advocated by Yin (2012), whereby the ‘case’ or unit of analysis is clearly defined, the type of case study is selected, and the use and role of theory within the approach is considered in order to enhance the

systematic approach of the methodology, and to minimise limitations as much as possible (see sections 2.2.1 – 2.2.3 below). Yin's six-stage approach of *plan, design, prepare, collect, analyse, share* has been used as guiding principles underpinning the work. However, the more flexible approaches to data analysis and validation suggested by Merriam (1998) and Stake (1995) are adopted as these fit more closely with the author's constructivist epistemological stance (see Appendix A).

The study follows a descriptive multiple / embedded case study design (Yin, 2012). Different aspects are included within each case, for instance specific assessments such as the Short Parallel Assessments of Neuropsychological Status (SPANS: Burgess, 2014, see section 2.3.3) and the Brain Injury Screening Index (BISI: The Disabilities Trust, 2014), type and severity of brain injury, intervention or treatment received, and experience of the Parole Board process, which constitute smaller and separate units of analysis (subunits).

2.2.1 Defining the 'case'

The first step in any research utilising a case study design is to define the 'case', that is the unit of analysis or phenomenon under study. The 'case' may consist of a person, an organisation, an event, process or other social phenomenon, but should be a recognisable and bounded entity (Miles & Huberman, 1994; Yin, 2012). In the current research, the 'case' is defined as *the offender's journey through their custodial sentence, from sentencing to the current point of interview*. There are various nested units within the overall 'case'; the offender themselves; the specifics of their brain injury; interventions or treatment received and presentation at and outcome of Parole Board hearings. Boundaries were placed on the cases, in order that the study remained both manageable and relevant to the topic as recommended by Baxter and Jack (2008). Cases were limited to a number between four and ten, where the offender was serving an IPP sentence, had been screened for a moderate or above

level of TBI, and was failing to progress as expected through their sentence, having served at least 50% over their specified minimum period.

2.2.2 Selecting the case study design type

Due to the nature of the phenomenon being researched it was felt that more than one case study would be needed to provide the richness of data required. Within each case there are separate embedded units of analysis to be considered and discussed. This leads to a multiple-case, embedded unit case study design as defined by Yin (2012). The type of case study according to Merriam's (1998) classification is *interpretative*, as the intent is to go beyond simple description and to develop conceptual categories which may provide support (or otherwise) to existing assumptions held by the researcher regarding the particular challenges faced by prisoners with brain injury who are serving an indeterminate sentence, and the role of professionals in supporting them.

2.2.3 Using theory in design work

The use of a theoretical basis as described above within case study research can help to make the methodology more systematic, for instance by contributing to the formulation of research questions, refining the case study design and defining what data will be relevant to be included in the research. It will also increase the generalisability of the findings and assist with the organisation of data sources.

This research is premised on the 'risk-need-responsivity' principles (Andrews & Bonta, 2006) whereby offenders should be identified and selected for appropriate treatment based on their level of risk, their current need for treatment, and relevant responsivity issues. Presuming that these principles have been followed throughout the offender's custodial journey, they should have been correctly assessed and selected for

treatment which is relevant to their criminogenic needs and should be able to demonstrate the required reduction in risk in order to progress through the prison system. An underlying assumption of this study is that offenders with mild or undiagnosed TBI may not be appropriately identified and assessed, and that the treatment they receive in relation to their offending behaviour may not be appropriate in relation to their responsivity needs. This assumption is based on studies which highlight the high prevalence of undiagnosed brain injury in prisoners (e.g. Davies et al., 2012; Williams et al., 2010), and the lack of specialist training of staff or adaptations to standardised OBPs in prisons in relation to prisoners with TBI.

2.2.4 The case study protocol

Both Stake (1995) and Yin (2012) recommend the use of a case study protocol to assist with the collection and analysis of data. A protocol may simply be a list of questions or issues under consideration during the research, or a checklist of stages developed by the researcher to guide their chosen methodology and used to help focus the researcher on the desired direction of research and increase the consistency of the approach. The questions posed are directed at the researcher, not at the participant, and so may serve as a checklist whereby the researcher can consider differing lines of enquiry, including opposing propositions or explanations which may then be supported or ruled out. Yin (2014) identified four sections that should be covered by a case study protocol: an overview of the case study, data collection procedures, data collection questions and a guide for the case study report. Yin explicitly advocates seeking data in relation to rival explanations throughout the data collection and analysis stage, and states “the desired rival thinking should draw from a continual sense of *skepticism* as a case study proceeds” (Yin, 2012, p. 14). A case study protocol³ was developed for use during this research and completed protocols for all participants can be found in

³ The current case study protocol covers the aspects of data collection procedures and questions; the case study overview and guide for the report were not felt to be necessary for explicit inclusion as they are detailed within this research report.

Appendix B. In the current research, rival explanations to be considered include that the failure of the IPPs to progress is not related to their suspected TBI, but is due to different factors (such as consistently poor custodial behaviour, poor motivation to progress or co-morbid conditions); or that TBI in prisoners is clearly identified, adequate support is given and prisoners are appropriately located in closed conditions due to their level of risk.

2.2.5 Data collection and analysis

Case study methodology utilises multiple sources of data, which may include interviews, information from files and records, observations and clinical assessments or tests. Information from these multiple sources are then amalgamated into an overall analysis rather than examined on their individual merits, which results in a comprehensive in-depth understanding of the research area or phenomenon (Baxter & Jack, 2008). As they stated, “this convergence (of data) adds strength to the findings as the various strands of data are braided together to promote a greater understanding of the case” (Baxter & Jack, 2008, p. 554). In order to move from a solely descriptive approach, information must be analysed in order to draw out meaning. The current study follows the inductive approach advocated by Merriam to data analysis, which is defined as “the process of making sense out of one’s data (Merriam, 1998, p. 127) and which involves *consolidating, reducing and interpreting* the data. According to this approach, data collection and analysis are seen as simultaneous activities whereby analysis begins at the point of first data collection.

Due to the potentially high volume of information which will be collected for analysis using a case study approach, it is necessary to have effective systems of data organisation in place from the start of the study. Both Stake (1995) and Yin (2012, 2014) suggest using a database to organise the data, which has the advantage of increasing the reliability of the case study as it becomes easier to track and sort the various data sources. Patton (1980) suggests developing a *case record* which is

separate to the final case study, and which pulls together the data in a comprehensive manner, allowing it to be edited, organised and checked for repetition.

In the present study, following the interview phase, the Parole Board dossiers for each participant covering the entirety of their sentence to date were reviewed by the researcher, and the relevant information collated. All interviews were transcribed, and the assessments fully scored. The information from these various sources was then recorded as a case record and a short case study was written for each of the six participants (see section 3 below). Salient points from each case were recorded on the summary of information table (see Appendix C). The process of identifying emerging themes using a three-stage process of *consolidating*, *reducing* and *interpreting* the data advocated by Merriam (1998) fits with the interpretative case study methodology of this research. Information was examined, and patterns and regularities were identified and transformed into distinct categories which were then reduced to a smaller number of conceptual categories by identifying common themes. This was done by a process of extracting and recording each separate item or strand of information as it was identified from each individual case; items of similar information occurring repeatedly were condensed into distinct descriptive categories (see Appendix D) and each occurrence of this for each participant was recorded. These descriptive categories were then reduced to a smaller number of conceptual categories. Conceptual categories which were seen to be relevant to three or more of the participants were identified as themes and included in the resulting discussion.

2.2.6 Data validation

When using information from multiple sources it is important to continually check the validity and consistency of the information from the various different sources in order to attempt to discover similar and converging streams of evidence (triangulation of evidence). The gold standard of triangulation would indicate that three or more

separate sources of evidence all point to the same outcome or conclusion (Yin, 2012). As one of the strengths of case study design is the richness of data yielded, it is important that strategies such as triangulation which increase the perceived credibility of the data reported are utilised. Baxter and Jack state that “triangulation of data sources, data types or researchers is a primary strategy that can be used and would support the principle in case study research that the phenomena be viewed and explored from multiple perspectives” (Baxter & Jack, 2008, p. 556). Likewise, Crowe et al. (2011) recommend utilising triangulation of data from multiple sources in order to increase the internal validity of the work. The issue of reliability and validity in qualitative research is complex. Whilst some researchers such as Yin (2012, 2014) feel that these constructs, developed within a positivist, experimental framework, are still applicable to qualitative study methods, others such as Lincoln and Guba (1985) and Merriam (1998) feel that they have limited usefulness within case study research. Lincoln and Guba (1985) instead suggest using the terms *truth value* rather than internal validity; *transferability* rather than external validity and *dependability* or *consistency* in place of reliability, although the underlying meaning of these terms seems unchanged. Merriam (1998) outlines six strategies to enhance internal validity, *triangulation*, *member checks*, *long-term observation*, *peer examination*, *participatory modes of research* and *clarification of researcher bias*. These are discussed further in section 2.6 below. Reliability, described as whether the findings of research can be replicated, is not a straightforward assumption in case study research. As Merriam (1998) highlights, it is not automatically the case that replication of a qualitative case study will result in the same results, but this does not infer that the original study was of a poor quality, only that different interpretations of the same data can be made at different times, or by different researchers. Lincoln and Guba (1985) suggest three techniques by which the dependability of findings can be ensured; a clear explanation of the position of the researcher and the theory underpinning the work; triangulation of data; and ensuring a clear audit trail. External validity, or generalisability of results pre-supposes good internal validity. Some researchers (e.g. Stake, 1995) feel that generalisability is not the aim of case study research, and so accept that it will be a

limitation of their chosen design. Case study methodology is used when researchers wish to achieve an in-depth understanding of one or more examples of a particular phenomenon; if the aim of the research were to obtain results that would be applicable to all examples then a different methodology would have been utilised. As Merriam states “One selects a case study approach because one wishes to understand the particular in depth, not because one wants to know what is generally true of the many” (Merriam, 1998, p. 173). Therefore, whilst poor generalisability may be a limitation of the research design, it is not the case that it necessarily detracts from the usefulness of the research itself. Issues in relation to validity and reliability are discussed further in section 2.6.

2.3 Procedure

2.3.1 Process

Following initial identification and selection processes six participants (given the alias names Gibby, Mark, Bill, Carl, Harry and Chris) were chosen for inclusion in the final sample. Information from the assessments and file data were gathered according to the case study protocol. The participants were invited to attend for an interview (see Appendix E for copies of the information sheet and Appendix F for the invitation letter), at which the interviewer went over the purpose of the study, and checked that the participant understood and still agreed with the consent form (Appendix G) they had previously signed. Any queries were dealt with, and the two structured interviews (the IPP sentence interview, and the brain injury screening interview, see Appendices H & I) and the SPANS assessment (Burgess, 2014, see section 2.3.3) were administered. Participants were asked if they felt a referral to healthcare should be made on their behalf in relation to any suspected head injury, and if they wanted any further information on the possible effects of mild or undiagnosed brain injury. They were then given a debrief sheet (Appendix J) and were thanked for their time.

2.3.2 Participants

Due to the in-depth design of the research, and the comparatively large scope of the 'case' or unit of analysis, a small number of participants was utilised, planned to be ideally between four and ten in order to allow for enough data to be included. In order to achieve this, three phases of sampling were carried out. Firstly, all IPPs who had taken part in the previous TBI screening / prevalence study within the Midlands region (Budd & Twomey, 2018, unpublished manuscript), who were screened as having TBI using the BISI (The Disabilities Trust, 2014), had still not progressed to open conditions or release and were still within the Midlands region were contacted and asked if they would like to take part. This yielded 16 potential participants, of whom 10 consented to take part. Secondly, all psychology colleagues in the Midlands region were asked by the researcher to recommend any IPPs with whom they had worked and who they felt fitted the research criteria in terms of likely head injury and failure to progress. Five IPP prisoners were referred by colleagues, one of whom was a duplicate from phase 1 who had already consented to take part. The researcher checked the remaining cases against the eligibility criteria, and sent out invitation packs to the remaining four, of whom two consented to participate. Finally, the centrally held database of IPPs who were failing to progress in the Midlands region was examined, and any of these offenders where their IPP case file review (a document completed by psychology staff) mentioned or indicated possible or undiagnosed brain injury were contacted (N = 8) and asked to take part. Three of these men agreed to take part in the research, although one later withdrew consent prior to interview.

The total number of potential participants who consented to take part in the research was 14 (50% of those contacted). A purposive sampling strategy was used based on the assumption that "one wants to discover, understand, gain insight; therefore one needs to select a sample from which one can learn the most" (Merriam, 1998, p. 48). Six participants were selected for inclusion in the final sample; these cases were selected by the researcher as they provided a range of offence types, security category

and brain injury severity. The participants were all male⁴, aged between 30 and 55 (mean age = 42), and located in one of four prisons in the Midlands (one local Category B prison, and three Category C training prisons). Three of the men were serving sentences for sexual offences, two for robbery / violence, and one for arson. All had had at least four Parole Board reviews, and one of the participants had been released, and then recalled for poor behaviour and failure to comply whilst on IPP licence. The selected participants had received tariffs of between 14 and 38 months (mean = 26.8 months), and were significantly over tariff, all having served over 10 years in prison.

2.3.3 Information sources

Multiple sources of information from interviews with the participants, specific assessments, Parole Board dossiers and custodial records were used. Much of the information used was pre-existing (for instance previous reports, assessments, case notes and Parole Hearing outcomes), and were obtained from the participants' Parole Board dossiers. Two specific assessments which were not pre-existing were administered, The Brain Injury Screening Index (BISI: The Disabilities Trust, 2014) and the Short Parallel Assessments of Neuropsychological Status (SPANS: Burgess, 2014).

The Brain Injury Screening Index (BISI, see Appendix K) is an 11 question self-report screening tool used to help identify people with TBI, and to give an indication of the level of severity of the injury. It is free for qualified professionals to use, and is available from The Disabilities Trust website (www.thedtgroup.org). Screening for TBI in the sample studied was undertaken in order to ensure that the cases chosen for in-depth study were relevant to the current research. The BISI was developed to specifically for use within the UK prison population in order to improve identification of potential brain injury and appropriate referral for further assessment and support where required (Ramos, Liddement, Addicott, Fortescue, & Oddy, 2018). The BISI is

⁴ Due to the organisational structure within HMPPS it was not possible to include the female estate in this study

designed to be short and easily administered by prison staff, and an initial evaluation by Ramos et al. (2018) indicated that the BISI had acceptable levels of reliability and validity when used as a screening measure, and whilst inter-rater reliability was described as poor to moderate, test-retest reliability was moderate to good. Limitations of the BISI, in particular in relation to inter-rater reliability are discussed further in section 4.

As none of the cases studied had previous neuropsychological assessments available, the Short Parallel Assessments of Neuropsychological Status (SPANS, Burgess 2014) was administered to give a valid indication of levels of impairment of neuropsychological functioning. The SPANS has been developed to assess neurological sequelae of ABI and other neurological disorders and to aid in decisions regarding mental capacity and cognitive impairment. It provides a richer source of data and more valid information on specific neurological impairment than relying on clinical accounts or assessments of IQ or executive functioning alone, although these were also reported in some of the participants' case records. The SPANS is a short battery of cognitive tasks consisting of 33 subtests and generates scores loading on to seven separate indices⁵ and has been developed to be easy to administer and score, taking between 45 and 60 minutes to administer. The *orientation index* measures the individual's orientation to person, time, place and condition; the *attention / concentration index* measures the individual's attention span and attentional capacity, and includes a speed of processing component in some tasks; the *language index* assesses a variety of language disturbances, and includes screenings of fluency of speech, reading and writing; the *memory/learning index* measures memory and learning of visual and verbal information; the *visuo-performance index* measures motor capabilities and visuo-spatial/visuo-perceptual skills, including visual attention, spatial and object perception and reading emotion in facial expressions; the *efficiency index* measures speed of reacting, thinking and scanning giving an overall estimate of

⁵ Orientation, Attention/Concentration, Language, Memory/Learning, Visuo-Motor Performance, Efficiency, and Cognitive Flexibility

efficiency of processing skills, and the *conceptual flexibility index* looks at concept formation, lateral and flexible thinking and combining concepts into categories. Further information on the constructs measured by the SPANS (subtests and indices) is given in Appendix L. Each of the seven indices demonstrate good internal consistency indicating measurement of a unitary cognitive construct. Validation studies have been conducted with brain injured ($n = 136$) and non-brain injured participants ($n = 122$, Burgess, 2014) and the SPANS has previously been used with patients with dementia and with intellectually impaired individuals. The SPANS has been shown to have good levels of validity and reliability and differentiates well between degrees of cognitive impairment; normative data are available for groups aged between 18 to 74 years (Burgess, 2014). The assessment includes two alternate versions, SPANS A and SPANS B, to enable retest whilst minimising any practice effects, which is particularly useful when assessing deterioration in functioning⁶.

The Parole Board dossiers for each participant from the point of sentence were scrutinised. These dossiers contain information including the Pre-Sentence report, and subsequent reports prepared by the Offender Manager (probation officer based in the community); reports by specialists such as psychologists or psychiatrists; information on institutional behaviour, for instance conduct on the wing, behaviour warnings and adjudications; and feedback from participation on offending behaviour programmes. Salient information from these sources was recorded for each participant.

Two additional interviews were conducted with each participant which were specific to this research. The interviews covered two areas; the brain injury interview asked questions specific to number and severity of past blows to the head, and was primarily used to score the BISI screening tool, as well as adding further information regarding treatment sought following injury and the participant's current level of understanding of their injury; the IPP questionnaire asked more general questions in relation to the participants' journey through their sentence, their behaviour in prison, offending

⁶ For the present study, on the advice of the test author, SPANS B was used as it is slightly more challenging, and produces greater sensitivity to deficit (Burgess, 2014).

behaviour courses and their personal impressions and experience of the Parole Board process.

As described in section 2.2.5, information was recorded as it was extracted for each participant and was grouped into similar descriptive concepts. These were then further reduced and consolidated into conceptual categories, which were assessed as being relevant or otherwise for each participant. Short case study summaries relating to each participant were completed and are given in section 3. Due to the small number of cases used, it was not felt necessary to also utilise a formal database to record the various data sources examined, however, the data were organised into case records, and a summary table of data collated in order that emerging categories could be identified more easily, and convergence of evidence streams identified.

2.4 Ethical considerations

Careful consideration was given to ethical issues, and ethical approval for the research was gained from both the National Research Committee (NRC) and the University of Leicester research ethics committee (see Appendix M for copies of correspondence in relation to ethical approval). All research with prisoners requires careful consideration in relation to their inherent vulnerability, the need for fully informed consent, any potential for conflict of interest on the part of the researcher and the power imbalance which exists in all relationships and interactions between staff and prisoners. Ethical issues specific to clients with TBI include the need to determine competency and the ability of the individual to make fully informed decisions regarding both treatment and participation in research (Aggarwal & Ford, 2013). Care was taken to ensure participants understood the purpose and nature of the research and they were provided with a debrief sheet giving details of who to contact with queries, if they decided to withdraw from the study, or changed their mind about a referral being made to the prison healthcare department. Prisoners received no incentive for taking part, and refusal to take part was not recorded in their psychology files or prison case

notes. One further ethical consideration which is paramount in case study research is that of ensuring confidentiality of data and anonymity of participants. Participants were assigned an alias to ensure that they cannot be identified in the write-up of the research, and all identifying data has been removed. Case records (other than the completed case study protocols) are not included in the appendices due to the amount of potentially identifying data but are available on request.

2.5 Position of researcher

The current research has been undertaken from a constructivist and interpretivist theoretical perspective, as described in Appendix A and following the influence of both Merriam (1998) and Stake (1995). It is also important to consider bias in research. The author of this study is currently employed by HMPPS and the research is wholly funded by HMPPS, so it is not possible to state that the researcher is free from any potential source of bias. Underlying assumptions in relation to the research questions have been declared. However, the researcher has had no prior face-to-face contact with any of the selected participants and had prior knowledge of only one of the cases, having previously supervised a psychological risk assessment report written on the participant by a trainee psychologist. There are no other conflicts of interest to declare.

2.6 Quality issues

Potential quality issues have been minimised by following accepted guidance in relation to case study methodology. However, it should be noted that research following an interpretive as opposed to a positivist paradigm can have specific shortcomings, in particular in relation to validity and transferability of data (Scotland, 2012). The strict standards of ensuring validity used in work following a positivist or scientific paradigm do not easily translate to qualitative methodology, although Yin (2012) places emphasis on considerations of reliability and internal, external and construct validity. Both Merriam (1998) and Stake (1995), following a more

constructivist approach than Yin, believe that “it is almost impossible to apply the concepts of validity and reliability into qualitative enquiry since they were first generated in positivist tradition” (Yazan, 2015, p. 146). In order to address issues of data validation in this study, the guidance provided by Merriam (1998) in relation to internal and external validity is followed as far as possible. Triangulation of data and use of multiple data sources was used to provide a holistic understanding of the phenomenon, and researcher bias was clearly identified prior to the commencement of the work.

Qualitative research is also criticised as being overly subjective, and the position and view of the individual researcher is likely to influence the interpretation given to findings. It is hoped that following the three stages of *consolidation*, *reduction* and *interpretation* in data analysis proposed by Merriam (1998) has increased the objectivity of findings in this study, whilst retaining the rich depth of individualised data that is a strength of case study design. However, qualitative case study research will always be subjective to some degree, and as Stake suggests “subjectivity is not seen as a failing needing to be eliminated but as an essential element of understanding” (Stake, 1995, p. 45).

Due to the inherently subjective nature of the work, and the methodology used, secondary rating of identified themes would have been highly desirable, as this would have enabled researcher bias to be better identified and managed. However, due to resource constraints, the use of a formal secondary independent rater was not possible. Informal in-service cross-checking was carried out, whereby feedback was sought from colleagues of the researcher who had knowledge of either the research area or individual participants, and discussions were had where opinions differed. Whilst this process may have increased reliability of the findings, the lack of formal independent secondary ratings is acknowledged as a limitation of the present study. Any future research carried out which aims to investigate the themes identified from

this study should include independent ratings by two or more researchers in order to triangulate the themes emerging.

The present study also suffers from a lack of generalisability, due to the case study design and purposive sampling strategy, which do not lend themselves to generalisation of findings to other cases. However, generalisability is not the main goal of the research; the purpose is to investigate in detail issues relevant to a small number of individuals and to identify what similar interpretations can apply to other individuals with these characteristics, rather than to develop findings that would be applicable to all prisoners or processes.

3. FINDINGS

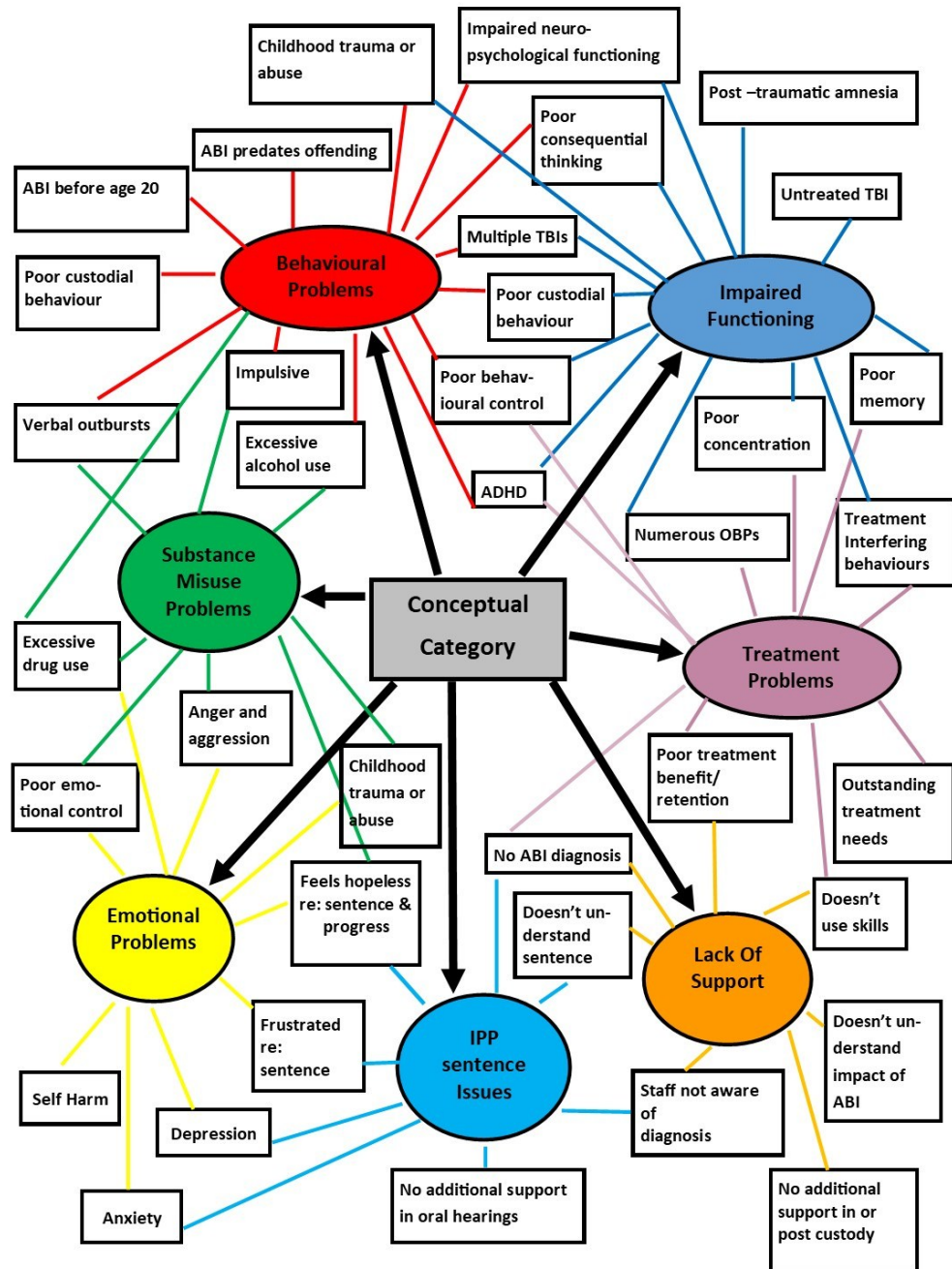
This research has followed an intuitive and inductive approach to the interpretation of information. The initial stage of analysis was to *consolidate* the information into separate issues, these being themes that came up repeatedly across the six cases (see Appendices C and D). The process of information collection and analysis are seen as running concurrently in this research, which at times meant that the original sources were re-examined for additional information. Information was extracted from existing sources such as case notes, assessments and behavioural reports as well as from the specific assessments administered as part of the current research and therefore some information included has been taken from subjective sources. However, all the information considered (with the exception of the BISI and SPANS data) was that available to the Parole Board when considering each case. As information was identified and interpreted further themes were suggested as fits with the constructivist position of the researcher, whereby knowledge is seen as constructed rather than discovered. The current research used an interpretative case study approach according to Merriam's (1998) classification, as the examination of information not only describes but also seeks to develop conceptual categories which may or may not provide support to existing assumptions held by the researcher.

The table of issues and resulting categories was seen as a live document, with further issues added as the process continued and further interpretation of information was undertaken. Issues were constantly revised and consolidated to reduce overlap, and to ensure that all key points were represented. Once all the issues were felt to have been extracted, they were recorded and *reduced* into categories which were then seen to cluster into seven conceptual categories, *impaired functioning*, *treatment problems*, *lack of support*, *IPP sentence issues*, *emotional problems*, *substance misuse problems* and *behavioural problems* (see Appendix D). A particular issue with case study design can be in identifying when to stop collection of information, and therefore analysis and interpretation. In order to keep this study clearly time-bounded, the decision was made not to re-interview or re-assess any of the participants once the scheduled assessments had been completed, and not to utilise any information which came to light following the date of interview.

Overall, a complex interrelationship between many of the emergent issues and the conceptual categories was seen. A visual representation is given in Figure 4. to illustrate the many relationships and links that were found to occur. The direction of relationships was hard to ascertain in many cases, and some factors, such as impulsivity and verbal outbursts were seen to impact on a number of different conceptual categories. Issues and categories were included on the interrelationship diagram when they were noted as relevant in three or more of the case studies, or from three or more different sources.

Initial observations relating to each of these conceptual categories are given below, and short case studies for each of the participants are presented. Whilst these short descriptions by no means provide all the information available for each individual, they provide an insight into the particular issues experienced by each participant and are intended to illustrate each as a narrative account, and to bring the individual to life.

Figure 4. Interrelationships between conceptual categories



3.1 Impaired functioning

Information collated indicated a number of areas of impaired functioning for all participants. These included impaired memory and concentration, reduced attention, poor consequential thinking, language disturbances and potential deficits in executive functioning such as poor planning and organisation. All of the men studied screened positive for post-traumatic amnesia on the BISI, and each reported receiving a head injury which led to a loss of consciousness.

Case Study - 'Mark'

Mark is 51 and has been in prison for 11 years serving an IPP sentence with a two-year tariff imposed for an offence of arson, being reckless as to whether life was endangered. He has now had four Parole Board reviews, with numerous deferments for further assessments and recommendations, and remains in closed conditions. There is little information in his file regarding his childhood, other than he struggled at school, truanted frequently and did not gain any formal qualifications. Aged 20 Mark was the victim of an unprovoked attack where he was hit over the head with a baseball bat. He was in intensive care for nine months and had to have a blood clot removed which led to him developing epilepsy. He has regular seizures and falls which cause further blows to his head and is on medication for this. His prison behaviour is generally good, he is currently on the Enhanced IEP level, although he has had some periods of poorer behaviour in the past when he can be rude and aggressive to staff. Mark self-harms on a regular basis and has had numerous ACCT documents opened on him. File information states that self-harm dominates his prison behaviour. He has completed CALM, TSP and a cognitive skills booster programme, as well as some work on alcohol use. Mark was described as a quiet group member whose participation was limited at times. He struggled to demonstrate understanding of the course material, and sometimes appeared disengaged and unfocused. At previous reviews professionals working with Mark have recommended him for a progressive move to open conditions, but this was not supported by the Parole Board, who felt he needed to do further offence focused work. Prison staff describe him as generally polite and cooperative although he often fails to consider the consequences of his behaviour and can be prone to verbal outbursts and damaging prison property. Mark's offending has occurred since his head injuries, and can be seen to be impulsive, emotionally driven and lacking consideration for the very severe consequences of his actions. Mark has been described as having significant functional difficulties related to having a TBI. His global functioning is extremely low, and he suffers with dysexecutive function, indicating he has difficulties with planning, abstract thinking, problem solving, verbal memory, time keeping and has impaired behavioural control. The SPANS assessment indicates impairment on all indexes.

As outlined in the method section (see 2.3.3), the SPANS assesses functioning in seven areas⁷. Three of the participants had scores falling within the *very low* or *extremely low* ranges across all seven of the SPANS indices, whilst only Carl and Chris had scores which were average or above across all indices (Carl) or all but one index (Chris).

All of the men except Carl reported impairments to memory following TBI, and all but Carl and Mark reported reduced concentration and problems with attention span. Harry in particular highlighted memory problems in relation to completing treatment.

I'm not saying it as an excuse, going through these offending behaviour courses, I've turned around and told them straight that I've got very little memory of pre-teen, and since I was bashed on the head with a hammer, in 2001, and laid up for two weeks, my memory had a reaction, even on something that happened yesterday, I can't recall it straight away, I can recall it, but I've got to be prompted to recall it, so yeah, things have slowed down and I'm not disputing that (Harry).

Memory impairment was also noted by Gibby, who laughed that he couldn't remember how long he had been in prison, and said *"I generally don't remember anything, I can't remember last week"*.

Lack of consequential thinking is also related to TBI. All of the participants had notes from staff in their files highlighting an inability to consider the consequences of their behaviour.

I just do daft stuff, I can't learn from it, I just keep doing things, I don't know why, like shouting and kicking off a bit, and then after I don't know why and I have to apologise. I just do stuff without thinking about it. I don't think about

⁷ orientation, attention/concentration, language, memory/learning, visuo-motor performance, efficiency and conceptual flexibility (see appendix L for a full description of the SPANS indices).

the consequences until afterwards. I think to myself 'why do I do it'? You don't burn yourself on the hob and then go back and do it again the next day and the next day, so why am I still doing it? Why am I making the same mistakes, I can't keep doing this to myself. I don't think about what might happen, I just do it then think about the consequences after (Chris).

3.2 Treatment problems

Barriers to treatment came up in relation to most of the men studied. Poor memory and concentration, as noted above, were apparent, as were reduced attention span and a lack of focus. Treatment interfering behaviours such as impulsivity, verbal outbursts and walking out of sessions were noted, and the men were described as either not appearing to retain the information and skills learnt on courses, or having a good understanding and verbal recall of the techniques learnt, but an apparent inability to put them into practice. Most of the men had completed numerous offending behaviour programmes, with only Chris being repeatedly excluded from courses, due to his ongoing drug use and poor behaviour. Of the six men, only Carl received wholly positive reports from OBPs, and was deemed to have no further outstanding treatment needs, although it was noticeable that he failed to apply any of the learning in his day-to-day behaviour. All the other participants were described as lacking in motivation and engagement or were excluded from treatment due to poor behaviour or substance use. All participants except Bill, who was diagnosed with mild learning disabilities, attended standard programmes with no adaptations or allowances for any impaired level of functioning. Despite attending a programme designed for low functioning men, Bill identified limited understanding and recall of the skills and techniques taught in interview.

...I've always struggled, like even on the Becoming New Me I did struggle in some areas you know, because it was saying things in one way, and I just couldn't understand how they were saying it, does that make sense? I just

couldn't.... import it, as good as the others, and then you get knocked down on that (Bill).

Case Study - 'Bill'

Bill is a 44-year-old man serving an IPP sentence for sexual offences which he denies. He received a 30-month tariff and has now been in prison over 13 years. He has had five Parole Board reviews, with no progression from closed conditions. Bill experienced an extremely poor childhood, characterised by physical and emotional abuse from his mother, and sexual abuse by a council worker. He was taken into care aged nine, and from the age of 17 had no fixed address, living in hostels and on the streets. File information documents behavioural difficulties at school as well as suggestions that he would regularly black out. He had a brain scan as a child, but no further treatment was recommended, and no diagnosis is recorded. Bill has made poor progress through his sentence. Parole Board hearings note the extent of discrepancy between his own offence accounts and the official versions, and he is described as minimising his offending behaviour and blaming the victim of the current offence. His prison behaviour has been poor at times, with numerous adjudications for breaking rules and for poor behaviour, although there have been periods when his behaviour has been less problematic and he has received good reports. Bill has completed ETS and BNM (an adapted SOTP course) but his post course reports are mixed, stating that he lacked motivation and struggled to provide examples of what he has learnt or put it into practice. He has been diagnosed with ADHD and LD. Further treatment has been recommended via a TC or PIPE, or as bespoke schema-based work but he has refused to engage with this. Bill has been described as struggling to take feedback on board, and an independent psychology report stated that his conversational style was 'excessively expressive, and notably lacking in detail and substance' and that 'the manner in which he recounts events makes it easy for him to be disbelieved'. Staff describe him as impulsive, with verbally aggressive outbursts at times and poor emotional and behavioural control. There has been no support for a progressive move. Bill has been assessed as having mild learning disabilities, with a full-scale IQ in the extremely low range. The SPANS assessment indicates that he scores extremely low on all indexes. He reports that he has impaired memory and concentration, which he feels are more noticeable since his last head injury. Bill self-reported three serious blows to the head, two of which resulted in a loss of consciousness. At the age of six he was hit on the head with a poker, which left him feeling dazed. Aged nine he was pushed in front of a car, resulting in him being in a coma for a month, with resultant swelling to the brain, and aged 22 he was knocked out when a metal tank fell on him. He screens positive for post-traumatic amnesia and has a TBI index rating of very severe.

Both Carl and Chris received positive reports from programmes they had attended, although Carl struggled to utilise the skills taught, despite being able to recall and explain them well, and Chris found it difficult to recall them in any meaningful depth.

I can remember bits from the courses, mostly just the bits that were useful to me. I remember little bits, like red flags, my red flags which are problem

people, problem areas, problem places, like, when I get angry my way of dealing with it is using (drugs) which helps me deal with my anger (Chris).

3.3 Lack of support

Lack of support was highlighted in a number of ways in all cases. Only Mark had a formal diagnosis of TBI and was known to healthcare due to this. Mark stated that before coming to prison there was no medical support available for him saying the hospital told him *“I’ve got brain damage and I’m epileptic and I’m going to be like that for the rest of my life and there’s nothing they can do... that’s when I was 21 and I’m 51 now”*. Mark received some support from prison staff as he was given work that they felt suited his abilities, although he stated that it was boring and repetitive. Despite clear indications of impaired cognitive functioning, Mark had attended a number of standard OBPS and had not been offered additional support in relation to these.

Case Study - ‘Harry’

Harry is a 55-year-old man sentenced to an IPP sentence with a tariff of under three years. He is now more than 10 years over tariff and remains in closed conditions despite having five Parole Board reviews. File information notes that he had a troubled childhood and lived with his paternal grandparents from 18 months old due to parental neglect. He was physically abused by his father and bullied at school, being described as poorly socialised and with little or no memory of his childhood prior to age 12. He is convicted of sexual offences against female children, including his sister who was five years younger than him and diagnosed with learning difficulties. There is evidence of previous failures to comply, and he has breached the terms of a SOPO twice. Harry’s prison behaviour is described as generally good, with the occasional IEP warning, but no formal adjudications. He has completed the courses recommended for him, including ETS, SOTP, Extended SOTP and HSP. He feels that the courses have helped him to address his offending behaviour, and is frustrated that further treatment, such as engaging in a TC or PIPE are suggested at Parole Board reviews, feeling that the goalposts are constantly being moved. File information describes him as impulsive, with avoidant coping and inflexible thinking styles. He reports no problems with alcohol use but has been a consistent heavy user of cannabis throughout his life. The BISl indicates a moderate to severe level of TBI and Harry self-reports three serious blows to the head, one of which occurred when he was hit on the head with a hammer and lost consciousness. His first serious head injury occurred aged 18, when he fell off a fairground ride and hit his head on a bolt, resulting in a one-inch open wound. The SPANS assessment shows a range of scores, with the Language, Memory and Learning, Visuo-motor Performance and Conceptual Flexibility indexes being scored as average, the Attention and Concentration index being scored low, and the Orientation and Efficiency indexes being scored very low.

No participants received additional help to prepare for Parole Board hearings, and other than in Mark's case, Parole Board members were not aware of any issues in relation to brain injury for any of the men. Mark had been assessed by a specialist brain injury service to provide support if he were released, but he was found unsuitable for this, as the assessment indicated he had no rehabilitative need.

None of the key staff working with the other participants, such as personal officers, key workers, offender managers or programmes staff were aware of any potential issues relating to TBI for these individuals, and there was no routine awareness training for staff within any of the prisons in the study, including specialist staff such as psychologists, or key workers. No additional support or advice was offered in relation to Parole hearings. When asked if he understood the questions asked in Parole hearings, Bill said;

Not all the time, like... you try and answer it in a way where you try and understand it, and then it can be wrong, does that make sense? Like... having someone... to support us, do you know what I mean, more support prior to, like someone independent, does that make sense, from it, so then I could say right actually this is what I am saying, this is how I am, this is how my life is, this is how I am day to day, me trying to say it, it gets all muddled up, you know what I mean like, and then it's like, everybody's looking like and then you're thinking why is everybody looking at me weird for, you know what I mean? (Bill).

3.4 IPP sentence issues

All the men described feelings of hopelessness and frustration in relation to the type and length of their sentences, and all had negative opinions of the IPP sentence. Some of their opinions are given below;

It's like the Parole Board are saying 'Mark, you're not suitable to be on the outside, we want you to do these things first' and then you do them but they can't make up their minds. It's like they're messing up... messing about with your life (Mark).

You're sat in front of three random strangers who control your fate, your existence... You have three people, one psychologist, one judge, and some random guy you've never met, you know.... It's a very very very isolating, daunting thing (Gibby).

Stressful, it's very stressful, it's like a court case over and over again you know, every time I go before the Parole Board it's like I'm fighting for my life you know. Some people think it's like going for a job interview or summat, I wish it was as plain as that, it's not, every time I go up I feel like I'm being sentenced, especially when I get a knockback, it's like being sentenced again and again (Carl).

That's how I feel about this IPP thing, where they're on a, how do you put it, they're money grabbing for psychology, people is like 'oh we've got them in here so we'll have this course and we'll have that course, we'll have that course' 'put them on that, why not' Especially for IPPs, why all of a sudden, we've done all the courses, and now we're getting recommended for PIPE.... 'oh, it's a new course', yeah, exactly what I'm saying, it's a new course, IPPs we'll get them on it, and I honestly feel that's what it is. While we're in here it's this course, that course, this course, that course. (Harry).

I went for Parole, I got a letter saying I'd been enhanced and all that for nearly a year, for 10 months, then I got a letter saying my hearing was going to be done on paper, I've not really progressed so it's not worth an oral hearing, so I just thought that's what normally happens, I keep getting a bit of paper every two years saying 'two year knock back' (Chris).

To me it's like, you go up for Parole, oral hearings, your solicitor's there... you go in there, you get... your offender supervisor says one thing, your probation officer says another thing, and then your solicitor says something different. And you're thinking where am I going, it's just going round in circles, you never get anywhere. All you'll end up doing is just going back to your cell and that's it. And you think one day I'm going to go up for Parole and they'll all think the same thing. They're never going to get anywhere... and I think are they real or is it a joke? Or is it for serious (Mark).

(they should) make it easier to progress to open prison, at least give people a chance, a bit more of a chance, and if they fuck it up then yeah, but I think Parole need to start giving people a chance. This isn't making people better, it's making people worse, making people want to rebel even more. So many years locked up... there's a lot of hatred there (Chris).

Issues in relation to the IPP sentence seemed to centre on their perception of it as unfair, that the goalposts in terms of programmes to be completed were constantly changing, and that it was too easy to be returned from open conditions or recalled following release. The men were frustrated about their lack of progress, and there seemed to be a general lack of understanding of the Parole process. A frequent complaint was the lack of agreement between professionals at Parole Board reviews,

with some participants feeling that they needed more information and support especially in relation to hearings.

3.5 Emotional problems

All the participants except Gibby reported a history of childhood trauma or abuse, and all except Gibby and Harry had been managed under the Assessment, Care in Custody and Teamwork (ACCT) process, used with prisoners at risk of self-harm and suicidal behaviour. At least two of the participants had been sexually abused as children, and Bill described a particularly traumatic childhood, being subject to severe physical and emotional abuse and neglect by his mother from a young age.

File information for all participants indicated some level of poor emotional control, and reactive verbal outbursts were highlighted in many cases.

I snap really quick, I can go from that to that really quick, and I don't like to back down. I like to have the last word, so I'm learning a bit now just to bite my tongue. Like with certain officers who I really don't like, a year ago I would have told them, when they annoy me I'd have told them straight, I'd have had them crying, you know what I mean... whereas now I'm learning to just go 'alright then' and leaving it. I do know I've got a short fuse (Chris).

Carl has struggled with depression at times through this sentence, in particular following the death of his brother. He feels that it would help if officers had more time to listen to prisoners and were trained to deal with people with mental health and bereavement issues.

Case Study - 'Carl'

Carl has served over 11 years for robbery, with a tariff of 14 months. He had four Parole Board reviews before being released on licence, and was recalled after one day for poor behaviour, drinking alcohol and breaching the terms of his licence. He previously failed twice in open conditions, on one occasion breaching the terms of his first release on temporary licence. Carl has now had a further two Parole Board reviews but remains in closed conditions. He has breached community sentences numerous times and has never successfully completed time under supervision. Carl has a history of excessive alcohol and drug use and has a long list of offences of robbery, theft, driving offences, violence and threatening behaviour. File information notes that Carl was regularly hit by his father, who was both strict and physically violent. He was expelled from school with no qualifications due to behavioural problems and had no stable long-term accommodation, residing in hostels and at times being homeless. He reports being disruptive at school and using alcohol and drugs from age 14. Prior to this sentence Carl had been in prison numerous times, but this had not curbed his offending behaviour. Carl's prison behaviour has been mixed, at times being characterised by ongoing use of illegal drugs and constant infringement of rules, at other times being stable, with positive comments from staff. He has received adjudications for fighting, threatening behaviour and use of drugs, although staff note that he is intelligent and articulate, and is able to verbalise learning from offending behaviour courses he has completed, although he seems unable to put this learning into practice. Whilst there is evidence that he can abide by prison rules, he struggles to maintain good behaviour for any length of time. Carl is described as impulsive, with poor consequential thinking, and ongoing problematic use of substances. He is not diagnosed with any personality disorder or mental illness and is below the threshold for psychopathy. He is quick to express his anger, a trait which is exacerbated by alcohol use, and lacks self-control generally. He tends to minimise his offending and the consequences of his behaviour and is described as reckless and engaging in risk taking behaviour, with an ongoing lack of impulse control and pattern of non-compliance. Carl has been diagnosed with depression and has been on ACCT documents repeatedly throughout his sentence. He has completed numerous treatment programmes (ETS, SCP, alcohol programmes and RaPT) with suggestions that engagement in a TC or PIPE would be beneficial, although he is reluctant to engage in these, and his progress through his sentence appears to have stalled. In his most recent psychological risk report completed for the Parole Board, a BISI was conducted, which indicated a potential TBI index severity of very severe. This was the first time that TBI had been considered, despite him having a motorbike accident some years previously whilst under the influence which resulted in a hairline fracture to his skull. Carl also reported a number of other injuries to his head during this assessment.

3.6 Substance misuse problems

Misuse of alcohol and drugs emerged as a theme throughout. Only Bill reported having no problems with alcohol use, with Mark stating he had not misused illegal substances but did previously have problems with alcohol. Four of the six men who participated stated that they had regularly blacked out due to drug and/or alcohol use.

Case Study - 'Chris'

30-year-old Chris is 10 years into an IPP sentence with a tariff of under two years for offences of robbery and assault. He first offended aged 13, and has been in custody on and off, since age 14. Chris's school years were problematic, with frequent truanting and poor attitude and behaviour, leading to expulsions. His schooling was interrupted by custodial sentences and he left with no formal qualifications. File information documents a difficult childhood; his parents separated when he was young, and he would spend every other weekend with his father, invariably in the local pub. His lifestyle has been chaotic, characterised by substance use, offending behaviour and imprisonment. His criminal behaviour shows evidence of recklessness and risk taking, and he is impulsive with little consideration of the consequences of his actions on himself or others. Chris's alcohol and drug use prior to this sentence was excessive; he would drink over 120 units of alcohol a week, and would regularly drink until he lost consciousness. He used cannabis regularly from the age of 12, ecstasy, amphetamines and cocaine from age 14 and crack and heroin from age 15. Chris can comply with prison rules and regulations, and has had periods of good behaviour, where he has held trusted positions, been on enhanced status and acted as a wing representative and programmes mentor. He has also had periods of exceptionally poor behaviour, with repeated warnings and adjudications for aggression, violence, use of weapons, arson and numerous petty rule infringements. He has over 60 proven adjudication on this sentence, and is regularly placed in the CSU, transferred for security reasons, or because he is under threat from other inmates due to running up drug debts. Chris has completed treatment programmes in relation to thinking skills, alcohol and drug use and violence, and has spent time on a TC. He has been removed from programmes due to ongoing drug use and poor attendance twice, and de-selected himself once as his methadone prescription was stopped and he was struggling to cope. He is of average intelligence, and can verbalise learning from programmes, although he fails to put this into practice, stating that he knows he does the same things over and over again, with no consideration of the consequences until it is too late. Chris has no diagnosis in relation to PD or ADHD, although traits of APD and ADHD are frequently mentioned. Aged 14 Chris was involved in a fight resulting in a blow to the head which left him unconscious, and aged 19 he was hit on the head with a bat and was unconscious for over an hour. He also reports numerous other blows to the head from fights and falls when drunk but is unsure if he was unconscious following these. He self-reports memory and concentration problems and feels that he became more impulsive and violent following the assault in his late teens.

Both Chris and Carl reported continuing to use drugs whilst in prison, which had a detrimental effect on their progress through their sentence. Carl had periods where he did not use drugs but decided to use again at stressful points in his sentence, such as when approaching a Parole Board review. Chris struggled to complete offending behaviour courses and was often transferred to different prisons due to security issues

related to drug use, and because he ran up drug debts and was then under threat when he couldn't pay the debt.

I started doing RaPT (a drug treatment course) but I got deselected, for using drugs. That's always been my downfall... I first had a spliff about 10 (years old), then I was using properly from 12. Before I came in I was spending £100 a day on drugs. I still use in prison, it's like, every weekend I just have to have a blow-out, or I'd lose the plot in here, I have to let off steam once a week. Cannabis and Spice mostly (Chris).

3.7 Behavioural problems

Poor custodial behaviour was evident in all the participants. Some have extensive adjudication records, with Chris estimating that he has been subject to 50 or 60 proven adjudications. He describes how he receives punishment for doing “silly little things” and apologised to the interviewer for being late to the interview, because he had just breached rules and had been given a negative behaviour warning by staff.

I do seem to get a nicking every couple of months, it's generally, most of the time it's for silly little things, I mean some in the past were serious, like the weapons and that, but lately it's been really petty. Like the one just now, I'm on Standard (IEP), only just, I've just had a warning (to go onto Basic), and then a nicking today for setting the fire alarm off cos my cell bell wasn't being answered. I'm surprised I'm not on basic now (Chris).

Carl's behaviour has been seen to fluctuate over his sentence, in his own words because “sometimes I don't see no light at the end of the tunnel, you know I think ‘what am I fucking behaving for’, sometimes I just hit the fuck it button”.

A similar theme of constant petty rule infringements is described by Bill.

It's petty little things you know what I mean, it's pathetic, but even the judge on my Parole Board says it's petty stuff, you know, it's not that a person is going out and committing violence is it, you know... like some people do (Bill).

Case Study - 'Gibby'

Gibby is a 31-year-old man convicted of sexual offences who was given an IPP sentence with a tariff of three years and two months. He has served over 10 years, had six Parole Board reviews, and has not yet progressed past closed conditions. He was described as difficult as a child, struggled at school, and was diagnosed with ADHD at the age of six. He self-reports using alcohol from age nine and drugs from age 15. File information refers to him being described as reckless, immature, socially isolated and aggressive from a young age. Gibby has not progressed well through his sentence. His prison behaviour is poor, and he receives numerous negative behaviour warnings and adjudication for rule infringements. Prison staff describe him as immature, impulsive, quick to anger and at times aggressive. He pushes boundaries, swears at people, can be verbally threatening and abusive, and makes ill-advised decisions with no thought for the consequences of his behaviour for himself or others. There has been no support for progression or release from professionals due to his poor custodial behaviour and apparent failure to benefit from treatment (he has completed the Core SOTP and TSP). His motivation on courses is described as fluctuating, and there is evidence of treatment interfering behaviours, such as fidgeting, failing to pay attention and walking out of sessions. He spent a period of time on a PIPE unit following SOTP but was removed from this as his behaviour did not meet expected standards. He is not considered suitable for further group work, is currently receiving no treatment and refuses to take medication prescribed to reduce ADHD symptoms. In addition to the long-standing diagnosis of ADHD, Gibby has been assessed using the IPDE as having definite diagnoses of paranoid, avoidant, borderline and anti-social personality disorder. He has an assessed IQ of 120, and screens as having some traits consistent with ASD, although a full assessment has discounted a diagnosis of ASD or Asperger's. The SPANS assessment indicates that he scores extremely low on the orientation, visuo-motor performance, efficiency and conceptual flexibility indexes, and very low on the language and memory indexes. His highest scoring index was the attention and concentration index, which was assessed as low. Gibby reports having had numerous blows to the head, guessing to at least 10 separate occurrences, and he feels that his offending behaviour escalated following his head injuries, reporting ongoing problems with his memory and concentration. The BISI screens him as having a likely TBI severity of moderate to severe, with a TBI rating of extremely severe. He has never been diagnosed with TBI.

4. DISCUSSION

The current research has attempted to provide information relevant to a small number of IPP prisoners with diagnosed or suspected TBI, and how the effects of any injury may have impacted on their progression through their sentence. Whilst there is previous research in this area in relation to prisoners in general, there has been little consideration of the particular challenges faced by indeterminate sentenced prisoners with TBI. The findings of this research have provided useful insight into the problems faced by some indeterminate prisoners with suspected brain damage and indicate that whilst the issue of brain injury in prisoners serving an indeterminate sentence is complex there are a number of ways in which improvements can be made.

4.1 Interpretation of findings

Impairment of cognitive functioning was seen to be relevant in most cases studied. Prison staff are experienced in dealing with prisoners with poor cognitive abilities linked to low IQ and there is a wealth of knowledge in relation to management of LD offenders (Barron, Hassiotis, & Banes, 2002; Craig & Hutchinson, 2005), and these deficits are taken into account when assessing and selecting prisoners for offending behaviour programmes, as well as during the Parole process. There is much less information available to staff regarding working with prisoners with TBI, and screening and assessment of TBI is not routinely undertaken with adult prisoners. An increase in knowledge of the implications of TBI may have far-reaching effects, as it cannot be assumed that staff, including specialist or medical professionals, have a thorough knowledge of TBI (Williams et al., 2018). A UK study by Chapman and Hudson (2010), highlighted that misconceptions regarding brain injury are widely held by the general public, and research with probation staff in Northern Ireland found evidence of a lack of knowledge regarding brain injury (O'Rourke, Linden, & Lohan, 2018).

If consideration of neuropsychological functioning had been taken into account it is likely that only Carl and Chris would have been seen as suitable for standard offending

behaviour programmes, and use of the SPANS or other specialist measure of neuropsychological functioning, may have given a more accurate indication of neuropsychological impairment, had it been used to inform decisions regarding suitability for treatment. Treatment adapted for lower functioning men may have been more appropriate for the others, despite both Gibby and Harry having IQ levels which would indicate standard programmes are suitable. Further adaptations to programmes, such as additional individual sessions, shorter sessions, smaller groups, increased use of compensatory strategies and more revision and repeating of information may have increased the benefit the participants gained from treatment (Nagele, Vaccaro, Schmidt, & Keating, 2019). Research on treatment outcomes with individuals with TBI has tended to focus on physical and cognitive rehabilitation, as discussed by Cattalani, Zettin, and Zoccolotti (2010) although descriptions of adaptations to treatment or educational programmes with UK forensic clients are given by Lowings and Wicks (2016), and in relation to North American offenders by Nagele et al. (2019) and O'Leary (2000). Lowings and Wicks (2016) give a useful summary of the potential impact of impairments following TBI which may be relevant when considering treatment planning. Individuals with TBI may suffer from fatigue, which may be particularly sudden in onset, and prove difficult to overcome, and struggle to maintain attention. This is particularly problematic when considering the effect on group-based treatment which inevitably lacks the flexibility of individually delivered sessions. Prisons by their nature are highly structured environments, and do not easily lend themselves to changes in regime to accommodate individuals and be responsive to particular needs.

Most programmes within the prison service are run according to stringent requirements, and it is generally not possible to make changes to the accredited treatment manual. Facilitators who are more aware of potential treatment interfering behaviours linked to TBI, such as increased impulsivity, lack of consideration of consequences, verbal outbursts, poor temper control and poor concentration (Bannon et al., 2015; Bechara et al., 2000) may be able to increase effective participation and enhance treatment benefit. It may however be the case that some offenders with TBI

are not going to be able to complete a full course of offending behaviour work due to treatment interfering behaviours which impact on their own learning, and that of the rest of the group, and so will struggle to evidence risk reduction from attending standard groupwork programmes.

Discussion - Mark

Mark is the only participant who has been formally diagnosed with TBI, and his impairments are severe. His IQ has been assessed as falling within the extremely low range, although despite this he has completed three mainstream programmes (ETS, CSB and CALM). He could recall little of the actual content of these, and he had problems with attention and motivation, which is unsurprising given that his score on the attention and concentration index of the SPANS is extremely low. Mark's behaviour in prison is problematic, he is a prolific self-harmer, and by his own admission does this in order to get attention from staff and when things are going wrong for him. Whilst Mark's prison behaviour is problematic for staff as it is resource intensive, he is not violent and does not generally breach rules. He likes to follow the same routine every day, and in his own words 'just wants to get out'. The block to Mark's release is not due to his prison behaviour, but because the Parole Board state he needs to complete further offence focused work, and because they feel that he will not be able to live independently due to his level of functioning. There is no further offence focussed groupwork that Mark can do and securing a placement for him post-release is difficult due to funding issues and a lack of provision. Mark was recently assessed for a residential brain injury placement but was turned down as he was found to have 'no rehabilitative need'. He is currently at an impasse within the system, being unable to access effective treatment in relation to his offending behaviour, being assessed by the Parole Board as being unable to live independently and so not suitable for release, and by clinicians as not being in need of a residential, rehabilitative placement. Alternative explanations for Mark's failure to progress were his perceived inability to cope after release and need to complete further offence focused work. This appears to be supported to some degree, although it is possible that with additional advice and training, staff at probation approved premises would be able to support Mark whilst he was there, and that bespoke offence focused work could be provided pre-release. The lack of move-on accommodation remains an issue, and Mark's case is currently awaiting further consideration by the Parole Board.

Many treatment programmes within HMPPS are based on talking therapies, such as CBT, which may pose particular issues for those with TBI. Alderman, Knight, and Brooks (2018) summarise this problem thus;

...neurocognitive impairments can considerably blunt the benefits typically associated with (talking therapies) including difficulties with: language,

especially comprehension; attention, retention, and recall of new information; and executive function, particularly monitoring and problem solving. These result in variable, slow learning, requiring considerable modification of programmes and provision of additional support. Even then, poor generalisation of programme benefits because of problems in independently recognising when to apply new strategies undermines ability to effectively modify behaviour (Alderman, Knight, & Brooks, 2018, p. 643).

Whilst there is useful research in to the effectiveness of cognitive-communication interventions for non-offenders (MacDonald & Wiseman-Hakes, 2010), there is currently little widespread awareness of the issue of offenders with TBI attending standard offending behaviour programmes, whether they are appropriately assessed, and what adaptations, if any, may be needed. A number of the adaptations and approaches suggested for use with non-offenders, such as use of external memory aids, individualisation of goals, and context sensitive interventions are likely to be generalizable to offence related work. Pitman and McNulty (2017) through their work with the Brain Injury Rehabilitation Trust (BIRT) have put together a comprehensive package of material aimed at increasing treatment benefit with individuals with cognitive impairments. Their approach of neuropsychologically informed rehabilitation (NIR) is aimed at targeting and changing challenging behaviours, as well as preventing disruptive behaviour and maintaining change. This would seem to have direct relevance for work with offenders with TBI who exhibit frequent rule breaking and problematic behaviours in prison. Where offenders with TBI are not able to complete groupwork, work to reduce risk may need to take place via bespoke individualised sessions. Whilst resource intensive, individualised treatment would allow for more effective adaptations to pace, frequency and length of sessions to be considered, and for adaptations to be tailored to the individual's needs.

Particular problems with executive functioning may be seen in prisoners with TBI (Lowings & Wicks, 2016). This may be evidenced as problems with organising and planning, keeping to the task in hand, setting realistic goals, and achieving goals,

maintaining focus and generalising learning from one situation to another. Lowings and Wicks give a useful checklist of strategies and adaptations that may be useful when working with clients with executive dysfunction. In many cases, discussions with the individual may give useful information about what particular strategies or changes to treatment or education programmes would be useful. Bill was able to identify a number of changes to standard group delivery which he feels would have helped him benefit more from treatment, as well as ways in which he feels he could be better supported through the Parole process.

Discussion – Bill

Bill has struggled to benefit from treatment programmes, having attended ETS, and then Becoming New Me, a sex offender treatment programme for lower functioning men. At times he found it hard to remain in treatment, walking out of sessions and struggling to complete the programmes. To his credit he did complete both courses, but he feels he was not given the best opportunity to succeed. Bill feels that he would have done better if the courses were split up into smaller chunks, with time built in to go over what has been taught. He also suggested that the pace of sessions was too fast for him, and that he needed the style of delivery to be more flexible. Bill has completed some individual work following the group programmes but professionals have indicated that he has outstanding treatment needs, and further schema-focused work is recommended. Engagement in a TC or PIPE unit has been recommended, but he is refusing to consider any further treatment, as he feels he has completed what was originally asked of him, that the goalposts are being changed and he is being made to jump through hoops. Bill blames his poor prison behaviour on his ADHD, and on the attitude that staff have towards him. He feels that he has addressed his offending, although he continues to place the blame for the offence on his victim, and that he is ready for release. Bill is open in his view that he doesn't really understand the Parole process and suggested that providing prisoners with informative DVDs that they could watch in small chunks, at their own pace would be useful. He is aware that he often rambles, and that he doesn't come across well in Parole hearings. He feels that providing prisoners with Dictaphones so they could record questions and their answers to questions would be useful, as would an independent support worker who understood his condition and could help him to get his meaning across. Alternative explanations considered for Bill's failure to progress were his poor custodial behaviour and refusal to do further treatment to address his outstanding needs. It is likely to be the case that these behaviours have stalled his progression. However, with more consideration of the impact of ABI on his functioning and behaviour, it is possible that he would see the benefit of repeating or continuing treatment. Likewise, if staff were better informed about the potential effect of ABI on his behaviour, for instance the likelihood of increased verbal outbursts, irritability or aggression, they may be better equipped to help him manage his behaviour.

Linked to the issue of adaptations to treatment and intervention programmes, is the need for increased support for offenders with brain injury in other areas of prison life, including the Parole process and complying with rules and regimes. Offenders with TBI would benefit from additional time to review and discuss their learning from treatment programmes, education classes or vocational learning, and may need help remembering appointments, understanding instructions and explaining the potential effects of their condition to others. None of the participants had any additional support offered to them for oral hearings, and other than in Mark's case, staff were not aware that TBI may be an issue. Bill in particular was aware that he struggles to articulate what he means, often misuses words and gets confused with verbally presented information, and feels that this has been detrimental for him, both on programmes and in oral hearings, although he had not attributed this to TBI prior to undertaking this research.

All the participants showed evidence of behavioural problems. TBI can increase the likelihood of an individual being aggressive, impulsive, violent, breaching rules, failing to consider the consequences of their behaviour and using drugs or alcohol (Baguley et al., 2006; Farrer et al., 2012; Piccolino & Solberg, 2014). These behaviours will be problematic in a custodial setting, and repeated rule infringements will impact on progression through an indeterminate sentence. Whilst all prisoners with TBI are likely to find that the effects of the injury are detrimental to them in prison, those indeterminate sentenced prisoners who need to demonstrate consistently good behaviour and be able to both evidence and articulate their reduction in risk in order to achieve release are likely to be at a greater disadvantage. The problems may continue once release is gained, as individuals with TBI are likely to find it harder to abide by the requirements of supervision on licence, to adhere to the rules and regime of a probation hostel and to re-offend (Ray & Richardson, 2017; Williams et al., 2018).

Discussion - Carl

Carl is an outlier in many ways; he is not assessed as having a low IQ and the SPANS assessments did not indicate any areas of concern. He receives good reports from offending behaviour programmes and has periods of time when his custodial behaviour is good. This is reflected in his previous success in achieving progressive moves to open prisons, and his subsequent release. However, Carl's behaviour is unpredictable and at times reckless. He frequently breaks rules, exhibits periods of extremely poor behaviour, has lost his enhanced status, has been returned from open conditions and has been recalled to prison on more than one occasion. His behaviour is reactive, impulsive and lacks consideration of the consequences, and he appears to self-sabotage at times, in particular when things begin to go wrong for him. He suffers with depression, self-harms and threatens to self-harm, and self-medicates with illegal substances. In the community his alcohol use was extremely problematic; in prison it is easier to get hold of drugs. Carl's prison rule infringements more recently have been in relation to drug use, and he has had a number of prison moves due to his behaviour. Carl has struggled to adhere to the requirements of release on temporary licence, supervision or release, and in recent years has yo-yo'd between the community, open and closed prisons. Rival explanations considered as part of this research for Carl are that his failure to progress and to succeed after release is due to his continued drug use and refusal to follow rules. However, he has an extensive history of head injury, with a TBI rating of very severe. Whilst the SPANS is not indicating any impairment to neuropsychological functioning, the pattern of reckless and impulsive behaviour, with little or no consideration of the consequences, in particular in relation to continuing drug use when approaching consideration for Parole is indicative of the behaviour one might expect from an individual with TBI. Carl is likely to benefit from further information and advice on how his previous brain injury may be affecting his behaviour. Whilst it is difficult to recommend leniency in relation to breaches of prison rules, it may be the case that if staff were more aware of possible reasons for Carl's poor behaviour they would be more willing to discuss rule infringements with him. A more frank discussion of the likely effects of previous head injury on Carl's behaviour in relation to his risk of violent re-offending may be useful at subsequent Parole hearings, and consideration of Carl's likely difficulties in consistently following rules and complying with supervision after release may increase the chances of him succeeding in the future.

TBI is likely to impact the frontal lobe and prefrontal cortex in particular (Pass & Dean, 2010) which may lead to executive dysfunction, and difficulties in planning, organising and decision making (Blasingame, 2018; Piovesana et al., 2017). Impairment to executive function will make it harder for an individual to follow rules, remember appointments and organise their time. Whilst prisoners within closed prisons are generally told what to do and when to do it, when they progress to open conditions they are expected to be more independent and show more autonomy. Once released IPP prisoners will be supervised on licence and will usually be required to live in a

probation approved hostel where they will need to remember to attend appointments, meet curfew restrictions, follow rules specific to the hostel and so on. Individuals with TBI are likely to find this difficult if their injury has caused a reduction in executive function. Other correlates of TBI, such as impulsivity, poor consequential thinking and substance misuse may also be problematic and are likely to quickly lead to recall to prison (Ray & Richardson, 2017; Williams et al., 2018).

Discussion – Chris

Chris is fully aware that his use of drugs and poor behaviour on this sentence is partly to blame for the fact that he is still in closed conditions. He has gone through phases of good behaviour, has completed treatment and seemingly been able to put it into practice. However, when things start to go wrong for him he says that he goes on a downwards spiral, behaves badly, and ends up feeling that it is pointless trying to get released. Chris has been in some sort of custodial setting, on and off, since he was 14, and he says he is tired of it now, and just wants to get out. He does not see his risk in the community as unmanageable, although he agrees that he is likely to continue to break rules and use substances. He knows that whilst he continues to use drugs in prison he is unlikely to be recommended for release, but so far has failed to change his behaviour. Chris also shows good insight into his problematic behaviour on the wing. He knows he can be rude and abusive to staff he doesn't like, and that he is prone to verbal outbursts that come out of the blue which he feels bad about afterwards, often seeking the member of staff out in order to apologise. He also recognises that he will engage in silly, petty behaviours that get him into trouble, but that at the time he doesn't care, or consider the consequences. He knows that he can choose to behave well, and to follow the rules, but that he generally doesn't and this leads him to feel stressed, frustrated and angry with himself. Chris deals with stress, anger and frustration by using drugs to make himself feel better, and so creates an ongoing cycle of increasingly poor prison behaviour. Chris has never been diagnosed with TBI, and until recently had not considered that the two serious blows to the head he has had in the past, as well as the numerous impacts from fights and falls when drunk may have had any sort of effect on his functioning or behaviour. He has never read any information on the possible impact of TBI on behaviour, but after the assessments were completed, and he asked the interviewer to explain some of the possible effects of TBI on thinking, decision making, and impulsivity said that it was like hearing someone give a description of himself.

Ongoing use of either drugs or alcohol will have a negative impact on progression through an IPP sentence. There is a link between substance use and TBI (Colantonio et al., 2014; Weil & Karelina, 2017) and prisoners with TBI are at higher risk of having had previous problems with either drugs or alcohol. Most indeterminate prisoners with a

history of substance misuse will have had the opportunity to attend treatment programmes to address this, although as shown it is not always the case that full benefit is derived from treatment. Individuals with TBI are more likely to be impulsive, reckless, and lack consideration of consequences. Bechara et al. describe patients with TBI as having “myopia for the future in that they are oblivious to the consequences of their actions and are guided only by immediate prospects” (Bechara et.al., 2000, p. 2189) and these traits could increase the likelihood of substance use (Cannella et al., 2019) in prison in a similar way to the increased likelihood of substance use in the community, despite the fact that it may reduce the individual’s chances of gaining release.

Discussion – Gibby

On one level, Gibby’s failure to progress can be seen as solely due to his poor prison behaviour and refusal to complete further treatment. He has an above average IQ, and the treatment programmes he has completed (TSP and SOTP) should have been appropriate and sufficient in terms of needs and intensity. However, he received poor reports from the group programmes, has struggled to retain and evidence his learning, and was removed from the PIPE unit he attended following treatment after three years for poor behaviour. He has had a number of adjudications, and after six Parole board reviews has still not received a recommendation for progression. Professionals working with him have sought to explain the reasons for his behaviour, and subsequent assessments have indicated that on top of the long-standing ADHD diagnosis he has definite diagnoses of paranoid, avoidant, borderline and anti-social personality disorder, and there are differing views as to whether he meets the criteria for ASD. His more recent psychology reports have sought to explain his poor behaviour during treatment as due to ADHD symptoms, and state that more allowances should have been made for him. Despite Gibby’s high IQ, the SPANs assessment indicated impairment in all areas, and there is evidence of memory impairment from self-report and file information. Gibby has refused to consider management via the offender PD pathway and is currently refusing medication for the symptoms of ADHD. An alternative explanation for Gibby’s failure to progress is that his poor prison behaviour and lack of treatment benefit are due to PD and ADHD symptoms, and it may be the case that it is not possible to be sure of the underlying cause of these problematic behaviours. However, given what is now known about his level of functioning, it is possible that the programmes he completed were not suited to his responsivity need, resulting in poor treatment benefit.

As stated previously, it is not unusual to see a number of different diagnoses being suggested for an individual. Awareness of TBI is only just beginning to become more widespread within the prison system, and in many cases the potential for impaired functioning following brain injury is the last thing that is considered, once all other

possible diagnoses or options have been exhausted. Whilst more widespread and standardised screening for TBI, and more formal assessment of impairment to neuropsychological functioning would undoubtedly be useful, it is unlikely to be the case that definite diagnosis of brain injury is routinely possible within a prison setting. From a practical point of view, greater consideration and understanding of the symptoms of TBI is likely to be useful independent of a definite diagnosis, such as from a brain scan.

Discussion – Harry

Harry feels that he has been poorly treated, in particular by psychologists, whilst he has been in prison. He feels that they twist what he says in order to make it sound worse, and that they make him do courses that he is not suited for. He has similar complaints of the Parole board and his probation officer, stating that they put words in his mouth and misrepresent what he says. His prison behaviour is not problematic, he has no adjudications, and he has completed the courses recommended for him although he is prone to verbal outbursts. He has undertaken extensive treatment, including three sex offender specific courses, one of which is individually delivered. However, he is described as not really showing benefit from treatment programmes, with evidence of continuing to hold abuse supportive attitudes. He has no definite diagnoses of PD and does not use substances in prison. He has now had five Parole Board reviews over 12 years with no recommendation for progression. There has been no prior suggestion of TBI, and the SPANS assessment did not indicate many areas of concern. The rival explanation to be considered in Harry's case was that his failure to progress was due to an ongoing and unacceptable level of risk, and this would seem to be a possible explanation in his case, although the impact of TBI on some of his problematic behaviours should not be discounted.

This research is primarily concerned with indeterminate sentenced prisoners. All of the participants in this study reported negative effects due to their IPP sentence. In the IPP sentence interview they expressed that they felt anxious, and in some cases depressed about their situation, and were frustrated at their lack of progress. There was a general lack of understanding about the purpose of the sentence, why they had received it, and the role of the Parole Board, and a number of the men likened oral hearings to being back on trial and being sentenced. Almost all of the participants said they felt they needed more support in relation to the Parole process, both in terms of their own understanding of it, and more practical support which might help them give a better account of themselves at an oral hearing. There was also a general feeling

that it would help if staff involved in the process, as well as those on the wing and the panel members themselves had more information about the potential effects of TBI and how these may manifest.

4.2 Limitations of the research

The current research has a number of limitations. It is hard to unpick the interrelationships between various contributory factors, and each case studied presented with a particular set of difficulties. In addition, each participant in this study was also formally diagnosed with at least one other condition, in some cases more than one, and so it is difficult to say with any certainty what the root of individual issues may be. The issue of co-morbidity and TBI has been discussed in other research and dual diagnoses of ADHD and TBI, for instance are not uncommon (Williams et al., 2018). In this sample, Gibby, Bill and possibly Chris had a diagnosis of ADHD, and showed some similarity of symptoms between this, and the effects of TBI. Gibby was also diagnosed with four personality disorders and Harry had a possible diagnosis of personality disorder. Whilst these co-morbid conditions may make it harder to assign causality of issues to any one source, they reflect the reality of working with offenders, in that it is more often than not the case that prisoners have multiple needs, and are likely to need to access services from more than one agency or department.

Screening for possible brain injury was undertaken using the BISI (The Disabilities Trust, 2014). This is a self-report measure and has been used in a number of prevalence studies of TBI. Previous research has indicated that the agreement between self-report measures of TBI and medical records is good (Schofield et al., 2011), however there were a number of limitations specific to the BISI which became apparent during this research. Some participants struggled to recall the number and details of blows to the head they had received, a disadvantage also found by Chester et al. (2018). This led to problems in scoring the level of TBI severity at times and could also lead to discrepancies in scoring between different researchers, with poor inter-rater reliability highlighted in previous research by Ramos et al. (2018). A further

problem with the BISI, which may be more apparent when used with offender populations, is that it was often the case that the participants reported receiving head injuries when they were by themselves or chose not to seek medical attention. On occasions where they were unconscious following injury, they were unable to say how long this may have been for, and so at times a best guess had to be made. This could have affected the scoring of the TBI index for these participants. For instance, in one case the participant was unable to say how long he had lost consciousness for, and the LOC was estimated by calculating the journey time to hospital, which is where he regained consciousness. It is likely that this is an under-calculation of LOC.

The present study is subjective in its design. A single researcher has reviewed all the available information and decided when these form issues which should be considered relevant. Whilst informal cross-checking was undertaken by colleagues, a more formal system of triangulation would have improved the overall quality of the research.

Qualitative case study research suffers from a lack of generalisability as described in sections 2 and 3 above. However, the purpose of this research was not to find information relevant to the group of remaining IPP prisoners as a whole, but to investigate a small number of participants in depth. The recommendations made below cover proposed changes to policy and process, such as the introduction of more wide scale screening for adult prisoners, and awareness training for staff, as well as consideration of changes that could be implemented on an individualised basis.

4.3 Recommendations

This research aimed to examine the issue of non-progression in IPP prisoners with TBI, following on from a previous study undertaken by the author (Budd & Twomey, 2018, unpublished manuscript) which showed that incidence of TBI in IPP prisoners specifically is high. Given the current political problem of the core group of remaining IPP prisoners who are failing to progress, and the likely impact of TBI on the ability of at least some of this group of prisoners to fully benefit from treatment, to comply with

prison rules, and to give a good and coherent account of themselves at Parole Board hearings, it seems reasonable to suggest that further consideration must be given to the effects of brain injury in this group. The specific neuropsychological and cognitive impairments discussed are likely to impact prisoners' ability to both reduce risk of re-offending via OBPs, and to evidence this reduction should it have occurred, for instance at Parole Board reviews, and so have particular significance for IPP prisoners. High levels of, often minor, rule infringements are often assumed to be an indicator of ongoing risk, however prisoners with TBI may show increased levels of cognitive and behavioural impulsivity, be prone to verbal outbursts or be forgetful of rules and routines without this necessarily reflecting a raised or unacceptable level of risk of serious re-offending. It may also be the case that the prisoner has benefitted from treatment and has reduced their risk, but that they are unable to explain this verbally to the Parole Board panel in a comprehensive and consistent manner. It is clear that additional support is needed, not only for prisoners with TBI, but for staff working with this group of prisoners, either on a daily basis on the wing, whilst delivering treatment, or when completing risk assessment reports.

There are a number of opportunities whereby additional support or changes to process could benefit IPP prisoners with TBI. Firstly, a more widespread screening process to identify potential TBI in indeterminate sentence prisoners is needed. Ideally, all offenders would be screened for TBI at the pre-sentence stage, in order that sentencing decisions can take any implications of TBI into account. If screening does not happen at this stage, then it should be a priority for when an offender is first received into prison. Once a positive screen for TBI is noted, further assessment of the individual's level of severity of TBI should be assessed. Medical notes may need to be accessed, and further assessment undertaken. If the presence of TBI is indicated, an assessment of neuropsychological and cognitive deficits should be completed, and the results of these shared with relevant staff, as well as with the prisoner. In order for staff and prisoners to understand and make full use of the information shared from screening and assessment, a programme of awareness-raising and education of relevant staff would be beneficial. Prisons may wish to produce information leaflets or

run workshops on recognising and working with prisoners with TBI. It will be useful for psychology staff to undertake training in relation to TBI, and consideration of TBI should be routinely included in psychological assessments of risk and risk formulation as also suggested by Newsome and Cullen (2017). As with all assessments of risk and decisions regarding release from an indeterminate sentence, a balance between protection of the public and protected human rights must be sought. When completing risk assessment reports with prisoners with brain injury, as with any other impairment or complex presentation, it is important to consider whether the prisoner may be using the impairment to gain preferential treatment or whether poor behaviour is a genuine consequence of injury, over which the individual has little control. Where necessary and if resources allow, medical confirmation of the presence and impact of brain injury should be sought.

Secondly, prisoners serving an IPP sentence who are failing to progress require an individualised supportive approach. Their particular needs should be identified, and appropriate support provided. Prisoners may benefit from learning more about their condition, and how it may impact on behaviour, and staff working closely with the prisoner both in custody and following release should be included in this as a collaborative approach. If necessary and possible, interventions should be tailored to their needs, or bespoke individual work undertaken.

An important aspect of support may be from key workers or link workers. A number of prisons previously piloted Linkworker schemes, which were very well received (The Disabilities Trust, 2016) and the more widespread rollout of these would be beneficial. HMPPS in Wales is currently working with The Disabilities Trust and re-establishing the Brain Injury Linkworker service across South Wales, including provision in prisons as well as Approved Premises. In addition, HMPPS in Wales is working closely with the Welsh Government and Public Health Wales to raise the profile of brain injury and to establish more informed treatment pathways across Wales. Extending this approach to cover all prisons and probation areas within England and Wales is recommended. The ideal standard of provision to IPP prisoners with TBI is a service of 'seamless

support' such as that advocated by the Linkworker schemes, whereby support could be provided on an individualised basis in custody, and links made with probation staff and other agencies following release in order to continue to provide post-release support, advice and practical help, both for the offender, family members and other professionals.

Lastly, consideration should be given to what adaptations are necessary and feasible in relation to OBPs or individual work with prisoners with TBI. Some prisoners will benefit from completing standardised or adapted OBPs with additional support, as discussed above. Others may require sessions to be conducted on a one-to-one basis in order to maximise treatment benefit. The neuropsychologically informed rehabilitation approach advocated by Pitman and McNulty (2017) lends itself well to use with offenders with challenging behaviour and frequent rule infringements. It may also be the case that prisoners with TBI will require additional support to help them understand the Parole process better, and to increase their chances of giving a good account of themselves at an oral hearing. Use of visual aids and notes may help, as would increased support and understanding of the nature and possible consequences of brain injury from the professionals involved.

4.4 Conclusions

A number of themes common to the issue of TBI in IPP prisoners have been identified and discussed. There are likely to be implications for a number of non-progressing IPP prisoners who would benefit from an individualised approach which takes the possibility of TBI into account. Whilst the goal of this research was not to be able to generalise the findings to all IPP prisoners, a number of recommendations have been made. It is accepted that these recommendations are wide-reaching and dependent in many cases on resources being available. Some of the recommendations could be implemented at little financial cost, by individual prisons or prison departments; others would require changes to policy and practice and would incur considerable cost. However, the issue of IPP prisoners who are failing to progress, and who are effectively

stuck in the system, serving a now-abolished sentence type is important. Further consideration of TBI as a possible cause of problems experienced by this group may lead to better outcomes for the individuals involved, as well as increased likelihood of success following eventual release. Consideration of possible TBI in prisoners is often a last resort, by which time many opportunities for intervention have been missed, and active consideration of TBI as early as possible in any offenders' contact with the CJS is recommended.

REFERENCES

- Aggarwal, N.K., & Ford, E. (2013). The neuroethics and neurolaw of brain injury. *Behavioral Sciences and the Law*, 31, 789-802.
- Ahmed, S.P., Bittencourt-Hewitt, A., & Sebastian, C.L. (2015). Neurocognitive bases of emotion regulation development in adolescence. *Developmental Cognitive Neuroscience*, 15, 11-25.
- Alderman, N., Knight, C., & Brooks, J. (2018). Therapy for acquired brain injury. In A. R. Beech, A. Carter, R. Mann & P. Rotshtein (Eds.), *The Wiley Blackwell handbook of forensic neuroscience*, (pp. 631-657). Chichester: Wiley & Sons.
- American Psychiatric Association (1987). *Diagnostic and statistical manual of mental disorders*, 3rd Ed. Washington, DC: American Psychiatric Association.
- American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders*, 4th Ed. Washington, DC: American Psychiatric Association.
- Andrews, D.A., & Bonta, J. (2006). *The psychology of criminal conduct*. 4th Ed. Newark, NJ: LexisNexis.
- Andrews, D.A., Bonta, J., & Hoge, R.D. (1990). Classification for effective rehabilitation: Rediscovering psychology. *Criminal Justice and Behavior*, 17, 19-52.
- Baguley, I. J., Cooper, J., & Felmingham, K. (2006). Aggressive behaviour following traumatic brain injury: How common is common? *The Journal of Head Trauma Rehabilitation*, 21(1), 45-56.
- Bannon, S.M., Salis, K.L., & O'Leary, D. (2015). Structural brain abnormalities in aggression and violent behaviour. *Aggression and Violent Behavior*, 25, 323-331.
- Barron, P., Hassiotis, A., & Banes, J. (2002). Offenders with intellectual disability: The size of the problem and therapeutic outcomes. *Journal of Intellectual Disability Research*, 46(6), 454-463.
- Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report*, 13(4), 544-559.
- Bechara, A., Tranel, D., & Damasio, H. (2000). Characterization of the decision-making deficit of patients with ventromedial prefrontal cortex lesions. *Brain*, 123, 2189-2202.
- Blair, R.J.R. (2001). Neurocognitive models of aggression, the antisocial personality disorders, and psychopathy. *Journal of Neurology, Neurosurgery & Psychiatry*, 71, 727-731.

- Blasingame, G.D. (2018). Traumatic brain injury and sexually offensive behaviors. *Journal of Child Sexual Abuse, 27*, 972-977. DOI: 10.1080/10538712.2018.1510454.
- Brower, M.C., & Price, B.H. (2001). Neuropsychiatry of frontal lobe dysfunction in violent and criminal behaviour: a critical review. *Journal of Neurology, Neurosurgery and Psychiatry, 71*, 720–726.
- Buck, P. W. (2011). Mild traumatic brain injury: A silent epidemic in our practices. *Health & Social Work, 36*(4), 299-302.
- Buckley, L., Kaye, S., Stork, R.P., Heinze, J.E., & Eckner, J.T. (2017). Traumatic brain injury and aggression: A systematic review and future directions using community samples. *Aggression and Violent Behavior, 37*, 26-34.
- Budd, N.C., & Twomey, H. (2018). *An investigation into potential barriers to progression in prisoners serving an Indeterminate sentence for Public Protection (IPP sentence)*. Unpublished report for HMPPS.
- Burgess, G. (2014). *Short Parallel Assessments of Neuropsychological Status (SPANS)*. Hogrefe, Oxford, UK.
- Cannella, L.A., McGary, H., & Ramirez, S.H. (2019). Brain interrupted: Early life traumatic brain injury and addiction vulnerability. *Experimental Neurology, 317*, 191-201.
- Cantor, J.B., Gordon, W.A., Schwartz, M.E., Charatz, H.J., Ashman, T.A., & Abramowitz, S. (2004). Child and parent responses to a brain injury screening questionnaire. *Archives of Physical Medical Rehabilitation, 85*(2), 54-60.
- Cassidy, J.D., Carroll, L.J., Peloso, P.M., Borg, J., von Holst, H., Holm, L., Kraus, J., & Coronado, V.G. (2004). Incidence, risk factors and prevention of mild traumatic brain injury: Results of the WHO collaborating centre task force on mild traumatic brain injury. *Journal of Rehabilitation Medicine, Supplement, 43*, 28-60.
- Cattelani, R., Zettin, M., & Zoccolotti, P. (2010). Rehabilitation treatments for adults with behavioural and psychosocial disorders following acquired brain injury: A systematic review. *Neuropsychology Review, 20*, 52-85.
- Chan, J., Hudson, C., & Parmenter, T. (2004). An exploratory study of crime and brain injury: Implications for mental health management. *Australian e-Journal for the Advancement of Mental Health, 3*(1), 1-6.

- Chapman, R.C.G., & Hudson, J.M. (2010). Beliefs about brain injury in Britain. *Brain Injury*, 24(6), 797-801.
- Chayer, C., & Freedman, M. (2001). Frontal lobe functions. *Current Neurology and Neuroscience Reports*, 1, 547-552.
- Chester, V., Painter, G., Ryan, L., Popple, J., Chikodzi, K., & Alexander, R.T. (2018). Traumatic brain injury in a forensic intellectual disability population. *Psychology, Crime & Law*, 24(4), 400-413.
- Craig, L., & Hutchinson, R.B. (2005). Sexual offenders with learning disabilities: Risk, recidivism and treatment. *Journal of Sexual Aggression*, 11(3), 289-304.
- Crowe, S., Cresswell, K., Robertson, A., Huby, G., Avery, A., & Sheikh, A. (2011). The case study approach. *BMC Medical Research Methodology*, 11:100. 1-9.
- Colantonio, A., Kim, H., Allen, S., Asbridge, M., Petgrave, J., & Brochu, S. (2014). Traumatic brain injury and early life experiences among men and women in a prison population. *Journal of Correctional Health Care*, 20(4), 271-279.
- Corrigan, J.D., Bogner, J., & Holloman, C. (2012). Lifetime history of traumatic brain injury among persons with substance use disorders. *Brain Injury*, 26(2), 139-150.
- Crotty, M. (1998). *The foundations of social research. Meaning and perspective in the research process*. London: Sage.
- Davies, R. C., Williams, W. H., Hinder, D., Burgess, C. N. W., & Mounce, L. T. A. (2012). Self-reported traumatic brain injury and post-concussion symptoms in incarcerated youth. *The Journal of Head Trauma Rehabilitation*, 27(3), 21-27.
- DelBello, M.P., Soutullo, C.A., Zimmerman, M.E., Sax, K.W., Williams, J.R., McElroy, S.L., & Strakowski, S.M. (1999). Traumatic brain injury in individuals convicted of sexual offences with and without bipolar disorder. *Psychiatry Research*, 89, 281-286.
- Denney, R.L., & Wynkoop, T.F. (2000). Clinical neuropsychology in the criminal forensic setting. *The Journal of Head Trauma Rehabilitation*, 15(2), 804-828.
- Dixon, M.R., Jacobs, E.A., Sanders, S., Guercio, J.M., Soldner, J., Parker-Singler S., Robinson, A., Small, S., & Dillen, J.E. (2005). Impulsivity, self-control, and delay discounting in persons with acquired brain injury. *Behavioral Interventions*, 20 101-120.
- Dumantheil, I. (2015). Development of the social brain during adolescence. *Psicología Educativa*, 21, 117-124.

- Durrant, R. (2018). Forensic neuroscience: Problems and promises. *Psychology, Crime and Law*, 24(3), 352-360.
- Farrer, T.J., Frost, R.B., & Hedges, D.W. (2012). Prevalence of traumatic brain injury in intimate partner violence offenders compared to the general population: A meta-analysis. *Trauma, Violence and Abuse* 13(2), 77-82.
- Farrer, T.J., & Hedges, D.W. (2011). Prevalence of traumatic brain injury in incarcerated groups compared to the general population: A meta-analysis. *Progress in Neuro-Psychopharmacology & Biological Psychiatry*, 35, 390-394.
- Fazel, S., Lichtenstein, P., Grann, M., & Långström, N. (2011). Risk of violent crime in individuals with epilepsy and traumatic brain injury: A 35 year Swedish population study. *PLoS Medicine*, 8, 1-8.
- Feast, L., & Melles, G. (2010). *Epistemological positions in design research: A brief review of the literature*. Paper presented at the 2nd International conference on design education, University of New South Wales, Sydney, Australia.
- Fishbein, D., Dariotis, J.K., Ferguson, P.L., & Pickelsimer, E.E. (2016). Relationships between traumatic brain injury and illicit drug use and their association with aggression in inmates. *International Journal of Offender Therapy and Comparative Criminology* 60(5), 575-597.
- Fortescue, D., Ramos, S. D. S., & Oddy, M. (2017). Implementing a brain injury offender strategy through the introduction of a specialist support service in prison. *Prison Service Journal*, 230, 21-24.
- Giedd, J.N., Blumenthal, J., Jeffries, N.O., Castellanos, F.X., Lui, H., Zijdenbos, A., Paus, T., Evans, A.C., & Rapoport, J.L. (1999). Brain development during adolescence: A longitudinal MRI study. *Nature America, Neuroscience*, 2(10), 861-863.
- Gerring, J. (2004). What is a case study and what is it good for? *American Political Science Review*, 98(2), 341-354.
- Greve, K.W., Sherwin, E., Stanford, M., Mathias, C., Love, J., & Ramzinskis, P. (2001). Personality and neurocognitive correlates of impulsive aggression in long-term survivors of severe traumatic brain injury. *Brain Injury*, 15(3), 255-262.
- Horn, M.L., & Lutz, D.J. (2016). Traumatic brain injury in the criminal justice system: Identification and response to neurological trauma. *Applied Psychology in Criminal Justice*, 12(2), 71-86.
- Hughes, N., Williams, W. H., Chitsabesan, P., Walesby, R. C., Mounce, L. T. A., & Clasby, B. (2015). The prevalence of traumatic brain injury among young offenders in

- custody: A systematic review. *The Journal of Head Trauma Rehabilitation*, 30(2), 94-105.
- Hux, K., Bond, V., Skinner, S., Belau, D., & Sanger, D. (1998). Parental report of occurrences and consequences of traumatic brain injury among delinquent and non-delinquent youth. *Brain Injury*, 12(8), 667-681.
- Kennedy, E., Cohen, M., & Munafò, M. (2017). Childhood traumatic brain injury and the associations with risk behaviour in adolescence and young adulthood: A systematic review. *The Journal of Head Trauma Rehabilitation*, 32(6), 425-432.
- Kocka, A., & Gagnon, J. (2014). Definition of impulsivity and related terms following traumatic brain injury: A review of the different concepts and measures used to assess impulsivity, disinhibition and other related concepts. *Behavioral Sciences*, 4, 352-370.
- Lincoln, Y.S., & Guba, E.G. (1985). *Naturalistic Inquiry*. London: Sage.
- Lowings, G., & Wicks, B. (2016). *Effective learning after brain injury. A practical guide to support adults with neurological conditions*. London: Routledge.
- Luiselli, J.K., Arons, M., Marchese, N., Potoczny-Gray, A., & Rossi, E. (2000). Incidence of law-violating behaviour in a community sample of children and adolescents with traumatic brain injury. *International Journal of Offender Therapy and Comparative Criminology*, 44(6), 647-656.
- MacDonald, S., & Wiseman-Hakes, C. (2010). Knowledge transition in ABI rehabilitation: A model for consolidating and applying the evidence for cognitive-communication interventions. *Brain Injury*, 24(3), 486-508.
- McKinlay, A., Grace, R.C., Horwood, L.J., Fergusson, D.M., Ridder, E.M., & MacFarlane, M.R. (2008). Prevalence of traumatic brain injury among children, adolescents and young adults: Prospective evidence from a birth cohort. *Brain Injury*, 22(2), 175-181.
- Merriam, S.B. (1998). *Case study research in education. A qualitative approach*. London: Jossey-Bass.
- Miles, M.B., & Huberman, A.M. (1994). *Qualitative data analysis: An expanded sourcebook*. 2nd Ed. London: Sage.
- Mills, J.F., & Kroner, D.G. (2004). A new instrument to screen for depression, hopelessness and suicide in incarcerated offenders. *Psychological Services*, 1(1), 83-91.

- Ministry of Justice (2011). LAPSO Amendments: Review of indeterminate sentences for public protection (IPPS).
- Ministry of Justice (2019). ISPPB Pack. Public Protection Group.
- Moore, E., Indig, D., & Haysom, L. (2014). Traumatic brain injury, mental health, substance use, and offending among incarcerated people. *Journal of Head Trauma Rehabilitation*, 29(3), 239-247.
- Nagele, D., Vaccaro, M., Schmidt, M.J., & Keating, D. (2019). Brain injury in an offender population: Implications for re-entry and community transition. *Journal of Offender Rehabilitation*, 57(8), 562-585.
- Newsome, J., & Cullen, F.T. (2017). The risk-need-responsivity model revisited. Using biosocial criminology to enhance offender rehabilitation. *Criminal Justice and Behavior*, 44(8), 1030-1049.
- O'Leary, C.A. (2000). Reducing aggression in adults with brain injuries. *Behavioural Interventions*, 15, 205-216.
- O'Rourke, C., Linden, M.A., & Lohan, M. (2018). Misconceptions about traumatic brain injury among probation services. *Disability and Rehabilitation*, 40(10), 1119-1126.
- Pass, L.A., & Dean, R.S. (2010). Principles of brain structure and function. In L.C. Hartledge & A. McNeill (Eds.), *The handbook of forensic neuropsychology*, 2nd Ed. (pp. 11-32). New York: Springer.
- Patel, S. (2015). The research paradigm – methodology, epistemology and ontology – explained in simple language. Retrieved from salmapatel.co.uk/academia/the-research-paradigm-methodology-epistemology-and-ontology-explained-in-simple-language.
- Patton, M.Q. (1980). *Qualitative evaluation methods*. London: Sage.
- Patton, J.H., Stanford, M.S., & Barratt, E.S (1995). Factor structure of the Barratt impulsiveness scale. *Journal of Clinical Psychology*, 51(6), 768-774.
- Perron, B.E., & Howard, M.O. (2008). Prevalence and correlates of traumatic brain injury among delinquent youths. *Criminal Behaviour and Mental Health*, 18(4), 243-255.
- Piccolino, A.L., & Solberg, K.B. (2014). The impact of traumatic brain injury on prison health services and offender management. *Journal of Correctional Health Care*, 20(3), 203-212.

- Piovesana, A., Ross, S., Lloyd, O., Whittingham, K., Ziviani, J., Ware, R.S., McKinlay, L., & Boyd, R.N. (2017). A randomised controlled trial of a web-based multi-model therapy program to improve executive functioning in children and adolescents with acquired brain injury. *Clinical Rehabilitation*, 31(10), 1351-1363.
- Pitman, I.M., & McNulty, R. (2017) *Neuropsychologically informed rehabilitation: A course by the Brain Injury Rehabilitation Trust (BIRT)*. The Disabilities Trust.
- Ramos, S.D.S., Liddement, J., Addicott, C., Fortescue, D., & Oddy, M. (2018). The development of the Brain Injury Screening Index (BISI) a self-report measure. *Neuropsychological Rehabilitation*, 30, 948-960. DOI: [10.1080/09602011.2018.1526692](https://doi.org/10.1080/09602011.2018.1526692)
- Ray, B., & Richardson, N.J. (2017). Traumatic brain injury and recidivism among returning inmates. *Criminal Justice and Behavior*, 44(3), 472-486.
- Ray, B., Sapp, D., & Kincaid, A. (2014). Traumatic brain injury among Indiana State prisoners. *Journal of Forensic Science*, 59(5), 1248-1253.
- Rosenbaum, A., Hoge, S.K., Adelman, S.A., Warnken, W.J., Fletcher, K.E., & Kane, R.L. (1994). Head injury in partner abusive men. *Journal of Consulting and Clinical Psychology*, 62(6), 1187-1193.
- Rotshtein, P., & Mitchell, I.J. (2018). A brief introduction to neuroscience. In A. R. Beech, A. Carter, R. Mann, & P. Rotshtein (Eds.), *The Wiley Blackwell handbook of forensic neuroscience*, (pp. 25-58). Chichester: Wiley & Sons.
- Sabaz, M., Simpson, G.K., Walker, A.J., Rogers, J.M., Gillis, I., & Strettles, B. (2014). Prevalence, comorbidities and correlates of challenging behaviour among community-dwelling adults with severe traumatic brain injury: A multicentre study. *The Journal of Head Trauma Rehabilitation*, 29(2), 19-30.
- Schofield, P.W., Butler, T.G., Hollis, S.J., Smith, N.E., Lee, S.J., & Kelso, W.M. (2006). Traumatic brain injury among Australian prisoners: Rates, recurrence and sequelae. *Brain Injury*, 20(5), 499-506.
- Schofield, P., Butler, T., Hollis, S., & D'Este, C. (2011). Are prisoners reliable survey respondents? A validation of self-reported traumatic brain injury (TBI) against hospital medical records. *Brain Injury*, 25(1), 74-82.
- Schofield, P.W., Mason, R., Nelson, P.K., Kenny, D., & Butler, T. (2019). Traumatic brain injury is highly associated with self-reported childhood trauma within a juvenile offender cohort. *Brain Injury*, 33(4), 412-418.

- Scotland, J. (2012). Exploring the philosophical underpinnings of research: Relating ontology and epistemology to the methodology and methods of the scientific, interpretative and critical research paradigms. *English Language Teaching*, 5(9), 9-16.
- Shaw, P., Kabani, N.J., Lerch, J.P., Eckstrand, K., Lenroot, R., Gogtay, N., Greenstein, D., Clasen, L., Evans, A., Rapoport, J.L., Giedd, J.N., & Wise, S.P. (2008). Neurodevelopmental trajectories of the human cerebral cortex. *The Journal of Neuroscience*, 28(14), 3586-3594.
- Shiroma, E.J., Pickelsimer, E.E., Ferguson, P.L., Gebregziabher, M., Lattimore, P.K., Nicholas, J.S., Dukes, T., & Hunt, K.J. (2010). Association of medically attended traumatic brain injury and in-prison behavioural infractions: A statewide longitudinal study. *The Journal of Correctional Health Care*, 16(4), 273-286.
- Simpson, G., Blaszczyński, A., & Hodgkinson, A. (1999). Sex offending as a psychosocial sequel of traumatic brain injury. *The Journal of Head Trauma Rehabilitation*, 14(6), 567-580.
- Slaughter, B., Fann, J. R., & Ehde, D. (2003). Traumatic brain injury in a county jail population: Prevalence, neuropsychological functioning and psychiatric disorders. *Brain Injury*, 17(9), 731-741.
- Smeijers, D., Bulten, E., Buitelaar, J., & Verkes, R-J. (2018). Associations between neurocognitive characteristics, treatment outcome, and dropout among aggressive forensic psychiatric patients. *International Journal of Offender Therapy and Comparative Criminology*. 00(0) 1-20.
- Stake, R.E. (1995). *The art of case study research*. London: Sage.
- The Disabilities Trust Foundation. (2014). The Brain Injury Screening Index www.thedtgroup.org/foundation/brain-injury-screening-index
- The Disabilities Trust Foundation. (2016). Prison Linkworker Service www.thedtgroup.org/foundation
- Weil, Z.M., & Karelina, K. (2017). Traumatic brain injuries during development: Implications for alcohol abuse. *Frontiers in Behavioral Neuroscience*, 11(135), 1-8.
- Williams, W.H. (2013). *Repairing Shattered Lives: Brain Injury and Its Implications for Criminal Justice*. London, United Kingdom: Transition to Adulthood Alliance.

- Williams, W.H., Chitsabesan, P., Fazel, S., McMillan, T., Hughes, N., Parsonage, M., & Tonks, J. (2018). Traumatic brain injury: A potential cause of violent crime? *Lancet Psychiatry*, 5, 836-844.
- Williams, W. H., Cordan, G., Mewse, A. J., Tonks, J., & Burgess, C. N. W. (2010). Self-reported traumatic brain injury in male young offenders: A risk factor for re-offending, poor mental health and violence? *Neuropsychological Rehabilitation*, 20(6), 801-812.
- Williams, W. H., Mewse, A. J., Tonks, J., Mills, S., Burgess, C. N. W., & Cordan, G. (2010). Traumatic brain injury in a prison population: Prevalence and risk for re-offending. *Brain Injury*, 24(10), 1184-1188.
- Yates, P.J., Williams, W.H., Harris, A., Round, A., & Jenkins, R. (2006). An epidemiological study of head injuries in a UK population attending an emergency department. *Journal of Neurology, Neurosurgery and Psychiatry*, 77, 699-701.
- Yazan, B. (2015). Three approaches to case study methods in education: Yin, Merriam and Stake. *The Qualitative Report*, 20(2), 134-152.
- Yin, R.K. (2012). *Applications of case study research*. London: Sage.
- Yin, R.K. (2014). *Case study research. Design and methods*. 5th Ed. London: Sage.
- Zucker, D.M. (2009). How to do case study research. *Teaching Research Methods in the Social Sciences*, 2. Retrieved from https://scholarworks.umass.edu/nursing_faculty_pubs/2

APPENDIX A – Position of researcher

Epistemological stance

All research will in essence belong to a particular paradigm, whether or not this is implicitly or explicitly stated. Scientific paradigms were described by Kuhn in the seminal text *The Structure of Scientific Revolutions* (1962) as “a unitary package of beliefs about science and scientific knowledge” and “an overarching conceptual construct, a particular way in which scientists make sense of the world or some segment of the world” (cited in Crotty, 1998, p.34).

Research paradigms and the process of research has been described as having four basic elements: epistemology, or the theory of knowledge; theoretical perspective, the philosophical stance which informs methodology and provides context; methodology, the strategy or plan of the research; and methods, the techniques used (Crotty, 1998; Feast & Melles, 2010). Ontology, the question of what constitutes reality, and how we understand existence and epistemology are important in research design as they create a holistic view of how knowledge and reality are viewed, and underpin both theoretical perspective and methodology. The current research, and researcher, sits within a constructivist paradigm, and interpretivist theoretic perspective. A basic description of the three most common paradigms as suggested by Patel (2015) is given below;

Positivists believe that there is a single reality, which can be measured and known, and therefore they are more likely to use quantitative methods to measure this reality.

Constructivists believe that there is no single reality or truth, and therefore reality needs to be interpreted, and therefore they are more likely to use qualitative methods to get those multiple realities.

Pragmatists believe that reality is constantly renegotiated, debated, interpreted, and therefore the best method to use is the one that solves the problem (Patel, 2015, taken from salmapatel.co.uk).

Following a constructivist and interpretative approach, the researcher believes that there is no single objective reality or truth to be discovered, and that reality needs to be interpreted in order to discover any underlying meaning (epistemology).

Methodologies commonly used within this paradigm include heuristic inquiry, giving emphasis to the personal experience and insights of the researcher, and grounded theory, and the case study method lends itself well to these types of methodology.

Bias

Researcher bias should be considered when undertaking any type of research.

However, it may be particularly relevant when considering use of case study design in research, given the likely increase in subjectivity of the approach. As discussed by Yin (2014) when deciding to utilise case study design, and in planning the approach, researchers must already have some understanding of the issues to be studied. There is the possibility that this a priori knowledge will sway a researcher towards evidence which supports their assumption, and away from evidence refuting it. This may be seen in the selection of cases made, in that cases supporting an assumption may be over-represented in a sample, or that counter-evidence in cases is ignored. The current research has attempted to eliminate bias as much as possible, in that rival explanations have been considered for all cases, and cases discussed with colleagues independent of the research process, in order that other alternative explanations may be highlighted. Throughout this research, an underlying assumption has been identified: that the lack of progress experienced by the participants is due, at least in part, to some consequence of brain injury. Alternative explanations, for instance that the failure to progress is due to risk or behavioural issues not connected to brain injury, have been explicitly considered for each case. In addition, the six cases chosen for inclusion were selected as they represented a variety of presentations, risk levels, behavioural issues and severity of suspected brain injury, in an attempt to further reduce bias.

Funding and affiliations

The current research concerns the progress of prisoners in custody in prisons run and managed by HMPPS. The researcher is an employee of HMPPS, and this doctorate has been wholly funded by HMPPS. There is therefore a potential conflict of interest in this respect.

APPENDIX B - Completed Case Study Protocol: Case Study ‘Gibby’

Step 1 – Check eligibility and gather demographic information

Demographics	
Age	31
Gender	M
Offence	Rape, Indecent assault
Sentence type	IPP
Tariff length	3 years 2 months
Time served	Over 10 years
No. of reviews	6
Recalled?	No
Returned to closed?	No
Eligible for inclusion?	YES
Information sheet given?	YES
Consent discussed and obtained?	YES

Step 2 – Record information from research interviews and assessments

Head injury information	
Reported at least 10 blows to head, states there are more. Could remember specific details about 4	
#1	Aged 13/14, fell out of a tree and hit head on a branch. Under the influence of substances, unconscious a few minutes.
#2	Aged 15, messing about on roof, fell off, landed on back, hit head on RSJ. Unconscious for number of hours. Did not seek medical help.
#3	Aged 16/17, In a van which crashed into a tree, hit head on windscreen.
#4	Aged 17, hit over head with a bottle in a pub. Either unconscious or asleep afterwards
#5	From psychiatric report – aged 18/19 got in a fight and had his head slammed into the side of a bus stop a few times
Assessments	
BISI	TBI level - Moderate - Severe TBI index – Extremely severe
SPANS	Orientation – Extremely Low Attention and Concentration - Low Language – Very Low Memory and Learning – Very Low Visuo-Motor Performance – Extremely Low Efficiency – Extremely Low Conceptual Flexibility – Extremely Low
IPP sentence interview	

Completed and transcribed	
Brain injury interview	
Completed and transcribed	
Follow-up procedure	
Debrief sheet given?	Yes
Further information requested?	Yes
Referral to healthcare needed?	No

Step 3 – Extract information from Parole Board dossier(s)

Parole Board reviews	
#1	No recommendation for progression. Paper review
#2	No recommendation for progression. Paper review
#3	No recommendation for progression or release. Paper review
#4	No recommendation for progression or release, Paper review
#5	No recommendation for progression or release, Paper review
#6	No recommendation for progression or release, OH
Psychological risk assessment reports	
#1	SARN report
#2	SPRE
#3	Independent Psychology report
#4	Addendum SPRE
Specialist reports	
#1	Psychiatric report
#2	IPDE assessment
#3	Psychiatric report
Previous assessments	
WAIS / WASI	Suitable for mainstream programmes
DKEFS	N/A
PD assessment	Diagnosed with paranoid, avoidant, antisocial and borderline PD
Neuropsych assessment	N/A
Other	Screens for possible ASD / Asperger's
Substance Use	
Alcohol	Yes, from age 9. Problematic use.
Illegal Drugs	Yes, Cannabis, ecstasy, cocaine from age 15
Other	N/K
Medical issues?	Refuses medication for ADHD
OBPs / Treatment	
#1	Core SOTP 2012
#2	TSP 2015
#3	DART programme (Drugs and Alcohol)?
Dropped out?	Removed from PIPE due to poor behaviour, but had completed 3 years plus
Excluded?	No
Prison Behaviour	
NOMIS entries	Numerous negative behaviour entries
Adjudication history	9 proved adjudications,

Transfer info	None for security reasons
Security info	General failures to follow rules
Other information	
Diagnosed ADHD, refuses medication	
Numerous suggestions of ASD / Asperger's, but has been discounted as not meeting the threshold for diagnosis	

Step 4 – Record and collate information

Assessments scored	Yes
IPP interview transcribed	Yes
Brain injury interview transcribed	Yes
Dossier information summarised	Yes
Case study written	Yes
Information noted on Data Summary table	Yes

Step 5 – Consider rival explanations

Poor prison behaviour is possibly due to PD issues and ADHD
ADHD symptoms and TBI symptoms are very similar, and it may be difficult to ascertain the cause of the problematic and treatment interfering behaviours

APPENDIX B - Completed Case Study Protocol: Case Study 'Mark'

Step 1 – Check eligibility and gather demographic information

Demographics	
Age	51
Gender	M
Offence	Arson, being reckless as to whether life endangered
Sentence type	IPP
Tariff length	2 years
Time served	11 years plus
No. of reviews	4
Recalled?	No
Returned to closed?	No
Eligible for inclusion?	YES
Information sheet given?	YES
Consent discussed and obtained?	YES

Step 2 – Record information from research interviews and assessments

Head injury information	
One very severe head injury, plus numerous less severe knocks to the head from seizures of which at least three are recorded in prison	
#1	Aged 17/18, hit with a baseball bat, had to have blood clots removed resulting in epilepsy and TBI
#2	Hits head when he has seizures and falls / collapses
#3	Hits head when he has seizures and falls / collapses
#4	Hits head when he has seizures and falls / collapses
Assessments	
BISI	TBI level - Moderate - Severe TBI index - Severe
SPANS	Orientation – Extremely Low Attention and Concentration – Extremely Low Language – Extremely Low Memory and Learning – Very Low Visuo-Motor Performance – Extremely Low Efficiency – Extremely Low Conceptual Flexibility – Extremely Low
IPP sentence interview	
Completed and transcribed	
Brain injury interview	
Completed and transcribed	
Follow-up procedure	
Debrief sheet given?	Yes
Further information requested?	No
Referral to healthcare needed?	No

Step 3 – Extract information from Parole Board dossier(s)

Parole Board reviews	
#1	No recommendation for progression
#2	No recommendation for progression
#3	No recommendation for progression, adjourned for specialist input
#4	No recommendation for progression, adjourned for further assessment
#5	Ongoing pending hoped transfer to specialist unit
Psychological risk assessment reports	
#1	Clinical psychology report
#2	SPRE
Specialist reports	
#1	Psychiatric report
#2	Psychiatric report
#3	Report of Consultant Psychiatrist review
Previous assessments	
WAIS / WASI	None reported, IQ suggested to be 'average'
DKEFS	None reported, but evidence of executive dysfunction
PD assessment	None undertaken
Neuropsych assessment	CT scan; Neuropsychological assessment
Other	
Substance Use	
Alcohol	Some, binge drinks
Illegal Drugs	No
Other	No
Medical issues?	Diagnosed with epilepsy, takes medication
OBPs / Treatment	
#1	ETS
#2	CSB
#3	CALM
#4	TC+ - was removed after the assessment stage due to poor behaviour
Dropped out?	No
Excluded?	TC+ - see above, also found unsuitable for G.T.C due to medication
Prison Behaviour	
NOMIS entries	Prison behaviour often poor, numerous ACCTs, Basic IEP
Adjudication history	7 proved
Transfer info	None for security reasons
Security info	Mostly due to self-harm which is constant and excessive
Other information	
Application to Progression Regime rejected	
Transfer to neurological rehabilitation facility rejected as assessed as having no rehabilitative need	

Step 4 – Record and collate information

Assessments scored	Yes
IPP interview transcribed	Yes
Brain injury interview transcribed	Yes
Dossier information summarised	Yes
Case study written	Yes
Information noted on Data Summary table	Yes

Step 5 – Consider rival explanations

Failure to progress is likely to be due to concerns regarding Mark's ability to cope outside of prison
Securing move on accommodation is difficult due to previous offences of arson of his dwellings

APPENDIX B - Completed Case Study Protocol: Case Study 'Bill'

Step 1 – Check eligibility and gather demographic information

Demographics	
Age	44
Gender	Male
Offence	Sexual offences
Sentence type	IPP
Tariff length	1 year 10 months
Time served	10+ years
No. of reviews	5
Recalled?	No
Returned to closed?	No
Eligible for inclusion?	YES
Information sheet given?	YES
Consent discussed and obtained?	YES

Step 2 – Record information from research interviews and assessments

Head injury information	
Reported three serious blows to the head	
#1	Aged 6, was hit on the head with a poker
#2	Aged 9, was pushed in front of a car, resulting in a coma
#3	Aged 22, a diesel tank fell on his head
Assessments	
BISI	TBI level - Moderate - Severe TBI index – Extremely severe
SPANS	Orientation – Extremely Low Attention and Concentration – Extremely Low Language – Extremely Low Memory and Learning – Extremely Low Visuo-Motor Performance – Not scored Efficiency – Extremely Low Conceptual Flexibility – Extremely Low
IPP sentence interview	
Completed and transcribed	
Brain injury interview	
Completed and transcribed	
Follow-up procedure	
Debrief sheet given?	Yes
Further information requested?	Yes
Referral to healthcare needed?	No

Step 3 – Extract information from Parole Board dossier(s)

Parole Board reviews	
#1	No recommendation for progression, paper review
#2	Directed to oral hearing, no recommendation
#3	No recommendation for progression
#4	No recommendation for progression
#5	Deferred for PD assessment
Psychological risk assessment reports	
#1	Independent Clinical Psychologist report
#2	SARN report
#3	Independent psychology report
#4	SPRE
#5	Independent psychology report
Specialist reports	
#1	Psychiatric report
Previous assessments	
WAIS / WASI	Extremely low, mild LD
DKEFS	None
PD assessment	IPDE directed, not yet completed
Neuropsych assessment	None
Other	Brain scan aged 9, no follow-up treatment PCL-R, F1 88 th percentile, F2 28 th percentile
Substance Use	
Alcohol	States no issues
Illegal Drugs	Some previous use
Other	N/K
Medical issues?	
OBPs / Treatment	
#1	ETS, poor report
#2	BNM, challenged post BNM SARN report
#3	Completed 8 sessions of 1:1 work, little progress
Dropped out?	No
Excluded?	No
Prison Behaviour	
NOMIS entries	Mixed behaviour, negative entries, frequently on ACCT, often on Standard IEP level
Adjudication history	Numerous proven adjudications (c25)
Transfer info	None for security reasons
Security info	Self-harms, victim of bullying, manipulative and aggressive to staff, makes accusations
Other information	
Diagnosed with ADHD, prescribed medication	
Further 1:1 work, TC/PIPE recommended but not completed as he refuses to engage	
Extensive contact with the MH team, some previous self-harm	

Step 4 – Record and collate information

Assessments scored	Yes
IPP interview transcribed	Yes
Brain injury interview transcribed	Yes
Dossier information summarised	Yes
Case study written	Yes
Information noted on Data Summary table	Yes

Step 5 – Consider rival explanations

Failure to progress is due to poor behaviour and refusal to engage in further treatment

APPENDIX B - Completed Case Study Protocol: Case Study 'Carl'

Step 1 – Check eligibility and gather demographic information

Demographics	
Age	41
Gender	Male
Offence	Robbery
Sentence type	IPP
Tariff length	1 year 2 months
Time served	Over 10 years
No. of reviews	2 since recall
Recalled?	Yes
Returned to closed?	Yes
Eligible for inclusion?	YES
Information sheet given?	YES
Consent discussed and obtained?	YES

Step 2 – Record information from research interviews and assessments

Head injury information	
Four separate incidents described, although there are likely to be more minor injuries from blows to the head	
#1	Aged 10, fell off a swing, unconscious for about 10 minutes
#2	Aged 25, motorbike accident, unconscious about 1 hour
#3	Aged 28, fight, unconscious about 15 minutes
#4	Aged 29, smashed in the head with a glass
Assessments	
BISI	TBI level - Moderate - Severe TBI index - Very severe
SPANS	Orientation - Average Attention and Concentration - Average Language – High Memory and Learning - Average Visuo-Motor Performance - Average Efficiency - Average Conceptual Flexibility - Average
IPP sentence interview	
Completed and transcribed	
Brain injury interview	
Completed and transcribed	
Follow-up procedure	
Debrief sheet given?	Yes
Further information requested?	Yes
Referral to healthcare needed?	No

Step 3 – Extract information from Parole Board dossier(s)

Parole Board reviews	
#1	No recommendation for progression
#2	Recommendation progression to open
#3	Recommendation for progression to open following return to closed
#4	Following return to closed conditions, recommend progression to Category D prison
#5	Released
#6	Following recall, no recommendation for re-release
#7	Released
#8	1 st since last recall, deferred
#9	2 nd since recall, no recommendation for progression
Psychological risk assessment reports	
#1	SPRE
#2	Independent psychological report
#3	SPRE plus addendum
#4	Independent psychological report
#5	SPRE plus addendums
Specialist reports	
#1	Psychiatric report
#2	IPDE
Previous assessments	
WAIS / WASI	Average intelligence
DKEFS	None
PD assessment	IPDE screen, possible BPD traits, Full IPDE diagnosed APD
Neuropsych assessment	
Other	
Substance Use	
Alcohol	Excessive use
Illegal Drugs	Excessive use
Other	N/K
Medical issues?	Prescribed anti-depressants
OBPs / Treatment	
#1	RaPT
#2	TSP
#3	AIP
#4	SCP
Dropped out?	No
Excluded?	No
Prison Behaviour	
NOMIS entries	Mixed reports, periods of both good and very poor behaviour
Adjudication history	About 6 proven adjudications
Transfer info	Frequent moves due to recalls etc
Security info	Self-harm and suicide risk, aggressive, fights with prisoners, makes threats, drug use in prison, damages cell
Other information	

Frequent failures on ROTL and following release
Use of drugs in prison and on licence
Struggles to cope emotionally since the death of his brother

Step 4 – Record and collate information

Assessments scored	Yes
IPP interview transcribed	Yes
Brain injury interview transcribed	Yes
Dossier information summarised	Yes
Case study written	Yes
Information noted on Data Summary table	Yes

Step 5 – Consider rival explanations

Poor custodial behaviour and failures after release due to substance use
Struggles to comply with regime consistently

APPENDIX B - Completed Case Study Protocol: Case Study 'Harry'

Step 1 – Check eligibility and gather demographic information

Demographics	
Age	55
Gender	Male
Offence	Sexual Assault
Sentence type	IPP
Tariff length	2 years 7 months
Time served	12 years plus
No. of reviews	5
Recalled?	No
Returned to closed?	No
Eligible for inclusion?	YES
Information sheet given?	YES
Consent discussed and obtained?	YES

Step 2 – Record information from research interviews and assessments

Head injury information	
Serious blows to head x 3. Feels the last one affected his memory, concentration and day to day life. Feels can come across as aggressive at times. States has had fits in the past, and has blacked out due to substance use in the past.	
#1	19 years old, fell off fairground ride and cut head open, felt dizzy
#2	20 years old, hit on head whilst stealing coal, no effects
#3	37 years old, hit on head from behind with hammer, felt dizzy and unstable, had to go to hospital, unconscious maybe 5 minutes.
Assessments	
BISI	TBI level - Moderate - Severe TBI index - Moderate
SPANS	Orientation – Very Low Attention and Concentration - Low Language - Average Memory and Learning - Average Visuo-Motor Performance - Average Efficiency – Very Low Conceptual Flexibility - Average
IPP sentence interview	
Completed and transcribed	
Brain injury interview	
Completed and transcribed	
Follow-up procedure	
Debrief sheet given?	Yes

Further information requested?	Yes
Referral to healthcare needed?	No

Step 3 – Extract information from Parole Board dossier(s)

Parole Board reviews	
#1	No release or transfer to open
#2	No release or transfer to open
#3	No release or transfer to open
#4	No release or transfer to open
#5	No release or transfer to open
Psychological risk assessment reports	
#1	SARN (NOMS)
#2	Clinical psychology report
#3	SARN (NOMS)
#4	SARN (HMPPS)
#5	IPDE (HMPPS)
Specialist reports	
#1	Psychiatric report. Prepared for court
Previous assessments	
WAIS / WASI	Not known
DKEFS	N/A
PD assessment	IPDE, probable Paranoid and Avoidant
Neuropsych assessment	None undertaken
Other	
Substance Use	
Alcohol	Some, not problematic
Illegal Drugs	Previous heavy use of cannabis resin
Other	Painkillers for arthritis
Medical issues?	Arthritis, depression
OBPs / Treatment	
#1	ETS
#2	Core SOTP
#3	Extended SOTP
#5	HSP
Dropped out?	No
Excluded?	No
Prison Behaviour	
NOMIS entries	
Adjudication history	
Transfer info	None for security reasons
Security info	Indicators of on-going interest in sexual abuse of children
Other information	

Step 4 – Record and collate information

Assessments scored	Yes
IPP interview transcribed	Yes
Brain injury interview transcribed	Yes
Dossier information summarised	Yes
Case study written	Yes
Information noted on Data Summary table	Yes

Step 5 – Consider rival explanations

Failure to progress due to ongoing risk and entrenched abuse supportive attitudes, rather than TBI
--

APPENDIX B - Completed Case Study Protocol: Case Study 'Chris'

Step 1 – Check eligibility and gather demographic information

Demographics	
Age	30
Gender	Male
Offence	Robbery, Assault with intent to commit robbery
Sentence type	IPP
Tariff length	2 years
Time served	Over 10 years
No. of reviews	4
Recalled?	No
Returned to closed?	No
Eligible for inclusion?	YES
Information sheet given?	YES
Consent discussed and obtained?	YES

Step 2 – Record information from research interviews and assessments

Head injury information	
Reports two serious blows to the head, but states there are likely to be more from fights and falls when drunk etc that he does not recall specifics of	
#1	Aged 14, received a blow to the head in a street fight, no use of weapons, unconscious 5-10 mins
#2	Aged 19-20, was hit on the head with a bat, unconscious for over 1 hr
Assessments	
BISI	TBI level - Moderate - Severe TBI index - Severe
SPANS	Orientation - Average Attention and Concentration - High Language - High Memory and Learning - Low Visuo-Motor Performance - Average Efficiency - Average Conceptual Flexibility - Average
IPP sentence interview	
Completed and transcribed	
Brain injury interview	
Completed and transcribed	
Follow-up procedure	
Debrief sheet given?	Yes
Further information requested?	Yes
Referral to healthcare needed?	No

Step 3 – Extract information from Parole Board dossier(s)

Parole Board reviews	
#1	No recommendation for progression
#2	No recommendation for progression
#3	No recommendation for progression
#4	No recommendation for progression
Psychological risk assessment reports	
#1	SPRE
Specialist reports	
#1	None
Previous assessments	
WAIS / WASI	None
DKEFS	None
PD assessment	None
Neuropsych assessment	None
Other	Suggestion of ADHD traits, self-harm.
Substance Use	
Alcohol	Yes, excessive, has led to blackouts
Illegal Drugs	Yes, excessive, has led to blackouts
OBPs / Treatment	
#1	TSP completed
#2	Victim Awareness completed
#3	ART completed
#4	Alcohol Related Violence (de-selected self)
#5	TC (de-selected for drug use)
#6	RaPT (de-selected for drug use)
Dropped out?	Yes
Excluded?	Yes
Prison Behaviour	
NOMIS entries	Prison behaviour extremely poor, often on basic IEP level. Can demonstrate more positive behaviour, but doesn't last.
Adjudication history	Over 60 proven adjudications.
Transfer info	Numerous moves for security reasons and due to being under threat due to drugs debts
Security info	Extensive security notifications
Other information	
Refuses to go back to TC or PIPE	
Uses drugs in prison, extremely poor behaviour.	

Step 4 – Record and collate information

Assessments scored	Yes
IPP interview transcribed	Yes
Brain injury interview transcribed	Yes
Dossier information summarised	Yes
Case study written	Yes

Information noted on Data Summary table	Yes
---	-----

Step 5 – Consider rival explanations

Failure to progress is due to drug use and rule infringements

APPENDIX C - Summary of information table

	<i>Gibby</i>	<i>Mark</i>	<i>Bill</i>	<i>Carl</i>	<i>Harry</i>	<i>Chris</i>
BISI	TBI Moderate – Severe, TBI index Extremely severe, positive for post-traumatic amnesia and developmental disorders	TBI Moderate – Severe, TBI index Severe, positive for post traumatic amnesia. No developmental disorders	TBI Moderate – Severe, TBI index Extremely severe, positive for post-traumatic amnesia and developmental disorders	TBI Moderate – Severe, TBI index Very severe, positive for post-traumatic amnesia.	TBI Moderate – Severe, TBI index Moderate, positive for post-traumatic amnesia. No developmental disorders.	TBI Moderate – Severe, TBI index Severe, positive for post-traumatic amnesia. No developmental disorders.
Head Injury / TBI	At least 10 incidents, many serious, periods of lack of consciousness	Serious injury from baseball bat age 21, lost consciousness, in hospital for 9 months. Had blood clots removed, developed epilepsy. Then numerous injuries when hits head during seizures.	3 serious injuries, aged 6, 9 & 22	4 serious head injuries, 1 st aged 10. 3 injuries led to loss of consciousness.	3 serious blows to head, 1 st at age 19, one period of unconsciousness.	2 serious blows to the head, both with loss of consciousness. Also numerous other less serious blows to the head from fights and falls when drunk.
Impact of TBI on functioning	Memory and concentration problems	Impaired memory function, some suggestion of speech problems	Impaired memory and concentration	None apparent	Memory problems following last assault, also assessed for speech problems	Self-reports memory and concentration problems.
Main offence type	Sexual offending (child victim)	Arson	Sexual offending (adult victim)	Robbery	Sexual offending (child victim)	Robbery & Assault

	<i>Gibby</i>	<i>Mark</i>	<i>Bill</i>	<i>Carl</i>	<i>Harry</i>	<i>Chris</i>
Impact of TBI on offending		States didn't offend prior to the head injury aged 17/18. 1 st offence aged 20.	Two serious injuries at a young age, only minor offending before last head injury (aged 22), however serious head injury aged 9	Potential impact of BI on tolerance to alcohol.	States none	Self-reports that he thinks he became more violent and impulsive
Any BI diagnosis	No	Yes	Brain scan as a child, aged 9, diagnosis unclear, no follow-up treatment	No, had a CT scan after accident which noted a hairline fracture to skull	No	No
Other relevant conditions		Epilepsy	Bell's Palsy States also has blackouts but doesn't know why.	No	No	No
Other diagnoses?	ADHD Paranoid PD Avoidant PD Borderline PD Anti-social PD Mixed views re: ASD	Epilepsy	ADHD LD	Depression	Probable Avoidant PD Probable Paranoid PD Depression ASD?	No, but likely to score for APD and potentially ADHD
Substance misuse	Alcohol, cannabis, ecstasy, cocaine	Alcohol use from age 5	Some previous drug use, no alcohol problems.	Severe previous alcohol use, drug use (NPS) in prison.	Some alcohol use, has blacked out Drugs - cannabis	Yes, severely problematic alcohol and drug use
Prison Behaviour	Poor, numerous rule infringements	Some adjudications, rude to staff, at	Poor, numerous adjudications. 23	Varies, has been good on occasion,	No transfers for security reasons, no	Extremely poor, 60+ adjudications,

	<i>Gibby</i>	<i>Mark</i>	<i>Bill</i>	<i>Carl</i>	<i>Harry</i>	<i>Chris</i>
	and adjudications, inconsistent, immature	least one violent incident. Numerous ACCTs opened, self-harm dominates prison behaviour	adjudications in a 2 year period. Generally for low level infractions. On ACCTs at times.	at times extremely poor. Numerous ACCTs, lots of security info. Uses drugs, struggles to maintain good behaviour for long periods of time	adjudications, an occasional IEP warning.	periods on basic and in CSU. Numerous transfers for security reasons. Assaults on staff and inmates, makes and uses weapons, verbal outbursts.
Impulsive (behavioural and/or cognitive)	Yes	Some evidence	Yes	Yes	Yes	Yes
Poor emotional control	Yes	Yes	Yes	Yes	Not apparent	Yes
Poor behavioural control	Yes	Yes	Yes	Yes	Not apparent	Yes
Anger / aggression issues	Yes	Some evidence	Yes	Yes	Some evidence	Yes
Poor consequential thinking	Yes	Yes	Yes	Yes	Yes	Yes
SPANS deficits	Extremely low on: Orientation, Visuo-Motor performance,	Extremely low on: Orientation, Attention/Concentr	Extremely low on all indexes.	None, all indexes Average, except Language - High	Average on Language, Memory/Learning	All Average except Attention/Concentration High;

	<i>Gibby</i>	<i>Mark</i>	<i>Bill</i>	<i>Carl</i>	<i>Harry</i>	<i>Chris</i>
	Efficiency, Conceptual Flexibility Very low on; Language, Memory	ation, Language, Visuo-Motor performance, Efficiency, Conceptual Flexibility. Very low on: Memory/Learning			Visuo-motor performance, Conceptual Flexibility. Very low on Orientation, Low on Attention / Concentration, Extremely low on Efficiency	Memory/learning Low
IQ	120, above average	Extremely Low	Mild LD, FSIQ Extremely Low	At least average	No information	At least average
PB Reviews	6, no progression	4, but with numerous deferments.	5, No progression	4? Prior to release, 2 since recall	5, No progression	5, No progression
OBPs	SOTP, TSP. Motivation fluctuates, treatment interfering behaviours, mixed reports of benefit, struggled to retain learning, removed from PIPE after 3 years	ETS, CSB. CALM. Limited learning and retention	ETS, BNM. Struggles to provide examples of what he has learnt. Lacked motivation.	TSP, RAPT, AIP, SCP. Positive reports, appears able to retain information and skills learnt.	ETS, SOTP, Extended SOTP, HSP. Limited motivation and engagement.	TSP (also ETS on previous sentence), ARV, ART, dropped out of RaPT and TC dye to drug use. Mixed reports.

	<i>Gibby</i>	<i>Mark</i>	<i>Bill</i>	<i>Carl</i>	<i>Harry</i>	<i>Chris</i>
Further treatment	Not suitable. Referred for PD service.	Not suitable, referred for specialist BI unit	Recommended for TC and/or PIPE. Refuses. Schema work also recommended.	None recommended.	Recommended PIPE	Recommended PIPE or TC
Medication	Refuses to take	Takes medication for epilepsy	Takes medication for ADHD	None	None	None at present. Previously on methadone script
IPP sentence issues	Anxiety, doesn't fully understand the need for it, feels IPPs treated badly	Extremely frustrated, wants to be out, doesn't understand why he is still in. Struggles in OHs.	Doesn't fully understand the process or questions, feels needs more support.	Frustrated at sentence and recalls.	Frustrated with PBRs and lack of progress.	Frustrated, disengages, hasn't had a full oral hearing.
Additional support in custody	None. OM suggests attending OH will be problematic for him given his clinical problems	Staff are aware of BI, various referrals made	Doesn't receive any	None	None	None
Additional support considered post release	None	Looking to release to a specialist supportive environment	Not mentioned	None mentioned	None mentioned	None mentioned

APPENDIX D – Issues and Categories table

Issues were identified by the researcher and recorded as separate pieces of information relevant to a conceptual category. When an issue was recorded as relevant in three or more cases it was identified for further discussion (indicated in bold).

Issue identified	Gibby	Mark	Bill	Carl	Harry	Chris	Conceptual Category
Brain injury diagnosed	N	Y	?	N	N	N	Lack of support
Head injuries before age 12	N	N	Y	Y	N	N	Behavioural problems
Head injuries aged 12- 20	Y	N	?	?	Y	Y	Behavioural problems
Self-reports impaired memory	Y	Y	Y	N	Y	Y	Impaired functioning
Self-reports impaired concentration	Y	N	Y	N	Y	Y	Impaired functioning
TBI before offending	Y	Y	Y	Y	Y	N	Behavioural problems
Offending before TBI	N	N	N	N	N	Y	Behavioural problems
Positive for post traumatic amnesia	Y	Y	Y	Y	Y	Y	Impaired functioning
Multiple head injuries	Y	Y	N	N	?	?	Behavioural problems
One PD diagnosis	Y	N	N	N	?	?	Co-morbidity
Multiple PD diagnosis	Y	N	N	N	?	N	Co-morbidity
ADHD diagnosis	Y	N	Y	N	N	?	Co-morbidity
ASD diagnosis	?	N	N	N	?	N	Co-morbidity
Epilepsy diagnosis	N	Y	N	N	N	N	Co-morbidity
Excessive alcohol use	Y	Y	N	Y	Y	Y	Substance use
Blackouts due to alcohol	Y	N	N	Y	Y	Y	Substance use

Issue identified	Gibby	Mark	Bill	Carl	Harry	Chris	Conceptual Category
Excessive drug use	Y	N	?	Y	Y	Y	Substance use
Blackouts due to drugs	Y	N	N	Y	Y	Y	Substance use
Many adjudications	Y	?	Y	Y	N	Y	Behavioural problems
Negative comments from staff	Y	Y	Y	Y	Y	Y	Behavioural problems
One ACCT	N	Y	Y	Y	N	Y	Emotional problems
Numerous ACCTS	N	Y	?	Y	N	Y	Emotional problems
Described as behaviourally impulsive	Y	Y	Y	Y	Y	Y	Behavioural problems
Described as having poor emotional control	Y	Y	Y	Y	?	Y	Emotional problems
Described as having poor behavioural control	Y	Y	Y	Y	N	Y	Behavioural problems
Anger / aggression issues	Y	?	Y	Y	Y	Y	Behavioural problems
Depression	N	N	N	Y	Y	Y	Emotional problems
Anxiety	N	N	Y	N	N	N	Emotional problems
Self-Harm	N	Y	Y	Y	N	Y	Emotional problems
Suicidal	N	Y	N	?	N	N	Emotional problems
Described as having poor consequential thinking	Y	Y	Y	Y	Y	Y	Impaired functioning
Low IQ	N	Y	Y	N	N	N	Impaired functioning
More than 4 PBRs	Y	Y	Y	Y	Y	Y	IPP sentence issues

Issue identified	Gibby	Mark	Bill	Carl	Harry	Chris	Conceptual Category
More than 6 PBRs	Y	N	N	Y	N	N	IPP sentence issues
Recalled?	N	N	N	Y	N	N	IPP sentence issues
Re-categorised?	N	N	N	N	N	N	IPP sentence issues
At least 1 OBP	Y	Y	Y	Y	Y	Y	Treatment problems
More than 1 OBPs	Y	Y	Y	Y	Y	Y	Treatment problems
Poor treatment benefit?	Y	Y	Y	Y	Y	Y	Treatment problems
No further treatment suitable	N	Y	N	Y	N	N	Treatment problems
Outstanding treatment needs	Y	Y	Y	?	Y	Y	Treatment problems
Refuses treatment (psychological)	?	N	Y	Y	?	?	Treatment problems
Refuses medication	Y	N	N	N	N	N	Treatment problems
Anxiety re: sentence	Y	Y	Y	Y	Y	Y	IPP sentence issues
Poor understanding of sentence	Y	Y	Y	N	N	N	IPP sentence issues
Anxiety re: PB hearings	Y	Y	Y	Y	Y	Y	IPP sentence issues
Poor understanding of PB process	N	Y	Y	N	N	N	IPP sentence issues
Feels hopeless / helpless re: sentence	Y	Y	Y	Y	Y	Y	IPP sentence issues
Frustrated re sentence / lack of progress	Y	Y	Y	Y	Y	Y	IPP sentence issues

Issue identified	Gibby	Mark	Bill	Carl	Harry	Chris	Conceptual Category
Understands impact of TBI	?	Y	?	N	N	N	Lack of support
Does not understand impact of TBI	?	N	?	Y	Y	Y	Lack of support
Additional support re TBI given in custody	N	Y	N	N	N	N	Lack of support
Additional support re TBI considered post release	N	Y	N	N	N	N	Lack of support
SPANS ORI V Low or Ext Low	Y	Y	Y	N	Y	N	Impaired Functioning
SPANS ACI V Low or Ext Low	N	Y	Y	N	Y	N	Impaired Functioning
SPANS LAI V Low or Ext Low	Y	Y	Y	N	N	N	Impaired Functioning
SPANS MLI V Low or Ext Low	Y	Y	Y	N	N	N	Impaired Functioning
SPANS VPI V Low or Ext Low	Y	Y	Y	N	N	N	Impaired Functioning
SPANS ECI V Low or Ext Low	Y	Y	Y	N	Y	N	Impaired Functioning
SPANS CFI V Low or Ext Low	Y	Y	Y	N	N	N	Impaired Functioning
TBI index very severe or above	Y	N	Y	Y	N	N	Impaired Functioning
Staff not aware of issues with TBI	Y	N	Y	Y	Y	Y	Lack of support
Poor retention from programmes	Y	Y	Y	N	Y	?	Treatment problems
Negative comments in PPR	Y	Y	Y	N	?	Y	Treatment problems
Doesn't use skills from programmes	Y	Y	Y	Y	Y	Y	Treatment problems
Diagnosed with a mental illness	N	N	N	N	N	N	Co-morbidity
Verbal outbursts	Y	Y	Y	Y	Y	Y	Behavioural problems
Childhood trauma/abuse	N	Y	Y	Y	Y	?	Emotional problems

Issue identified	Gibby	Mark	Bill	Carl	Harry	Chris	Conceptual Category
Foetal Alcohol Syndrome	N	N	N	N	N	N	Co-morbidity
Developmental problems	?	N	?	N	N	N	Co-morbidity
Raised outside of family home	Y	?	Y	N	Y	N	Emotional problems
In local authority care	N	?	Y	N	N	N	Behavioural problems
Homeless / accommodation problems	?	Y	Y	Y	Y	N	Behavioural problems
Lack of personal support	?	Y	Y	?	Y	?	Lack of support
Uses drugs in custody	?	N	N	Y	N	Y	Substance use
Uses alcohol in custody / on ROTL	N	N	N	Y	N	?	Substance use
Indications of childhood neglect	?	?	Y	Y	Y	?	Emotional problems

APPENDIX E – Participant information sheet



**HM Prison &
Probation Service**



**UNIVERSITY OF
LEICESTER**

RESEARCH STUDY

**An investigation into the potential effect of traumatic brain injury on
progression through an Indeterminate Sentence for Public Protection
(IPP sentence)**

Information sheet for prisoners

What is the research about?

I want to know why some prisoners serving an IPP sentence find it harder to progress through their sentence than others. In particular I want to know if the effects of blows or injury to the head, or other forms of acquired brain injury are linked to how well prisoners progress through their sentence so they can reach open conditions or get released. If we think there is a link between brain injury and progress through a sentence we may be able to identify ways to help prisoners progress through their sentence that haven't been considered much before. A lot of prisoners might have suffered from injury or blows to the head in the past, for instance from playing sport, being in traffic accidents, being involved in fights or being assaulted. There are also other reasons for injury to the brain, such as illness or substance use.

Why am I being asked to do the research?

You are currently serving an IPP sentence. Prisoners eligible to be included in this study are those who have served at least 50% over their tariff (the shortest amount of time you were told you would need to stay in prison) and those who have been released and then recalled to prison. We want to include prisoners who feel that they may have acquired a brain injury in the past, maybe from a car accident, or by receiving injuries to the head. We hope the information gathered will help to support individuals in prison and in the community by increasing our understanding of why some prisoners are finding it hard to progress through their sentence.

What will I be asked to do?

I am asking for volunteers to complete an assessment that will be carried out by myself or one of my colleagues. This will take about 45 minutes to 1 hour, and is a series of questions and simple tasks that you will be asked to complete. This assessment is called the Short Parallel Assessments of Neuropsychological Status (SPANS); if you have ever had a WAIS or WASI assessment it is a bit like that. You may also be asked some other questions afterwards so that the researcher can score the Brain Injury Screening Index (BISI) if this hasn't already been done, as well as some questions about how you feel about your sentence. Some IPP prisoners will already have had the BISI scored for them and if so this will not need to be done again. In total it is anticipated that the assessment will take about 1 – 1.5 hours to complete.

Can I be identified?

Only I and my colleagues who may carry out the assessment with you will have access to your name and NOMIS prison number, you will be given an individual participant number. When completed your assessment will be locked away in a cabinet only accessible to HMPPS Psychology Service staff. The assessment and other information about you will be written up into a case study to be included in the research paper. You will not be able to be identified in the research paper.

The information you provide will not be identified as coming from you or passed on to anyone else unless you mention any information or the completed questionnaires indicate any risks regarding you harming yourself or someone else, and/or any risks to the security of the prison. In these circumstances the relevant information may be passed on to the prison security department, those managing your sentence, safer custody or the police.

Will anyone else be contacted about what I tell you?

If the results from the SPANS or the Brain Injury Screening Index identifies that you have a possible brain injury which means you should be seen by a medical professional, we will make a referral to healthcare for you. We will only do this if you want us to.

What will happen if I do not want to take part or withdraw from the research?

Participation is voluntary. Your decision to take part or not to take part will not affect your chances of progression, access to treatment or any other opportunities.

If you begin completing the assessment and then change your mind about being involved then this is ok. The questions you have answered will not be used and will be destroyed. If you complete the assessment and later decide that you do not want to take part, all you need to do is give me your participant number (which will be written on the debrief sheet you are given when you do the assessment) and your questionnaires will be destroyed. I will let you know via letter when this has been completed.

All requests to withdraw from the research should be done through the prison application system or via letter (depending on your prison location) to:

Naomi Budd Senior Psychologist Psychology Department HMP [REDACTED]
--

You can withdraw from the research at any point up until four weeks after the assessment has been completed. Once the data is analysed I can't identify you, and so I will not know which assessment is yours and I will not be able to remove your answers from the study.

What happens to the information I provide?

The assessment that you complete will be stored in a locked briefcase or cabinet, where only those employed by HMPPS Psychology Service have access. It will not have your name or prison number on them. It will then be sent securely to the lead researcher (contact details below) to be analysed.

The information will be identifiable only by your participant number. If you agree to it, the paper copy of the assessment will be stored in your psychology file in case it is useful in the future. The database containing the data will be stored on an HMPPS computer for five years.

A report will be written about the findings of the research and this will be made available to the University of Leicester and HMPPS Psychology Service. Additionally, reports on the research may be written for publication in academic journals.

What will I get for taking part?

You will not receive anything for taking part and you will not lose anything if you do not take part in the research.

Your participation in this research would be really appreciated to ensure that you have the opportunity to contribute to research in relation to IPPs and potentially help to identify and address the needs of this group of prisoners.

Lead researcher

The lead researcher for this project is Naomi Budd, Senior Registered and Chartered psychologist. Naomi can be contacted via the psychology department at HMP [REDACTED].

APPENDIX F - Participant invitation letter



HM Prison &
Probation Service



UNIVERSITY OF
LEICESTER

RESEARCH STUDY

An investigation into the potential effect of traumatic brain injury on progression through an Indeterminate Sentence for Public Protection (IPP sentence)

Dear

My name is Naomi Budd, and I am employed as a Senior forensic psychologist in Her Majesty's Prison and Probation Service (HMPPS). I am also currently doing a Doctorate level qualification with the University of Leicester. As part of this qualification I am completing some research into the potential effects of head injury in prisoners.

I am writing to eligible indeterminate sentenced prisoners in the [REDACTED] region to ask if they would agree to take part in the study. To be eligible you need to be serving an IPP sentence, and be at least 50% over your tariff date. You can be in any category of prison, or have been released and recalled to prison. You may also have been identified as having a potential brain injury from previous research you took part in, or you or staff who have worked with you may feel that you have a potential brain injury because of previous accidents or injuries you have had to the head.

The research involves taking part in an assessment called the Short Parallel Assessments of Neuropsychological Status (SPANS). This measures how you complete certain tasks. If you have ever had a WAIS or WASI assessment it is a little bit like this. The assessment takes about 45 minutes to complete. If you agree to take part in the study I will arrange for myself or one of my colleagues to see you to complete the assessment. You will also be asked to answer a few questions about how you feel about your sentence. The assessment, and other information on you will be written up into an anonymised case study to be included in the research.

I have enclosed a prisoner information leaflet which explains the research and how you can be involved. You may have already completed some research on barriers to progression in IPP prisoners recently. If you have you can still take part in the research I am writing to you about now, it will just mean you don't need to answer additional questions on head injury as we will already have these. If you are willing to take part you will need to complete the attached consent form and return the reply slip to the psychology department at your prison.

Kind regards

Naomi Budd

HCPC Registered Forensic Psychologist & BPS Chartered Psychologist
HMP [REDACTED] & the University of Leicester

APPENDIX G – Participant consent form

Participant consent form

Please initial or tick the relevant boxes to indicate that you agree with each of the statements below.

1. I can confirm that I have read the information sheet for prisoners, or it has been read to me and I understand its contents. ☐
2. I have had enough opportunity to consider the information, ask any questions that I want to and they have been answered satisfactorily. ☐
3. I understand that my participation is voluntary and there will be no consequences if I choose not to take part. ☐
4. I understand that I can withdraw from the research by contacting the researcher up to four weeks from today. ☐
5. I understand that if I provide information which could represent a risk to myself, others or the security of the prison then this information may be passed on to relevant staff or authorities. ☐
6. I understand that if the Brain injury screening interview identifies that I have a possible brain injury which means I should be seen by a medical professional, a referral to healthcare will be made, if I consent to this. ☐
7. I agree to the following:
To undertake the Short Parallel Assessment of Neuropsychological Status (SPANS) and the Brain Injury Screening Index (if I have not already done this), and to answer additional questions about my sentence. ☐
I give permission for the SPANS record sheet and completed BSI to be kept in my HMPPS psychology file. ☐

Participant:

Name:..... Signed:..... Date:.....

Researcher:

I have explained the research to the participant and am satisfied that they are providing informed consent.

Name:..... Signed:..... Date:.....

APPENDIX H – Blank IPP interview

Participant interview

Participant ID _____

Alias _____

Section A

1. How long have you served?

2. How long was the minimum time you needed to serve?

3. Why do you think you have served so much longer?

Section B

1. Have you completed any Offending Behaviour Programmes, or other treatment? (if no, go to Section C)

2. What have you started / completed?

3. Have you ever dropped out of a programme, or had to leave it? If yes, why?

4. Tell me what you can remember about the programmes / treatment you have done

5. Do you think the programmes have helped you? Why?

6. Is there anything you feel could have helped you more in programmes or treatment?

Section C

1. What is your behaviour like in prison?

2. Do you get into trouble?

3. How many adjudications have you had?

4. Why do you think you get into trouble?

5. Do you think doing programmes has helped you stay out of trouble in prison?

6. What else has or could help your behaviour in prison?

Section D

1. How would you describe your experience of the parole process (reports, oral hearings etc)

2. Do you understand the parole process?

3. What are parole board hearings like for you?

4. Do you understand the questions parole board members ask you?

5. Do you feel you can give good answers about yourself and your risk of re-offending?

6. Is there anything that could be changed about the parole process that would help you?

Section E

1. Do you think that having head injuries or blows to the head in the past has affected how you think or behave?

2. Has anyone suggested that you may have some level of brain injury?

3. Would you like more information on how a brain injury may affect people who have had repeated blows to the head?

APPENDIX I – Blank brain injury screening interview

Participant number	
Participant name	
Age	
Gender	
Education (highest qualification obtained)	
IEP level	

1. **Have you ever had a serious blow to the head?** (serious means knocked out, felt dizzy, sick, or suffered memory loss, for example)

2. **If yes, how many times has this happened that you can remember?** If no – please go to question 8.

3. Ask the following questions for each incident they can remember (use the table on the back to record this – if there are more than 5 incidents use an additional sheet to record up to 10 incidents);
 - a. **When and how did it happen? Were you hit with a weapon, if so, what?** (dates or age is fine, plus a brief description, e.g. car accident, hit with bottle)
 - b. **Did it leave you feeling dizzy, unsteady or dazed?**
 - c. **Were you able to remember what happened to you in the hours after the incident?**
 - d. **Were you were knocked unconscious? If yes, for how long in minutes approximately. How do you know you lost consciousness?**
 - e. **Following the injury did you;**
 - i. **Go to hospital**
 - ii. **See a paramedic**
 - iii. **Do nothing**
 - iv. **Don't know**
 - v. **Other**
 - vi. **Do you think you should have gone to hospital / seen a paramedic but didn't because of how the injury occurred?**
4. **Do you notice any difference in yourself now compared to before you had the injury? If so, in what way?** (prompt for whether this is currently affecting their day to day life, if they feel it is, consider making a referral to healthcare)

5. **Do you think that the injuries you have had to your head affect your behaviour in prison, your progress on offending behaviour treatment programmes, or the way you come across in parole board hearings?** (if yes, prompt for details)

6. **Do you think you need to see a healthcare professional now about the injury/injuries you have had to your head?**

7. **Do you think that your offending got worse after you had a serious blow or injury to the head?** (prompt for more frequent, more serious, acted more impulsively, had less consideration for consequences etc)

8. **Have you ever had an illness affecting your brain?** (prompt for things like meningitis, stroke etc). **If yes, what was it** – give as many details as possible

9. **Have you ever suffered from epilepsy, fits or blackouts?** If yes, prompt for details such as frequency, date of last occurrence, are healthcare aware of this?

10. **Have you ever used drugs or alcohol to such an extent or for so long that you think it has caused you brain damage?** If yes, prompt for details

11. **Have you ever 'blacked out' due to drug or alcohol use?** If yes prompt for details

12. **Do you think you have significant problems with;**
 - a. **Memory** Y/N
 - b. **Concentration** Y/N
 - c. **Speech** Y/N
 - d. **Other – please specify** Y/N

If yes, please ask for details, such as whether they have seen a doctor or other specialist for this, when they first noticed the problem and if they feel it has affected their day to day life

13. **Have you ever seen a doctor for, or been diagnosed with;**
 - a. **Attention Deficit Hyperactivity Disorder (ADHD)** Y/N
 - b. **Learning difficulties / Intellectual disability / low IQ** Y/N
 - c. **Serious mental health problems** (please specify) Y/N

Healthcare referral

If the participant has indicated at Qn. 3 that they have had an injury that required medical assistance (whether or not they sought it, that they feel their head injury is causing them current problems in their day to day life (Qn. 4), has answered yes to Qn. 5, or indicated at Qn. 8 that they have current problems that healthcare are not aware of, please consider whether you need to make a referral to your establishment's healthcare department and if so complete the details below.

Participant number	
Date of referral to healthcare	
Referral made by (staff name)	

APPENDIX J – Participant debrief sheet

Participant debrief sheet

Thank you for meeting with the researcher to complete the SPANS and BISI assessment today. We hope that this research may help us identify different ways of supporting IPP prisoners in the future.

If any of the results from the SPANS assessment or the Brain Injury Screening Index (if completed) show that you may have an undiagnosed brain injury we can make a referral for you to be seen by healthcare. We will only do this if you want us to. If you would like a referral to be made, please tell the researcher now, or contact the psychology or healthcare department to request this is done, or to ask for additional information or advice.

Remember you can choose to withdraw consent for the research up to 4 weeks from today. Contact the psychology department or the lead researcher if you decide to do this.

If you have any questions or concerns, please contact me via the application process or letter to:

<p>Naomi Budd Senior Psychologist Psychology Department HMP [REDACTED]</p>

Please make sure you include your participant number in any correspondence with me or the other researchers.

Your participant number / alias is: _____

Thank you for your help with this research.

APPENDIX K – Blank BISI form

Brain Injury Screening Index (BISI®)

Date: ____/____/____ Age: ____ Gender: ☐ Male ☐ Female ☐ Prefer not to say

Education (years of full time education and/or highest qualification obtained): _____



	1 st Injury		2 nd Injury		3 rd Injury		4 th Injury		5 th Injury	
Q 1. Have you ever had a serious blow to the head?	YES <input type="checkbox"/>	NO <input type="checkbox"/> Ask Q 8.								
Q 2. When and how did it happen? Record here →										
Q 3. Did it leave you feeling dizzy, unsteady or dazed?	YES <input type="checkbox"/>	NO <input type="checkbox"/>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
Q 4. Were you able to remember what happened to you in the hours after the injury?	YES <input type="checkbox"/>	NO <input type="checkbox"/>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
Q 5. Were you told you were unconscious at the time? For how long? Record here (in minutes) →	YES <input type="checkbox"/>	NO <input type="checkbox"/>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	YES <input type="checkbox"/>	NO <input type="checkbox"/> Ask Q 8.
Q 6. Following the injury, did you (tick all that apply)										
Go to hospital	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
See a paramedic	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Do nothing	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Don't know	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Other (please specify)	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Q 7. Have you had any other blows to your head? How many? Record here →	YES <input type="checkbox"/>		NO <input type="checkbox"/>							
	Repeat Q 2-6 for 2 nd to 5 th injuries		Ask Q 8.							

Q 8. Have you ever had an illness affecting your brain?	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
What was it (give as many details as possible)?	Record here ➔		
Q 9. Have you suffered from epilepsy, fits or blackouts?	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
Q 10. Do you have any significant problems with your (tick all that apply)...	Memory <input type="checkbox"/> Speech <input type="checkbox"/> Concentration <input type="checkbox"/> Other (please specify) _____		
Q 11. Have you ever seen a doctor for, or been diagnosed with...	Tick all that apply below		
Attention Deficit Hyperactivity Disorder (ADHD)	<input type="checkbox"/>		
Learning difficulties or learning disabilities	<input type="checkbox"/>		
Serious mental health problems	<input type="checkbox"/>		

Copyright ©2014 The Disabilities Trust
Registered Trademark number UK00003075657
Permission is required for use, reproduction or display
This document may not be republished or amended without prior consent



APPENDIX L – SPANS indices and subtests, taken with permission from the SPANS manual (Burgess, (2014))

Constructs measured: SPANS subtests indices

The SPANS contains 33 subtests, arranged into seven indices that measure (1) orientation, (2) attention/concentration, (3) language, (4) memory/learning, (5) visuo-motor performance, (6) efficiency and (7) conceptual flexibility. Each of the indices possesses very good internal consistency (i.e. at least .70) in both versions A and B, suggesting a reliable unitary cognitive construct is measured in each index and between each of the alternate versions. A brief summary of the SPANS indices is as follows:

1. *Orientation Index (ORI)*: The ORI measures examinees' orientation to person, time, place and condition, recall of present and past political leadership, and estimation of the passage of time. On each of the ORI items, the number of points awarded is dependent upon a graded approximation scoring scheme that is sensitive to exact, near or distal (to the correct answer) responses: for example, an examinee's estimate of his / her own age maybe exact, one year younger, or twenty years younger, each of which suggests varying degrees of intact mental status that is then reflected in in some degree to the score that is received. All answers provided by the examinee for the ORI are verifiable by their medical notes or otherwise easily verifiable by the administrator.

2. *Attention/Concentration Index (ACI)*: The ACI measures several aspects of attention/concentration, including span or attention capacity, sustained and divided attention with response inhibition, mental control tasks of counting backwards in ones and threes, and mental monetary calculations, adding to the ecological or face validity of the assessment. The counting backwards and calculation tasks include a speed of information processing component, in which additional points may be earned if the correct answer is provided within a specified time limit.

3. *Language Index (LAI)*: The LAI incorporates measures to screen for aphasia, alexia and agraphia disorders, or to otherwise detect language disturbances, with subtests including confrontation naming (with a scoring scheme that reflects any need for phonetic cues), repetition, comprehension and free expressive language/verbal reasoning. Fluency or non-fluency of speech is evaluation through observation. Brief screenings of reading (reading and following written commands) and writing (original and dictated sentences) are also included, again providing an ecologically valid assessment of everyday activities.

4. *Memory and Learning Index (MLI)*: The MLI measures memory and learning via several means, including for verbal and visual material. Two 'recall' subtests are composed of 'learning' trials (i.e. repeated lists and associative learning), and two are composed of only a single exposure to the material. Three of the subtests contain a five-minute delay of an intervening (but unrelated and non-confounding) activity before the recall trial. Again, ecological validity was included as a feature (i.e. learning a shopping list).

5. *Visuo-Motor Performance Index (VPI)*: The VPI measures various visuo-spatial/visuo-perceptual and motor capabilities, including screening for spatial impairment and/or object perceptual agnosia. Following a visual screening test, the index includes visual attention and visual recognition memory, copy of geometric figures, visuo-motor coding, spatial and object

perception, reading emotion in facial expressions and visual concepts, with ‘free-choice’ and ‘recognition’ scoring criteria.

6. *Efficiency Index (ECI)*: The ECI combines the subtests with a timed element, thus evaluating the speed of reacting, thinking, scanning, and visuo-motor movement in unison, for an overall estimate of the efficiency of processing.

7. *Conceptual Flexibility Index (CFI)*: The CFI combines two subtests that each possess elements of concept formation, thinking laterally and flexibly, and combining concepts into a superordinate category, with both visual and verbal elements.

The table below provides an outline view of the subtests that compose each index, as well as error scores including number of commissions committed on the sustained and divided listening tasks, perceptual naming errors (number of semantic cues provided on the naming subtest and number of trials needed to learn a symbol-word association) and number of memory recall intrusions.

Outline of the SPANS subtest and indices

Indices	Subtests
Orientation Index	<ul style="list-style-type: none"> • Person (<i>name, date of birth, age</i>) • Time (<i>of day, day of week, month, year</i>) • Place (<i>city and type/name of place</i>) • Condition (<i>awareness of condition</i>) • Political Leadership (<i>present and past PM</i>) • Time Estimation (<i>how long was duration of testing</i>)
Attention/Concentration Index	<ul style="list-style-type: none"> • Digit Span Forward • Digit Span Backward • Sustained and Divided Listening – Round 1 • Sustained and Divided Listening – Round 2 • Counting Backwards • Monetary Calculations
Language Index	<ul style="list-style-type: none"> • Naming • Repetition • Yes/No Questions • Following Directions • Writing Sentences • Reading • Similarities
Memory/Learning Index	<ul style="list-style-type: none"> • Object Recall • Figures Recall • List Recall • List Recognition • Symbol-Word Paired-Associates
Visuo-Motor Performance Index	<ul style="list-style-type: none"> • Object Recognition • Spatial Decision • Unusual Views • Figures Copy

	<ul style="list-style-type: none"> • Letter-Number Coding • Figures Recognition • Facial Expressions • 3-and-1 Concept Test
Efficiency Index	<ul style="list-style-type: none"> • Sustained and Divided Listening – Round 2 • Counting Backwards • Monetary Calculations • Spatial Decision • Letter-Number Coding
Conceptual Flexibility Index	<ul style="list-style-type: none"> • Similarities • 3-and-1 Concept Test
Error Scores	<ul style="list-style-type: none"> • Perceptual Naming Errors • Memory Intrusions • Sustained Attention Commissions

APPENDIX M – Correspondence in relation to ethical approval

Naomi Budd [HMPS]

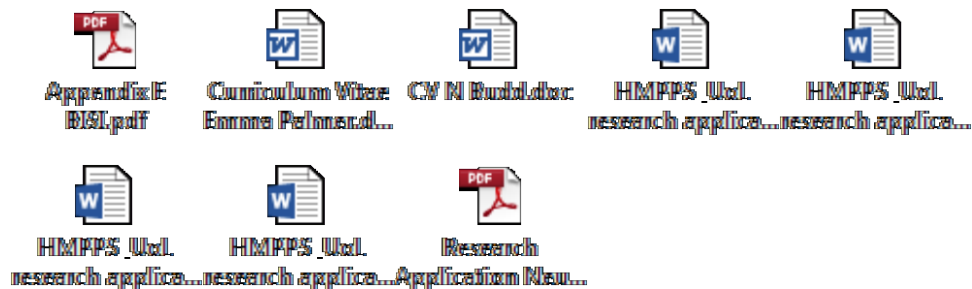
Sent: 24 October 2017 10:21

To: National Research [NOMS] <[REDACTED]>

Subject: Research application submission

Importance: High

Please find attached a research application for the Midlands area for consideration. Please let me know if you require any further information.



Many thanks,

Naomi Budd | Senior Psychologist

Regional allocations lead

HCPC Registered Forensic Psychologist

BPS Chartered Psychologist

Public Sector Prisons Psychology Service

Her Majesty's Prison and Probation Service | HMP [REDACTED]

[REDACTED]

[REDACTED]

e: naomi.budd@[REDACTED]



From: National Research [NOMS]

Sent: 24 October 2017 12:54

To: Budd, Naomi [HMPS] <[REDACTED]>

Subject: FW: Research application submission

Importance: High

Dear Naomi,

Thank you for the NRC Application. However, we are unable to take this forward at the moment, because it has been noted that the Research summary report for your research **NRC 2016-[REDACTED] (An investigation into potential barriers to progression in**

prisoners serving an Indeterminate sentence for Public Protection (IPP sentence).)
has not been submitted. The report completion date was 31/08/2017.

Once this report has been received by the NRC or if you can assure that the report is currently in the process of being written we will be able to take your new application forward. For your convenience attached is the Research Summary for HMPPS Template. When completed please email to [National.Research@\[REDACTED\]](mailto:National.Research@[REDACTED])



Kind regards,

[REDACTED]

NRC Co-ordinator

From: Budd, Naomi [HMPS]
Sent: 24 October 2017 12:56
To: National Research [NOMS] <[REDACTED]>
Subject: RE: Research application submission

Hi,

These are two separate pieces of research, one which is ongoing at the moment, and which is part of my day to day work, and the new one which is a separate study, being undertaken as part of my doctorate.

Naomi Budd | Senior Psychologist
Regional allocations lead
HCPC Registered Forensic Psychologist
BPS Chartered Psychologist
Public Sector Prisons Psychology Service
Her Majesty's Prison and Probation Service | [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

From: National Research [NOMS]
Sent: 24 October 2017 14:42
To: Budd, Naomi [HMPS] <[REDACTED]>
Subject: RE: Research application submission

Dear Naomi,

Unfortunately, even if the two research projects are unrelated, the NRC have the policy that we are unable to take the new application forward until the Research summary report for your research **NRC 2016** [REDACTED] has been

received or if you can assure that the report is currently in the process of being written. Sorry of the inconvenience caused, thank you.

Kind regards,

[REDACTED]

NRC Co-ordinator

From: Budd, Naomi [HMPS]

Sent: 02 November 2017 16:25

To: National Research [NOMS] <[REDACTED]>

Subject: RE: Research application submission

Hi [REDACTED]

I am currently in the process of analysing the data for the research covered by application number 2016 [REDACTED] and hope to be able to forward the research summary to yourselves in December.

Regarding my most recent research application, I will now have to make some changes to this in terms of timescales and proposed methodology, so would like to withdraw this. I will send you a new application in December.

Many thanks

Naomi

Naomi Budd | Senior Psychologist

Regional allocations lead

HCPC Registered Forensic Psychologist

BPS Chartered Psychologist

Public Sector Prisons Psychology Service

Her Majesty's Prison and Probation Service | [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

From: National Research [NOMS]

Sent: 03 November 2017 13:14

To: Budd, Naomi [HMPS] <[REDACTED]>

Subject: RE: Research application submission

Dear Naomi,

Thank you for updating the NRC.

Kind regards,

[REDACTED]

NRC Co-ordinator

From: National Research [NOMS]
Sent: 03 May 2018 11:36
To: Budd, Naomi [HMPS] <[REDACTED]>
Subject: NRC 2018-091 - Decision

Ms Naomi Budd
HMP [REDACTED]
[REDACTED]

HM Prison and Probation Service
National Research Committee
Email: [REDACTED]

[naomi.budd@\[REDACTED\]](mailto:naomi.budd@[REDACTED])

02 May 2018

Research Title: An examination of neuropsychological functioning and the progression of prisoners serving a sentence of

Imprisonment for Public Protection (IPP)

Ref: 2018-091

Dear Ms Budd,

Please find attached the decision letter from the National Research Committee.



Please could you provide the NRC with the information requested at your earliest convenience.

REQUEST FOR FURTHER INFORMATION – HMPPS RESEARCH

Ref: 2018-091

Title: An examination of neuropsychological functioning and the progression of prisoners serving a sentence of

Imprisonment for Public Protection (IPP)

Dear Ms Budd,

Further to your application to undertake research across HMPPS, the National Research Committee (NRC) has considered the details provided, alongside the requirements set out in the HMPPS research instruction (<https://www.gov.uk/government/organisations/her-majestys->

[prison-and-probation-service/about/research](#)) and has requested the following further information:

- How does the proposed research link to HMPPS business priorities?
- Please clarify the links between each of the research questions and each of the methods.
- The Disabilities Trust Foundation in partnership with the Barrow Cadbury Trust and the Pilgrim Trust are conducting a similar study (Traumatic Brain Injury Linkworker Pilot Evaluation) into the prevalence of ABI/TBI in certain prisons/regions including prevalence studies with IPP prisoners. How will the proposed research develop and inform the evidence base beyond the study mentioned above.
- How will 'moderate to severe' traumatic brain injury be determined?
- What is the rationale for choosing the Brain Injury Screening Index (BISI) and the Short Parallel Assessments of Neuropsychological Status (SPANS) to determine the extent of brain injury? Are they appropriate for use with prisoners? How will prisoners be supported who require assistance with completing the measures?
- What is the reasoning behind the case study approach? How does the approach link to any outcome regarding parole?
- What is the rationale for the sample size of 4-10? Given the small sample size and potentially other factors influencing IPP prisoners' failure to progress in their sentences, how will the findings lead to any wider understanding of the topic area?
- Bearing in mind the small sample size, how will it be ensured that individual respondents cannot be identified in the final research reports?
- Is the intention to interview prison staff? If so, how will they be selected? How many will be interviewed? What questions will the topic guide cover?
- How will the various sources of information (P-NOMIS, OASys, Parole Board Outcome letters, post programme reports, psychology files) be accessed?
- How will data from SPANS and BISI and the different sources of information be analysed?
- How will objectivity and conflict of interest be mitigated with the lead researcher or psychology staff asking prisoners in their establishments to participate in the project?
- Access to HMPPS files/records is limited without the individuals' consent. Will consent be sought and, if so, how?

Please send this further information (quoting your NRC Reference number) to the NRC (National.Research@NOMS.gsi.gov.uk) within 8 weeks of the date of this letter. If your response is not received within eight weeks your application will be treated as withdrawn and you will need to submit a new application should you wish to apply for NRC approval. Please note the research must not commence until the NRC has granted full approval, and a formal letter to that effect is provided.

Yours sincerely,



(on behalf of the National Research Committee)

REQUEST FOR FURTHER INFORMATION – HMPPS RESEARCH (REPLY)

Ref: 2018-091

Title: An examination of neuropsychological functioning and the progression of prisoners serving a sentence of Imprisonment for Public Protection (IPP)

Dear Ms Budd,

Further to your application to undertake research across HMPPS, the National Research Committee (NRC) has considered the details provided, alongside the requirements set out in the HMPPS research instruction (<https://www.gov.uk/government/organisations/her-majestys-prison-and-probation-service/about/research>) and has requested the following further information:

How does the proposed research link to HMPPS business priorities?

The research links directly to the business priority of IPP prisoners. I was asked to complete research in this area by HMPPS, and the scope and methodology of this study has been agreed by the National IPP lead [REDACTED] and the National Lead Psychologist [REDACTED]. HMPPS have undertaken considerable work with multi-agency partners to improve the progression of IPP prisoners and therefore research into potential reasons why many prisoners have failed to progress is important. The current evidence base suggests that undiagnosed brain injury could be a potential barrier to progression.

Please clarify the links between each of the research questions and each of the methods.

Principal research question: What do we know about the potential link between neuropsychological functioning, progress through the parole process and rate of progression of prisoners serving an indeterminate sentence for public protection? The use of the SPANS assessment will give information regarding the individual's neuropsychological functioning in the areas of orientation, attention and concentration, language, memory and learning, visuo-motor performance, efficiency and conceptual flexibility. These factors will be discussed in relation to the individual's response to treatment programmes, prison behaviour, performance during parole board hearings, and rate of progress through their sentence. The BISi is used to identify potential participants, rather than as a separate methodology.

Secondary research question: Is more support needed for prisoners with acquired or traumatic brain injury? The personalised case study approach will allow for the identification of additional support which may have assisted individuals whilst in prison, and for any participant having been recalled, after release.

The Disabilities Trust Foundation in partnership with the Barrow Cadbury Trust and the Pilgrim Trust are conducting a similar study (Traumatic Brain Injury Linkworker Pilot Evaluation) into the prevalence of ABI/TBI in certain prisons/regions including prevalence studies with IPP prisoners. How will the proposed research develop and inform the evidence base beyond the study mentioned above.

The Disabilities Trust study evaluated the linkworker scheme, and used the BISi as the primary information on brain injury. My proposed study progresses the research undertaken by the Disabilities Trust but aims to take a more in depth look at the interplay for IPP prisoners in particular between their brain injury, custodial adjustment and progress. Therefore this study aims to follow a small number of 'stuck' or recalled IPPs who have already been identified as having a suspected brain injury to look at how their brain injury

may impact on their response to treatment, behaviour in prison, and their experience of the parole process.

How will 'moderate to severe' traumatic brain injury be determined?

This will have been indicated by scores from existing BISI screenings. Any potential participants suspected of having a brain injury but not having had a BISI screen will be screened using the BISI prior to final selection to ensure consistency.

What is the rationale for choosing the Brain Injury Screening Index (BISI) and the Short Parallel Assessments of Neuropsychological Status (SPANS) to determine the extent of brain injury? Are they appropriate for use with prisoners? How will prisoners be supported who require assistance with completing the measures?

The BISI is not being used as part of the study itself, but to identify appropriate participants. It has been widely used with prisoners (The Disabilities Trust, 2016). The SPANS has been selected because of the detailed information it will yield on neuropsychological functioning across the 7 indices listed. It has been used with prisoners and inpatients and is appropriate for this population. The SPANS is an individually administered assessment and was designed for use with brain injured clients. It will be administered by myself, and I have received training in its administration from the test author. Full information and debrief will be given to the participants.

What is the reasoning behind the case study approach? How does the approach link to any outcome regarding parole?

The case study approach has been identified in order that numerous sources of information regarding the progress of this sample can be considered in depth. It is an appropriate method to use as it enables detailed information from multiple sources to be utilised. The focus is not on the outcome of parole, rather the individual's journey through the parole process.

What is the rationale for the sample size of 4-10? Given the small sample size and potentially other factors influencing IPP prisoners' failure to progress in their sentences, how will the findings lead to any wider understanding of the topic area?

It is envisaged that a sample of 4-6 will be used, with 10 advised as a maximum by Leicester University. The focus is on the impact of ABI and how it may manifest for that individual, as assessed using the SPANS assessment. The case study approach allows for other potential factors to be discussed, and a holistic picture of the impact of brain injury on the prisoner's progress through their sentence obtained. The SPANS has not been used in this context before, and the study, whilst small scale will add to our knowledge of the impact of neuropsychological functioning on various issues relating to potential barriers to progression through an indeterminate sentence, and whether we can better support these individuals through to, and following, release. Previous large scale studies have been undertaken (see Hughes et al., 2015) which indicate that brain injury is an issue within the prison population and more in depth examination of relevant factors is necessary and appropriate. Whilst the findings of this small scale study are likely to be generalizable to some degree given the subject matter, as with all case study designs there will be limitations to this which will be discussed fully in the research report.

Bearing in mind the small sample size, how will it be ensured that individual respondents cannot be identified in the final research reports?

Every effort will be made to ensure individuals cannot be identified, including changing details of locations and names. Offence details do not need to be included in the case studies further reducing the likelihood of identification.

Is the intention to interview prison staff? If so, how will they be selected? How many will be interviewed? What questions will the topic guide cover?

As indicated in the research application form there is no intention to interview prison staff. Any information included relating to progress on treatment programmes, behaviour in prison etc. will be taken from existing reports and case notes.

How will the various sources of information (P-NOMIS, OASys, Parole Board Outcome letters, post programme reports, psychology files) be accessed?

Psychology and programme files will be accessed via the relevant departments by myself. Parole information will be accessed from the dossiers held on PPUD by myself, OASys and PNOMIS information will be accessed by myself.

How will data from SPANS and BISI and the different sources of information be analysed?

The information from these sources will be drawn together using a multiple information source case study approach. The case study approach is often used in exploratory research as the method can provide insight or rationale for further research (McLeod 2008). There is no statistical analysis of the data.

How will objectivity and conflict of interest be mitigated with the lead researcher or psychology staff asking prisoners in their establishments to participate in the project?

My role is regionally based, and as such I complete very little direct work with prisoners at HMP [REDACTED] Any prisoner who I have or am likely to work with would not be included in the final sample.

Access to HMPPS files/records is limited without the individuals' consent. Will consent be sought and, if so, how?

Consent to access information will be sought from the potential pool of participants as part of the consent process for the study.

Please send this further information (quoting your NRC Reference number) to the NRC (National.Research@NOMS.gsi.gov.uk) within 8 weeks of the date of this letter. If your response is not received within eight weeks your application will be treated as withdrawn and you will need to submit a new application should you wish to apply for NRC approval. Please note the research must not commence until the NRC has granted full approval, and a formal letter to that effect is provided.

Yours sincerely,

[REDACTED]

(on behalf of the National Research Committee)

From: National Research [NOMS]

Sent: 13 July 2018 16:44

To: Budd, Naomi [HMPS] <[REDACTED]>

Subject: NRC 2018-091 - Decision

Research Title: An examination of neuropsychological functioning and the progression of prisoners serving a sentence of Imprisonment for Public Protection (IPP)

Ref: 2018-091

Dear Naomi

I apologise for the delay in responding to you. Please find attached the decision letter from the National Research Committee.

Before the research can commence, you must formally agree by email to the NRC (National.research@noms.gsi.gov.uk) that you will comply with the terms and conditions outlined in

the letter.

Please also find attached the NRC research summary which should be completed once the research project has ended (ideally within one month after the end date).

Kind regards,

NRC

FINAL APPROVAL

Ref: 2018-091

Title: An examination of neuropsychological functioning and the progression of prisoners serving a sentence of Imprisonment for Public Protection (IPP).

Dear Naomi

Further to the additional information you provided to the National Research Committee (NRC) on your application, the National Research Committee (NRC) is pleased to provide final approval for your research project. The terms and conditions below will continue to apply to your research project.

Please note that unless the project is commissioned by MoJ/HMPPS and signed off by Ministers, the decision to grant access to prison establishments, National Probation Service (NPS) divisions or Community Rehabilitation Company (CRC) areas (and the offenders and practitioners within these establishments/divisions/areas) ultimately lies with the Governing Governor/Director of the establishment or the Deputy Director/Chief Executive of the NPS division/CRC area concerned. If establishments/NPS divisions/CRC areas are to be approached as part of the research, a copy of this letter must be attached to the request to prove that the NRC has approved the study in principle. The decision to grant access to existing data lies with the Information Asset Owners (IAOs) for each data source and the researchers should abide by the data sharing conditions stipulated by each IAO.

Please note that a HMPPS/MoJ policy lead may wish to contact you to discuss the findings of your research. If requested, your contact details will be passed on and the policy lead will contact you directly.

Please quote your NRC reference number in all future correspondence.

Yours sincerely,
National Research Committee

From: ethicsapp@leicester.ac.uk <ethicsapp@leicester.ac.uk>

Sent: 04 January 2019 18:02

To: Budd, Naomi C.

Subject: Ethical Approval System: Approval Letter

PI Name: Budd, Naomi

Department: Psychology

Research Project Title: An examination of neuropsychological functioning and the progression of prisoners serving a sentence of Imprisonment for Public Protection (IPP).

Dear Naomi Budd,

The University Ethics Sub-Committee of Psychology has reviewed your application and decided to grant ethics approval subject to the conditions set out in the Ethics Approval Letter attached.

This email should not be used as official confirmation of ethics approval from the University Ethics Sub-Committee. Please use the attached Letter as proof of institutional ethics review and approval.

You may also access and print the Ethics Approval Letter by logging in to the ethics online system.

Yours sincerely,
Chair of the University Ethics Sub-Committee of Psychology

You can view this application by going to the Ethical Approval System at
<https://ethicsapp.le.ac.uk/ethics/applications.aspx?app=0p1674fBhoddYpun4OKtnA==>

Ethics Approval System Admin (ethics@le.ac.uk)



University Ethics Sub-Committee for Psychology

04/01/2019

Ethics Reference: 19097-ncb16-ls:neuro',psych&behaviour,deptof

TO:

Name of Researcher Applicant: Naomi Budd

Department: Psychology

Research Project Title: An examination of neuropsychological functioning and the progression of prisoners serving a sentence of Imprisonment for Public Protection (IPP).

Dear Naomi Budd,

RE: Ethics review of Research Study application

The University Ethics Sub-Committee for Psychology has reviewed and discussed the above application.

1. Ethical opinion

The Sub-Committee grants ethical approval to the above research project on the basis described in the application form and supporting documentation, subject to the conditions specified below.

2. Summary of ethics review discussion

The Committee noted the following issues:

All ethics issues have been considered.

3. General conditions of the ethical approval

The ethics approval is subject to the following general conditions being met prior to the start of the project:

As the Principal Investigator, you are expected to deliver the research project in accordance with the University's policies and procedures, which includes the University's Research Code of Conduct and the University's Research Ethics Policy.

If relevant, management permission or approval (gate keeper role) must be obtained from host organisation prior to the start of the study at the site concerned.

4. Reporting requirements after ethical approval

You are expected to notify the Sub-Committee about:

- Significant amendments to the project
- Serious breaches of the protocol
- Annual progress reports
- Notifying the end of the study

5. Use of application information

Details from your ethics application will be stored on the University Ethics Online System. With your permission, the Sub-Committee may wish to use parts of the application in an anonymised format for training or sharing best practice. Please let me know if you do not want the application details to be used in this manner.

Best wishes for the success of this research project.

Yours sincerely,

Prof. [REDACTED], Chair

Part Three - Critical Appraisal

Naomi Budd

Introduction

Over the course of my doctorate I have kept a diary relating to the process of completing all aspects of the degree, as well as my own experience of completing the work. This section reflects my journey and learning over the entirety of the work, including completion of the systematic review.

Choice of research area

I chose the research area of acquired brain injury in indeterminate prisoners for a number of reasons. I have spent much of my career working with high risk offenders serving indeterminate sentences, either life sentences or those imposed for public protection (IPP). Over the last five or six years it has become apparent that a number of IPP prisoners were not progressing as would be expected and were serving many times their minimum specified period (tariff) in closed conditions. Within the last few years the topic of acquired or traumatic brain injury (ABI/TBI) and its role in criminality has been given increasing prominence, with various studies (e.g. Davies, Williams, Hinder, Burgess, & Mounce, 2012; Williams, Mewse, Tonks, Mills, Burgess, & Cordan, 2010) highlighting a widespread prevalence of TBI in prisoners which has largely gone undiagnosed. I became interested in whether the presence of TBI could go some way to explain the lack of progress for some IPP prisoners. In particular, I was interested in looking further into the response to standard accredited offending behaviour programmes of those individuals who may have some level of brain injury, and whether there was a need for specific adaptations to programme delivery. A further area of interest for me was the way in which prisoners with suspected brain injury may present at Parole Board hearings. When the opportunity was offered by my employers to undertake research into TBI in IPP prisoners I expressed an interest in doing so and was additionally offered full funding for the completion of this doctorate degree.

Systematic review of the literature

I decided to complete the systematic literature review for this portfolio prior to the research aspect. Whilst I have completed a number of literature reviews in the course of previous studies, I was not familiar with the specific methodology of a systematic review (SR) or how it differed from the type of literature review I was used to. The

initial stages of this work therefore consisted of me researching what a systematic review is, and how it is used. I searched online for articles relating to SRs and found several examples (e.g. Liberati et al., 2009; Moher, Liberati, Tetzlaff, & Altman, 2009) which were useful in terms of learning more about SRs in general terms. There were a number of workshops and seminars available through the library on literature review methodology which I attended, including one specifically on SRs. I found the supervision process extremely helpful at this point, as I was able to discuss my initial ideas around the research question for my SR with my supervisor. In particular I found the help and expertise of the dedicated postgraduate library staff invaluable during these initial stages, as I was able to send in my preliminary plan for conducting the review and receive feedback on the overall process. I also arranged an individual meeting with a member of library staff in order to go through the practicalities of conducting the search, and to help with familiarisation of the database searches.

At this point I was able to finalise my research question and identify my key terms. I found it useful to brainstorm alternate terms for words with colleagues as it is easy to remain confined to terms with which we are more familiar, and so narrow the potential of the search. I decided on the number of databases I wanted to search, and which these would be following advice from my supervisor and completed an initial run of the search terms I had generated on just one of the databases. I amended the terms used until I was reasonably sure that I had generated the maximum number of relevant 'hits' from the search. As the nature of my research question was quite specific, I wanted to ensure that I was overly inclusive at the initial database search point, in order not to miss any relevant publications. I was aware that this may make the further elimination stages more time consuming. Once I was happy with my search terms and inclusion / exclusion criteria I ran the search on all six databases. I found some databases much more user friendly than others, with the more psychology-specific databases seeming more suited to my type of search. I had decided to use RefWorks as a way of organising and reporting my results, and found exporting lists of references to this, and using it to narrow down and filter articles by relevance on subsequent stages of the process extremely useful. I found that using a strict process of filtering using the pre-determined inclusion / exclusion criteria was

both logical and easily replicated. Relevance of publications was based on firstly checking against the exclusion criteria, then assessing relevance by title review, abstract review, and full text review. I discovered at this stage that gaining access to the full texts of some publications was not as easy as I would have liked, with individual requests having to be made to the library, and in some cases to the publication authors directly. I found it gratifying that all the authors I approached were happy to provide me with a copy of the article in question and were interested in the work I was completing. The last stage of exclusion was the quality assessment process. I initially did not find a quality assessment method which I felt met my needs, so I developed one based on a subjective assessment of quality and consideration of relevance and bias. Once I had identified my key publications, I conducted further searches of their references in order to identify any additional publications not thrown up by the database searches. A small number of additional papers were found, which were assessed for relevance in the same way as the initial results. I also conducted a search for grey literature, although this yielded few further papers for inclusion. This was my first experience of conducting the searches for a systematic review. As a process I enjoyed it; I liked the logical process that needed to be followed, and the inherent replicability of the work. It felt like it made sense to me, and I could see how useful and robust this type of methodology is.

Once I had the full texts of all the articles, I completed the quality assessment process and read all the articles thoroughly a number of times for data extraction purposes. I then completed the first draft of the SR, which I wanted to do in time for my probation review meeting so that it could form the submission element of this. I found the word count very restrictive and felt that I struggled to get enough meaningful content into the body of the report. I was also anxious to ensure that the data set was as current as possible, so I re-ran the searches to check for further inclusions to the list of articles but found none. I conducted a check for existing relevant or similar SRs on Cochrane, and registered my review on the database.

When reflecting on this part of the work, I felt that the section I struggled with most was the quality assessment of studies, as I felt I did not as yet have a good

understanding of this process. I also found organising and recording the data much more time-consuming than I had envisaged. However, by my deadline for the first submission to my supervisor I had a completed document, which felt like it was at least a good way towards meeting the requirements of a SR.

Prior to submitting the SR for my probation meeting I sent the review to my supervisor. She made some useful comments regarding structure, the need for clearer definitions of key terms, and on the quality assessment process. I made what changes I initially could in time for submission for my probation review. During my probation review meeting in September 2017 we discussed the SR and I received some positive and encouraging feedback on this. I then put work on the SR to one side for a few months, whilst focussing on my Integrated Research Application System (IRAS) application for the research project which was to form the major part of this portfolio.

I resumed work on the systematic review in December 2017 and spent time working on the quality assessment process primarily, as well as adding more content into the introduction and discussion sections. I researched quality assessment methods following feedback from my supervisor that the SR would be much more robust if an accepted and existing method of quality assessment of studies was used. After initially considering the Oxford Centre for Evidence Based Medicine (OCEBM) guidelines (OCEBM, 2009), the consolidated criteria for reporting qualitative research (COREQ) checklist (Tong, Sainsbury, & Craig, 2007) and the Critical Appraisal Skills Programme (CASP) measures (Institute of Health Science, Oxford), I decided that the Mixed Methods Appraisal Tool (MMAT: Pluye et al., 2011) was the most appropriate method to follow for my SR due to the variety of methods used in the studies included in the review. I re-assessed all the key studies using the MMAT and found that it excluded one article completely as the screening questions / criteria were not met. All the other studies came out as of good quality and remained included in the sample. Following this, I made the changes required to the text, and sent the revised document to my supervisor for further comment. I considered the need to re-run the searches again prior to final submission of my theses to ensure that the information contained was completely up to date. However, I decided against this as the parameters and remit of

the SR are clearly defined and dated, and I felt I needed to spend the remaining time I had concentrating on the research aspect of my work.

Overall I enjoyed the process of completing the systematic review. It was a new methodology for me, and I found the systematic approach and logical way of working suited my own working style well. I felt that it added weight to the considerations I would be taking forward in the research element of this doctorate, and formed a solid and well-defined foundation on which to base further work. It is a methodology I will be using again in the future in my work, and I will also be encouraging trainee psychologists who I supervise to use this as a robust research methodology.

Research report

I approached the research element of this degree with an amount of trepidation as it had been while since I had undertaken a research project of this level. I had however just commenced a prevalence study (Budd & Twomey, 2018, unpublished manuscript) to investigate how widespread TBI in IPP prisoners may be, so I did not feel completely unequipped for this part of the work. The prevalence study was undertaken as part of my regional role within NOMS (now HMPPS) Midlands psychology, and consisted of screening over-tariff IPP prisoners for brain injury using the Brain Injury Screening Index (BISI: The Disabilities Trust, 2014) the Barratt Impulsivity Scale (BIS-11: Patton, Stanford, & Barratt, 1995) and the Depression and Hopelessness Scale (DHS: Mills & Kroner, 2004). It was clear from the initial findings of this preliminary study that the issue of TBI in IPP prisoners was something which warranted further investigation. For this research I started with a clear idea of what I wanted to investigate, and why this was a useful area of study for applied psychology in prisons, and the findings of the systematic review I had just completed and the ongoing prevalence study reinforced this. There had recently been an increased National interest in investigating why such a large number of prisoners serving indeterminate sentences were failing to progress through to conditions of lower security and eventual release, and the impact of TBI was one potential consideration that was suggested for investigation.

Research design and timescales

My initial plan to conduct this research was to continue the theme of a fairly large scale study investigating in more depth the issues faced by prisoners who had been previously identified as having a possible brain injury, and who appeared to be 'stuck' and not progressing well through their sentence. I discussed my initial ideas with my primary supervisor, who was supportive of them. My second supervisor was a neuropsychologist who had designed and published an assessment tool to investigate neuropsychological functioning in patients (Short Parallel Assessment of Neuropsychological Status (SPANS: Burgess, 2014), especially those who may have had a brain injury or other condition which might impact on their functioning, During discussion in supervision it was felt that this assessment tool may be useful to be included in the research, alongside other information in relation to how far over tariff the prisoners were, and what specific obstacles could be identified in relation to their failure to progress. My preliminary research idea was to assess IPP prisoners with TBI using the SPANS, and to compare these results to the length of delays in progressing, using a measure of time served over tariff.

I had decided to complete the systematic review of the literature as the first part of my degree, and spent much of the first year on this as described above. However, during this time I also discussed possible design methodologies in supervision, and attended various refresher lectures on relevant methodology. I submitted my initial Integrated Research Application System (IRAS) form on 24/10/17, receiving a reply from the National Research Ethics Committee stating that my application to undertake the research was rejected outright by the committee. This was because I had an ongoing research study active in my name (the prevalence study referred to above, which was being undertaken as part of my NOMS / HMPPS role) and the committee stated I could not apply to commence another research project before the previous one was completed. I was surprised at this decision, as the two research projects were being undertaken for different reasons, and from my time sitting on the Midlands Regional research ethics committee I was also aware of previous doctorate researchers having approval for more than one research study to be ongoing at any given time. I challenged this decision, but was told that the committee would not review any

application for further research whilst the TBI prevalence study was ongoing. This was a big setback for me, as I now had to concentrate on expediting the prevalence study research in order to be able to re-submit my ethics application for my doctorate research. I used this time to concentrate on completion of the systematic review, and during work time, to complete the ongoing TBI prevalence research, which I was finally able to do on 12/03/18.

During the additional time I had now had to consider my research design, and over the course of writing up the findings of the prevalence study, I considered that my initial research idea would not produce sufficient novel data, and was too similar in methodology to the prevalence study. The prevalence study indicated that incidence of TBI in IPP prisoners was high and I wanted to look in more depth at the way the often unrecognised effects of TBI may be affecting the progress of this set of prisoners. I was also concerned that I would struggle to achieve sufficient participants to ensure that meaningful research was achieved. I had conducted preliminary analysis into how many participants I would need in order to obtain robust results, and due to changes in the structure of NOMS / HMPPS psychological services in the Midlands, I felt I would no longer be able to access a sufficient number of prisons, and therefore prisoners, to gain the required numbers. Whilst completing the systematic review aspect of this doctorate I had also become aware that there was quite a lot of large-scale research into prevalence of TBI in prisoners and the potential consequences of this in terms of cognitive deficits and impaired executive functioning. I was increasingly drawn to questions regarding how the effect of TBI may be impacting on progression in particular with regards to the Parole process, and I felt I had struggled to identify a specific research question in relation to this using the previous methodology; potentially due to a lack of understanding of where the problems may be, and how we should go about investigating them. My feeling now was that a more in-depth, exploratory approach might be more appropriate at this point in time, and began to consider utilising a case study approach.

I discussed my thoughts regarding this with my supervisor, and she agreed that utilising a more exploratory approach was likely to be useful, given the current level of knowledge in this area in relation to prisoners. I explained that I was concerned not to

complete research which was little more than a replication of the previous prevalence study, albeit utilising a different assessment tool, and I was becoming increasingly interested in what I was finding out about the personal experiences of IPP prisoners during Parole Board hearings, and whilst on offending behaviour programmes. In order to be able to gain a rich understanding of these issues for the individuals involved, I decided to re-design the research methodology, and rather than assessing a large number of participants to investigate *whether* their brain injury was impacting on their rates of progression to instead look much more deeply into a smaller number of participants who we already knew or suspected had an TBI and to investigate *how* this may be affecting their progress through their sentence, their learning from OBPS and their experience of Parole Board hearings. When reflecting on these proposed changes, I was able to see that the delay caused by having to complete the prevalence study before I was able to obtain ethical approval had in fact led to positive changes in the way I was going to undertake the research. The prevalence study indicated that a significant number of IPPs who were post-tariff and appeared to be failing to make any further progress were likely to have some level of TBI. They also had higher levels of impulsivity and hopelessness, were particularly disillusioned with their sentence, and felt that they were unlikely to be released due to the type of sentence and the issues they were facing. Given that we now already knew this, I wanted my research to focus on the impact of TBI related impairments to neuropsychological functioning and the ability of prisoners to progress through the Parole process, and whether additional support is needed for this particular group of prisoners. I felt that a case study approach would now be better suited to answering these questions, and made the required changes to my research ethics application, which was re-submitted on 21/03/18.

When the application was reviewed, the committee asked for further clarification on some points (see Appendix M of the research report) which I provided on 23/05/18. I again experienced delays in the approval process, as there was an administrative error on the part of the NRC, which meant that my application was not processed. I chased for a response on 06/06/18 and 06/07/18, and received final approval for the research on 13/07/18, about nine months after my first submission for approval. At around this

time there were a number of changes within and outside of work which meant I needed to put work on my doctorate on hold for a number of months before finally submitting my ethics application to the University of Leicester in December 2018. I received a speedy response from the University ethics committee, and was able to commence with data collection in February 2019, with the aim of completing the work by the summer of 2019.

Research setting and sample

Once I had approval for the revised case study methodology, I decided on a three-tier approach to identification of the sample as detailed in the research report, as I wanted to ensure that I had interesting and sufficiently different cases to include. This yielded 28 potential participants who were contacted and asked to take part in the research, of whom 14 agreed to participate. I felt that this approach, whilst time-consuming, allowed me to identify all those men who would be useful to be included in the study (the female estate is managed separately within NOMS / HMPPS and my NRC approval did not allow for access to these prisons). Those participants who gave consent to take part in the research were contacted and interviews were arranged. I utilised a purposive sampling strategy, selecting the final six participants in order that the sample as a whole included men from both category B and C prisons, with a range of offence types and severity of brain injury.

I discovered that the practicalities of identifying participants and arranging and conducting interviews was more time consuming than I had planned for. The nature of the impairments likely to be seen in the participants meant that they could struggle with day to day organisation, and a number of appointments were missed and forgotten. Additionally, there were occasions where operational issues meant that interviews needed to be re-arranged. When planning the research I had decided to take written verbatim notes of the interviews with the participants. However, advice from my supervisor was to record the interviews and transcribe them later in order not to miss any relevant information. I looked into this in relation to best practice in case study research, and found that there were conflicting schools of thought regarding this, but that sole reliance on Dictaphones was advised against in case of technical

failure which would deem a participant's interview and therefore inclusion in the study obsolete. I decided to utilise a 'belt and braces' approach and record the interviews as well as taking notes. This led to some delays as further approval was needed from the relevant security departments to take the Dictaphone into and out of the various prisons for each interview.

Ethical considerations

Undertaking research with prisoners is likely to lead to additional ethical considerations due to their status as an incarcerated person with reduced rights and autonomy. In the present research I was also selecting participants who may be deemed additionally vulnerable due to their potential brain injury, the length of time they had served and their perceived failure to progress through their sentence. Potential TBI may not have been previously identified or discussed with the participants, and so this also needed to be carefully managed. I ensured that participants were well informed regarding the purpose of the research, and that they understood how to withdraw consent, and how to seek further help. Referrals to the healthcare department were made if felt necessary, or if the participant requested this, and an information sheet with some basic information on the potential impact of TBI and further sources of information and help was available for those who asked for this. I found that all the prisoners who took part reported finding the process positive as it allowed them to express concerns that they had regarding their sentence. I was personally surprised that the majority of them stated they had never previously been asked about how they found Parole hearings by staff, had been asked if they needed any additional support or had been given the opportunity to say whether they understood the purpose and process of Parole hearings.

Analysis

Having completed the methodology section of the research report I felt that I had a good understanding of case study research design. I had decided on my unit of study being the period of time since the start of the prisoners' sentence as this would capture all the data relating to offending behaviour programmes completed and all Parole Board reviews, whether held in person or considered on the papers. This meant

that I needed to review all Parole dossiers for each participant, rather than just the most recent one. Whilst it is tempting to assume that all relevant information and reports are repeated in each subsequent dossier, I know from experience that this is not the case, and that even important reports and documents can be 'lost' from one review to the next. This led to the process of extracting data from files being very time-consuming, much more so than I had initially envisioned. However, I was confident that I had gleaned all relevant data from the files for each case used. I had decided to record and then transcribe the interviews conducted which also took more time than I had previously allowed. At times I felt frustrated that the process of interviewing and collecting data was taking longer than I had expected it to, however I was able to reflect on the fact that I could be certain that I was using all the information available to me, and that the findings of the research would be robust. I made sure that I was completing the writing up of the initial sections of the research report alongside the data collection phase, so as to ensure that I would still be able to meet my deadline for submission. I followed approaches to case study advocated by Yin (2012, 2014) and Merriam (1998). I found Yin's approach to planning and recording of data useful as it is highly structured. However, I did not feel that his approach to ensuring internal, external and construct validity and reliability lent itself well to qualitative case study following a constructivist approach, and did not feel that generalisability to a wide group of prisoners was the aim of the research, and so adhered more closely to the data validation approach of Merriam.

Write up

I found writing up the various sections of the research report challenging at times. In particular, I found some aspects of discussing case study methodology quite complex, and additionally felt that I had a tendency to repeat information across sections. On receiving initial feedback from my supervisor on some sections of the work it was clear that at times I did not provide sufficient detail and sometimes did not reference sources clearly enough. I struggled with the word count throughout, and had to make a concerted effort to write concisely, without repetition and making good use of appendices and tables. In particular, I was unsure how to present the information contained in the case studies. I had initially written up quite detailed case studies for

each participant which I planned to include in the appendices, along with the assessment results, transcripts of interviews and summaries of information from Parole Board dossiers. However, as I worked through the section discussing the findings of the research I increasingly felt that these case studies needed to be included in the main body of the text in order to provide easy reference, bring the participants to life, and give a cohesive feel to the work. I therefore shortened the case studies, and included them in text boxes within the relevant section, keeping the raw data within the appendices. I also decided that the detailed case records for each participant should not be included in the appendices, in order to ensure anonymity.

The process of analysis of the data followed a logical progression of consolidation, reduction and interpretation. The resulting seven conceptual categories felt that they had intrinsic meaning and relevance to the individuals studied, and a number of issues were identified that could be considered in relation to a wider group of IPP prisoners with TBI. A number of recommendations emerged throughout the work, some of which echo those made by previous research. Others, such as additional support during and adaptations to, standard offending behaviour courses, and increased support in Parole Board hearings, are specific to IPP offenders, and have been suggested as part of this research.

The role of supervision

I found the support of my supervisor throughout this degree invaluable. Given that I qualified as a forensic psychologist in 2003 it had been many years since I had any regular supervision, and even longer since I completed my previous degree (MSc, also undertaken at the University of Leicester). I found that my need for supervision varied throughout the course of my degree, depending on what stage I was at. The methodology of completing a systematic review was new to me, and I needed to rely quite heavily on the advice of both my supervisor and other specialist staff during the initial stages of this. I found that the feedback I received from my supervisor was always clear and relevant, and that she also sought the advice of her colleagues at times to be able to give me more in-depth replies to specific queries. During the mid-stages of my degree I encountered a number of delays and setbacks, and I feel that I

perhaps did not make the best use of the supervision offered to me at these points, and that I had a tendency to bury my head in the sand in relation to the barriers and difficulties I was facing. However, once I felt that I was back on track with the work I think I was able to utilise supervision more effectively again.

Future research strands and opportunities

This research has shown that there is more input needed with prisoners suffering from brain injury. Whilst the focus of the current research was on indeterminate prisoners, and the potential impact of brain injury on their progression, the findings have relevance for all prisoners. There is some increased awareness of TBI by psychologists and researchers, but this does not yet seem to be the case for staff who are working with and managing prisoners on a day-to-day basis on prison wings, or those professionals who are making decisions as to their risk level and suitability for release. I believe that more widespread training of staff, Parole Board members and probation / hostel staff would be enormously beneficial as at present there is a tendency for the impact of brain injury on behaviour to be either overlooked, or simply put down to disobedience or failure to follow rules. Additionally, I think that further consideration is needed into how we can better support brain injured prisoners in both completion of offending behaviour programmes and during Parole Board hearings.

Personal reflection

I feel that overall I approached this degree with enthusiasm and dedication. I am aware that motivation fluctuates, especially when undertaking work over a long period of time, and I can identify times when my motivation and productivity dropped. I was completing this work alongside my day to day job, and whilst experiencing a number of changes to my life both within and outside of work, and at times it felt difficult to juggle all aspects of my life effectively. I had a tendency to work in fits and starts, rather than to set aside a set a number of hours a day or week to my doctorate and I think this was reflected in my progress, and stress levels at times. If I were to start this process again, I would try to be more consistent in setting regular time aside each week in order to fit the work in better with my home and work life, and to perhaps be more realistic when setting deadlines for myself.

I have learnt that I am committed and dedicated to complete any task I take on and feel that I have learnt new skills and have increased my knowledge in various areas. This is not only in relation to the academic literature relating to brain injury, but of the specifics of various research designs, the intricacies of case study methodology and the logical and robust use of database searches needed for a systematic review of the literature. Overall, I am happy with the quality of the research I have completed. I feel that I have added something useful to the existing knowledge in this area, and have been able to highlight some areas for future focus that may increase our understanding of the particular problems this set of prisoners is likely to face, both in prison and after eventual release.

REFERENCES

- Budd, N.C., & Twomey, H. (2018). *An investigation into potential barriers to progression in prisoners serving an Indeterminate sentence for Public Protection (IPP sentence)*. Unpublished report for HMPPS.
- Burgess, G. (2014). *Short Parallel Assessments of Neuropsychological Status (SPANS)*. Hogrefe, Oxford, UK.
- Critical Appraisal Skills Programme (CASP), Public Health Resource Unit, Institute of Health Science, Oxford.
- Davies, R. C., Williams, W. H., Hinder, D., Burgess, C. N. W., & Mounce, L. T. A. (2012). Self-reported traumatic brain injury and post-concussion symptoms in incarcerated youth. *The Journal of Head Trauma Rehabilitation*, 27(3), 21-27.
- Liberati, A., Altman, D.G., Tetzlaff, J., Mulrow, C., Gotzsche, P.C., Ioannidis, J.P.A., Clarke, M., Deveraux, P.J., Kleijnen, J., & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. *PloS Medicine*, 6(7), 1-28.
- Merriam, S.B. (1998). *Case study research in education. A qualitative approach*. London: Jossey-Bass.
- Mills, J.F., & Kroner, D.G. (2004). A new instrument to screen for depression, hopelessness and suicide in incarcerated offenders. *Psychological Services*, 1(1), 83-91.
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D.G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *British Medical Journal*, 339, DOI: 10.1136/bmj.b2535.
- Oxford Centre for Evidence Based Medicine (2009) OCEBM guidelines
- Patton, J.H., Stanford, M.S., & Barratt, E.S. (1995). Factor structure of the Barratt impulsiveness scale. *Journal of Clinical Psychology*, 51(6), 768-774.
- Pluye, P., Robert, E., Cargo, M., Bartlett, G., O’Cathain, A., Griffiths, F., Boardman, F., Gagnon, M.P., & Rousseau, M.C. (2011). *Proposal: A mixed methods appraisal tool for systematic mixed studies reviews*. Department of Family Medicine, McGill University, Montreal, Canada. Retrieved from <http://mixedmethodsappraisaltoolpublic.pbworks.com>.

The Disabilities Trust Foundation (2014) The Brain Injury Screening Index

www.thedtgroup.org/foundation/brain-injury-screening-index

Tong, A., Sainsbury, P., & Craig, J. (2007) Consolidated criteria for reporting qualitative research (COREQ); A 32 item checklist for interviews and focus groups.

International Journal for Quality in Health Care, 19(6), 349-357.

Williams, W. H., Mewse, A. J., Tonks, J., Mills, S., Burgess, C. N. W., & Cordan, G. (2010).

Traumatic brain injury in a prison population: Prevalence and risk for re-offending. *Brain Injury*, 24(10), 1184-1188.

Yin, R.K. (2012). *Applications of case study research*. London: Sage.

Yin, R.K. (2014). *Case study research. Design and methods*. 5th Ed. London: Sage.