Forensic Psychology Research Portfolio:

Impulsivity in Adult Male Sexual Offenders

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Abstract

This research thesis explored impulsivity in adult male sexual offenders. Low self-control and impulsivity are generally associated with criminality (e.g. Andrews & Bonta, 2006), as well as problematic sexual behaviour (Mick & Hollander, 2006). Meta-analyses have provided evidence that self-regulation deficits in sexual offenders are amongst the strongest predictors of recidivism (Hanson, Harris, Scott, & Helmus, 2007; Hanson & Morton-Bourgon, 2005). Researchers have suggested that exploring the construct of impulsivity within forensic populations might help enable identify specific re-offending risks and targets for intervention (Gordon & Egan, 2011; Egan, 2017).

The current research thesis provides a unique contribution to knowledge. Given the size of literature regarding the role of impulsivity in sexual offending, no single review was located which had compiled all available research into the psychometric and behavioural assessment of impulsivity within adult male sexual offenders. Chapter Two of this research helps fill the gap. As evidenced in Chapter Two, due to the inconsistencies amongst various conceptualisations of impulsivity, and the heterogeneous nature of the construct itself, multiple methods of assessing impulsivity exist (Whiteside & Lynam, 2001). Chapter Three critiques a relatively newer measure of impulsivity, the UPPS-P Impulsive Behaviour Scale (Lynam, Smith, Cyders, Fischer, & Whiteside, 2007), which reflects a more theoretical structuring of impulsivity than previous empirically derived measures. This chapter positioned the UPPS-P Impulsive Behaviour Scale as a viable option for the continued assessment of impulsivity in forensic populations, in-keeping with the need for a more theoretically informed and structured assessment of trait-based impulsivity. Chapter Four of this research thesis applied the UPPS-P, in addition to a measure of hypersexuality and offence-related sexual interests, to a sample of adult male Internet Sexual Offenders (ISOs). The role of impulsivity was further explored in Chapter Five, a single case study of an ISO. This thesis is concluded by a discussion chapter, which considers what was learned through each of the four individual chapters of the academic thesis. Consideration for how this knowledge might aid the development of more effective risk assessment, management, and prevention of further sexual abuse is given.

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Chapter One - Introduction

1.1 Introduction

1.1.1 Sexual Offending in Society

Sexual offending is not a new phenomenon. However, with increased media coverage in recent years, it seems as though societal awareness of the prevalence of this behaviour is higher than ever before. Despite increased awareness of its prevalence, sexual offending behaviour continues to be highly stigmatised in society. The psychological damage caused to victims and society as a result of sexual offending behaviour is high, and many sexual offenders may be reluctant to voluntarily seek help, due to the stigma, shame, and criminal repercussions associated with their crimes. The many technological advancements in the twenty first century have enabled new types of sexual offending to emerge. The advent of the internet has created a new, unique offending environment whereby illegal sexual content can be feely accessed, from the seeming anonymity and privacy of one's own home (Webb, Craissati, & Keen, 2007). Multiple forms of internet-enabled sexual crime exist, including sexual stalking, revenge pornography, virtual harassment, enticement, grooming, and the production, download, and distribution of Indecent Images of Children (IIOC). With increased availability of high speed, fourth-generation (4G) mobile technology, in addition to the unregulated environment of the anonymous “dark web”, more opportunities than ever before are afforded to engage in illegal sexual behaviour (Babchishin, Hanson & Hermann, 2011; Henshaw, Ogloff, & Clough, 2017).

The number of sexual offences reported to the UK police increases annually. Compared with the previous year, in 2015-2016, the number of reported sexual offences rose by 21% (Office for National Statistics, 2016). Whilst it is probable this increase may in part result from improved police recording practices (Office for National Statistics, 2016), it must be acknowledged that consequentially, it is likely that increasing numbers of sexual offenders will be referred for treatment with the aim of reducing their risk of reoffending.

Adding to knowledge regarding the psychological processes involved in sexual offending behaviour therefore represents a significant and important avenue for research. Egan (2017) proposed that recognising the role of different individual difference constructs in the sex offender population will help improve the treatment and management of these offenders, so that the potential for sexual recidivism will be reduced. Moreover, recent initiatives advocate a ‘public health approach’ (Gideon, 2013) to tackle sexual offending, with emphasis on the initial prevention of

sexual offending. This is due to recognition that – particularly for internet-enabled sexual crimes – it appears near-impossible to completely 'arrest our way out of' the problem. Adding knowledge regarding the psychological processes involved in sexual offending might be helpful to inform preventative measures when treating, managing, and risk assessing known sexual offenders.

1.1.2 Sexual Offending Risk Domains

Ward and Beech (2004) published an etiological model of risk, drawn together from a review of existing sex offender theories and risk assessment tools. The aim of this model was to integrate knowledge of static (fixed) and dynamic (changeable) risk factors, to provide clinicians a structured framework to formulate how external triggers might impact on an individual's likelihood of committing a sexual offence. The model outlined static factors, which included psychosocial problems, criminality/antisociality, and a range of offending behaviours, in addition to distal developmental factors. With an already-vulnerable individual, the model then outlined how external triggers might impact on stable dynamic factors across four risk domains to thus increase sexual offending risk. The four risk domains outlined by Ward and Beech (2004) were: sexual self-regulation (physiological arousal), offence-supportive cognitions (deviant sexual interest), level of interpersonal functioning (need for intimacy), and general self-regulation problems (impulsivity). The thesis is focussed on the general self-regulation risk factor.

1.1.3 Self-Regulation Deficits in Sexual Offenders

Low self-control and impulsivity are generally associated with criminality (e.g. Andrews & Bonta, 2006), as well as problematic sexual behaviour (Mick & Hollander, 2006). Meta-analyses have provided evidence that self-regulation deficits in sexual offenders are amongst the strongest predictors of recidivism (Hanson, Harris, Scott, & Helmus, 2007; Hanson & Morton-Bourgon, 2005). Researchers have suggested that exploring the construct of impulsivity within forensic populations might enable better identification of specific re-offending risks and targets for intervention (Gordon & Egan, 2011).

Theories and models of sexual offending have paid attention to the role and importance of self-regulation deficits in sexual offenders. In the General Theory of Crime, Gottfredson and Hirschi (1990) proposed that criminal behaviour is the result of an offender's low self-control interacting with opportunities to engage in criminal behaviour. Pullman, Stephens, and Seto (2016) presented a Motivation-Facilitation Model of adult male sexual offending. The authors stated that offending

behaviour is influenced by a number of motivations which increase the desire to sexually offend. If motivation to offend is present, offending is facilitated by a range of factors that make offending behaviour more likely to happen. The authors observe that poor self-regulation (impulsivity) is a trait-facilitator which increases the likelihood of an offence taking place, if the motivation to offend is present. The Self-Regulation Model (SRM; Ward, Hudson, & Keenan, 1998) also places emphasis of the central role of self-regulation within the sexual offending process. Ward et al. (1998) define self-regulation as being an internal process which allows humans to engage in goal-directed behaviour. The authors explain that goals may include both 'approach' and 'avoidance' goals, and an individual's perception about whether or not they are meeting their goals will likely change their affective state and behaviour. The authors outline three general self-regulation styles which are related to sexual offending; underregulation (goal to avoid offending, but passive in attempts to control behaviour), misregulation (goal to avoid offending, but efforts to avoid offending are misplaced); and, paradoxically, effective self-regulation (goal is to sexually offend; self-regulation is intact). The Integrated Theory of Sexual Offending (ITSO; Ward & Beech, 2006) also describes three unique, interconnecting, psychological mechanisms which produce dynamic risk factors for sexual offending. Difficulties in one of these psychological mechanisms, the 'action selection/control system', is purported to result in self-regulation deficits (tendency to engage in impulsive acts), which is hypothesised to increase the risk of an individual committing a sexual offence.

1.1.4 The Unique Contribution of this Research Thesis

This research thesis explored impulsivity in adult male sexual offenders. Given the size of literature relating to the importance of impulsivity in sexual offending, no single review was located which had compiled all available research into the psychometric and behavioural assessment of impulsivity within adult male sexual offenders. Chapter Two of this thesis, therefore, presents a Systematic Review and Meta-Analysis of impulsivity in adult male sexual offenders, providing a unique contribution to knowledge. The aim of this review was to capture how impulsivity has been assessed in adult male sexual offenders so far, to explore what is known regarding impulsivity in adult male sexual offenders who have committed contact versus non-contact sexual offences, and to summarise the extant literature which has explored impulsivity in adult male sexual offenders versus adult male non-offending controls. It is hoped that the findings will aid researchers and clinicians to better understand the place of impulsivity as a distinct risk factor for sexual offending. Clear directions for future research resulting from this systematic review are discussed.

As is highlighted in Chapter Two, multiple methods of assessing impulsivity exist. This is likely due to the heterogeneity of the construct itself, which has resulted in many different conceptualisations and assessment methods (Whiteside, Lynam, Miller, & Reynolds, 2005). Chapter Three of this thesis presents a psychometric critique of the UPPS-P Impulsive Behaviour Scale (Lynam, Smith, Cyders, Fischer, & Whiteside, 2007). This chapter provides an overview and critique of the UPPS-P, which was developed in an attempt to clarify the multi-dimensional nature of impulsivity, and to provide an overarching conceptualisation and framework for assessing impulsivity.

Following from Chapters Two and Three, Chapter Four presents a primary empirical research study, which explored impulsivity and hypersexuality in a sample of Internet Sexual Offenders (ISOs) compared to non-sexual offending Community Controls (CCs). This empirical research project uniquely applied the UPPS-P to a large sample of ISOs, following recommendations in the Systematic Review and Meta-Analysis in Chapter Two of the need for more research into impulsivity in non-contact sexual offending samples. The empirical research study also uses a new measure previously only used within the British Prison Services to assess sexual interests – the "My Private Interests" (MPI) scale. Limitations of the study and directions for future research are discussed.

Finally, Chapter Five of this thesis presents a single case study of an ISO in which the assessment, formulation, and psychological intervention process are discussed. Deficits in self-regulation are prominent within the formulation, and the case study presents some evidence of significant psychometric change following intervention in addressing such dynamic risk factors.

This thesis is concluded by a discussion chapter, which considers what was learned through each of the four individual chapters of the academic thesis. Consideration for how this knowledge might aid the development of more effective risk assessment, management, and prevention of further sexual abuse is given.

Chapter Two - Impulsivity in Adult Male Sexual Offenders: A Systematic Review and Meta-Analysis

2.1 Abstract

This review systematically examined impulsivity in adult male sexual offenders. Following PRISMA guidelines, this review aimed to explore how impulsivity has been assessed in adult male sexual offenders, whether impulsivity differs between broad subtypes of sexual offenders (individuals who have committed contact- versus non-contact sexual offences), and whether impulsivity differs between sexual offenders and non-offending controls. This review integrated 23 studies, comprising 2,035 sexual offenders and 1,319 non-offending controls. The BIS-11 (Patton, Stanford, & Barratt, 1995) was the most commonly used assessment tool. A total of eight psychometric and seven behavioural measures of impulsivity were identified. The included studies provided somewhat mixed results regarding whether impulsivity differed between adult male sexual offenders and non-offending controls. Separate meta-analyses comparing contact sexual offenders to controls, and non-contact sexual offenders to controls on psychometric measures of impulsivity found medium effect sizes, suggesting higher impulsivity in sexual offenders. A meta-analysis which compared contact sexual offenders to non-offending controls on behavioural measures found a small effect size, again indicating higher impulsivity in sexual offenders. However, heterogeneity of studies was high, and could not be sufficiently explained via subgroup analysis. The analyses may have been limited due to publication bias. This review showed a lack of extant research comparing impulsivity in contact versus non-contact sexual offenders. Recommendations and suggestions for how future research might improve on methodological quality were discussed, and directions for future research were considered.

2.2 Introduction

Low self-control and impulsivity are generally associated with criminality (e.g. Andrews & Bonta, 2006), as well as problematic sexual behaviour (Mick & Hollander, 2006). Egan (2017) proposed that recognising the role of different individual difference constructs in the sex offender population will help improve the treatment and management of these offenders. By modifying treatment to reflect what is known about relevant intervention targets, the potential for sexual offending recidivism is potentially reduced.

2.2.1 Defining & Measuring Impulsivity

The extant literature around impulsivity is complex, not least due to the number of different terms and conceptualisations for the construct of impulsivity itself (Ward, Hudson, & Keenan, 1998). Moeller, Barratt, Dougherty, Schmitz, and Swann (2001) defined impulsivity as a rash behavioural response, characterised by a lack of planning or forethought. Different conceptualisations of impulsivity also include factors such as: lack of future planning (Patton, Stanford, & Barratt, 1995); risk taking (Eysenck & Eysenck, 1985); spontaneity (Carver, 2005); novelty seeking (Cloninger, 1987); lack of planning and perseverance (Whiteside & Lynam, 2001), and lack of inhibitory control (Bechara & Van der Linden, 2005).

Impulsivity has been cited as being both a facet of personality, but is also an element of many psychopathologies and behavioural disorders, including borderline personality disorder, antisocial personality disorder, ADHD, substance use disorders, and pathological gambling (Sharma Markon, & Clark, 2014). Because impulsivity is such a multi-faceted concept, there is still no one unified accepted definition of this construct, and the literature can be disjointed. The disjointed literature poses problems when trying to assimilate research findings, and so far it has been near-impossible to integrate research findings into an overarching theoretical model of impulsivity.

Given the inconsistencies between various conceptualisations of impulsivity (and the heterogeneous nature of the construct itself), there are multiple methods of assessing impulsivity (Whiteside & Lynam, 2001). Impulsivity is commonly assessed in clinical and research settings via two broad but very different methods: self-report questionnaires, and behavioural laboratory tasks. Self-report measures ask participants to rate their own general behaviour on Likert-type scales across questions theorised to index a particular aspect of impulsivity. In contrast, behavioural measures infer impulsive-type behaviour through performance on (typically) computerised tasks in real-time, specific situations – for example, rapid responses with high commission errors are used to

infer impulsive-type behaviour in go/no-go tasks. Recent evidence from meta-analysis reports moderate predictive power for both methods when predicting 'real-world' problematic, impulsive-type behaviours (e.g. gambling and substance misuse; Sharma et al., 2014). One difficulty is that the same meta-analytical evidence finds that behavioural measures of impulsivity do not correlate well with self-reported impulsivity disposition scales (Cyders & Coskunpinar, 2011; Sharma et al., 2014). This may result from the differences between subjective and objective measures focussing on different aspects of impulsivity; for example, objective behavioural tasks to measure present states on a specific task, whereas subjective self-report questionnaires to measure general traits. "Impulsivity" might be best seen as an umbrella term, under which a variety of empirically separate traits and dimensions sit (Berg et al., 2015).

To clarify the multi-dimensional nature of impulsivity and operationalise measurement, the UPPS-P Impulsive Behaviour Scale has been developed (See Chapter Three for a critique of this measure). The UPPS-P reflects a more theoretical structuring of impulsivity than previous empirically derived psychometric measures. Nevertheless, a limitation still exists in measurement in that, as yet, there have been no theoretical advancements in terms of parsing the heterogeneity between psychometric and behavioural conceptualisations of impulsivity.

The defining of impulsivity is salient to the context of the current research thesis. Because impulsive-type behaviour *can* in a sense be operationalised, defined, and measured (as behavioural tasks suggest), it might seem sensible to suggest these tools may better capture the construct of impulsivity rather than just by asking people if they are impulsive (as psychometric self-report measures do). However, when assessing impulsivity in sexual offenders via behavioural tasks, the gap from the task to the offending behaviour is considerable. It is a significant leap that individuals pressing buttons on a computerised task in laboratory conditions is analogous to committing real-world sexual offences where arousal and furtiveness and guilt may be concurrent to Internet surfing. Computerised tasks cannot account for the additional confounding factors which likely interact with the concept of 'impulsivity' in real-world sexual offending behaviour, such as sexual pleasure seeking or moral disengagement. Similarly, asking sexual offenders to self-rate their impulsive-type behaviour on psychometric questionnaires may also be limited by an individuals' inability to introspect, or by individuals wishing to provide 'socially desirable' responses. Despite this critique, characteristics of impulsive-type behaviour are broadly observed in sexual offenders; for example, discounting negative longer-term consequences (e.g. criminal justice proceedings; being labelled a 'sex offender') in favour of immediate gratification (e.g. sexual pleasure). The issue of defining impulsivity, combined with the need for tools which can measure impulsivity in some meaningful, ecologically valid way in sexual offender populations, adds an inherent level of complexity to the

context of the current research thesis, because as yet no widely accepted conceptualisation or assessment method exists.

2.2.2 Impulsivity & Sexual Offending

The impulsivity construct is present in many theories and models of sexual offending, including the General Theory of Crime (Gottfredson & Hirschi, 1990), the Motivation-Facilitation Model of adult male sexual offending (Pullman, Stephens, & Seto, 2016), the Self-Regulation Model of sexual offending (Ward, Hudson, & Keenan, 1998), and The Integrated Theory of Sexual Offending (Ward & Beech, 2006), as discussed in Chapter One.

Sex offenders are a highly heterogeneous group (Seto, Kingston, & Stephens, 2015). Whilst exploring subtypes of sexual offenders, the most basic distinction to make is the distinction between offenders who commit contact ('hands-on') sexual offences, and those who commit non-contact ('hands-off') sexual offences. Contact sexual offences may include child sexual abuse, rape, incest, and sexual assault. Non-contact sexual offences may include exhibitionism, voyeurism, and internet sexual offending (e.g. possession/distribution of Indecent Images of Children; online sexual chat with a child). Research has suggested characteristic and demographic differences between subtypes of sex offenders exist. For example, Babchishin, Hanson and VanZuylen (2015) presented meta-analytical findings that internet-only sexual offenders, compared with contact or mixed contact-noncontact child sexual offenders, scored lower on measures of antisociality and cognitive distortions, and higher on measures of victim empathy and sexual deviancy. Given these findings, it appears feasible that different sexual offender subtypes will present with differing treatment needs and targets for intervention. Indeed, Babchishin et al. (2015) conclude their meta-analysis by calling for research comprised of clearer defined samples of sex offenders, so that risk factors for individual sex offender typologies might be better established. With regard to existing research on impulsivity in sex offenders, the distinction between sex offender subtypes and impulsivity has not always been made clear, so it seems sensible to hypothesise that differences in impulsivity between different sex offender subtypes likely exist. The above research findings demonstrate the utility of considering the role of impulsivity within sex offending, as well as emphasising the need for further exploration of impulsivity across separate sex offender subtypes, as these subtypes may have different offence pathways and motivations for perpetrating sexual offences.

One extant meta-analysis was located (Joyal, Beaulieu-Plante, & de Chantérac, 2014), which explored executive dysfunction in sexual offenders, part of which considered the 'lower order'

executive function of impulsivity. This was explored via behavioural measures of impulsivity. Joyal et al. (2014) reported highly significant effect sizes for sexual offenders compared to general population controls, suggesting sexual offenders exhibited higher impulsivity than control counterparts. Joyal et al. (2014) explored impulsivity across a varied range of sexual offenders (male juvenile and adult sexual offenders). The current meta-analysis seeks to explore impulsivity in a narrower focus of sexual offenders (adult males only), across a broader range of impulsivity assessment tools (both psychometric and behavioural).

2.2.3 Rationale & Review Questions

First, this review aimed to provide an overview of how impulsivity has been assessed in adult male sex offenders. The implication of this is that the findings may allow clinicians to make judgements on the most suitable measure to use whilst assessing impulsivity in adult male sexual offenders. This review focussed on male sexual offenders because the majority of sexual offences are perpetrated by males, so it is expected that the majority of research in the area will utilise a male sexual offender population. This review focused solely on adult male (aged 18 years or older) sexual offenders to add specificity to the research questions. While female sexual offenders are now a topic of some interest (e.g. Gannon & Cortoni, 2010) there are few studies of impulsivity in this group.

Second, this review aimed to explore whether impulsivity differs between adult male sexual offenders who have committed contact versus non-contact sexual offences. It is hoped this will provide a better understanding and conceptualisation of impulsive behaviours in different types of sexual offenders. Adult male sexual offenders include those who have received a conviction/caution, currently under investigation for, or self-reportedly admit having committed a sexual offence (in the absence of police involvement). It is hoped this understanding will guide the development of evidence-based intervention to potentially reduce future sexual offending (Pullman et al., 2016).

Lastly, this review sought to summarise the extant literature which has explored impulsivity in adult male sexual offenders versus adult male non-offending controls. It is hoped this information will help researchers and clinicians to understand the place of impulsivity as a distinct risk factor for sexual offending.

In summary, this review attempted to answer the following questions:

1) How is impulsivity assessed in adult male sex offenders?

2) Does impulsivity differ between adult male contact and non-contact sex offenders?

3) Does impulsivity differ between adult male contact and non-contact sex offenders and non-offending controls?

2.3 Method

2.3.1 Search Strategy: Sources of Literature

This review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009; Appendix A). The search parameters were set to include research published from 1980-Current, in-line with the development of measures designed specifically to investigate impulsivity. Multiple techniques were used to source relevant literature, in order to obtain both published and unpublished material from psychology, social science, and biomedical disciplines. Literature sources included:

a) Electronic bibliographic databases:

OVID: PsycINFO (1980-week 5 Nov 2016, completed on 29th Nov 2016)

OVID: MEDLINE (1980-week 5 Nov 2016, completed on 29th Nov 2016)

OVID: EMBASE (1980-2016 week 48, completed on 29th Nov 2016)

Web of Science (Science Citation Index Expanded (SCI-EXPANDED); Social Sciences Citation Index (SSCI); Arts and Humanities Citation Index (A&HCI); Conference Proceedings Citation Index - Science (CPCI-S); Conference Proceedings Citation Index - Social Science and Humanities (CPCI-SSH); 1980-2016, completed on 29th Nov 2016)

PROQUEST: ASSIA (After Dec 1979, completed on 29th Nov 2016)

b) Gateways:

Cochrane Central (1980-2016, completed on 29th Nov 2016)

c) Meta-analyses:

Hand searched reference list of Joyal et al. (2014)

d) Contact with experts:

Other publications were obtained from Professor Ian Elliott (National Offender Management Service) and Professor Derek Perkins (University of Royal Holloway, UK).

2.3.2 Search Strategy: Search Terms

The initial scoping search identified some key search terms used in this field of research. The search strategy was developed from these initial terms. Medical Subject Headings (MeSH) headings were used to locate related terms, and truncations were used to accommodate differences in spelling and grammar. The final syntax was modified for each database due to differences in indexing and searching facilities. See Appendix B for full search syntax. A *guide* to the final search syntax is as follows:

paraphilia* OR p?edophil* OR rape OR rapist OR incest OR sex* offen* OR sex* assault* OR voyeur* OR exhibitionis* OR groom* OR molest* OR indecen* OR solicit* OR "child porn*" OR "internet sex*" OR "indecent image*" OR hebeph* OR gerontoph*

AND

impuls* OR "risk taking" OR "sensation seeking" OR "delay discounting" OR "response inhibition" OR "behavio?ral disinhibition" OR disinhibit* OR "self control" OR "delay gratification" OR "rash action" OR "rash behavio*" Or "risky action" OR "risky behavio*" Or "inhibitory control" OR "boredom susceptibility" OR "reward sensitiv*" OR "punishment sensitiv*" OR "positive urgency" OR "negative urgency"

2.3.3 Study Selection

The results of the systematic search were exported to Mendeley, a reference management software. Duplicates were excluded. Titles were screened, and irrelevant references were also excluded. The remaining references were then screened by abstract, and irrelevant references were excluded. Inclusion and exclusion criteria were applied to the remaining studies using a pre-defined inclusion/exclusion form (see Appendix C), which was guided by the Population, Exposure, Comparator, Outcome (PECO; See Table 1). See Appendix D for excluded studies. When all inclusion criteria were met, studies proceeded to the quality assessment stage. See Figure 1 for full search strategy.

Table 1. *Inclusion and Exclusion Definitions*

Population	Include: Males aged over 18, who have received a conviction/caution, currently under investigation for, or self-reported (undetected) having committed a sexual offence (including contact and non-contact sexual offences) Exclude: If female/juvenile sexual offender data cannot be separated
Exposure	Include: Measurement specifically designed to assess impulsivity (psychometric or behavioural) Exclude: Lifestyle indicators of impulsivity
Comparator	Include: NOs (where possible) Exclude: If only comparator group consists of non-sexual offenders
Outcome	Score/outcome of the impulsivity measure
Study type	Include: Quantitative research only Exclude: Opinion papers, editorials, commentaries, reviews etc
Language	No language restriction
Date of publication	1980 onwards

2.3.4 Quality Assessment

During the quality assessment stage, a pre-defined quality assessment form adapted from the Critical Skills Appraisal Programme (CASP; Critical Skills Appraisal Programme, 2013; Appendix E & F) was used to gauge the quality of the included research. The first author assessed the quality of all included studies, whilst a second reviewer independently assessed a random sample of 25% of the included studies, to aid consistency and transparency to the quality assessment process. The two assessors achieved a quality assessment correlation coefficient of .81, which falls in the excellent range (Fleiss, 1986).

2.3.5 Data Extraction

Finally, data from included studies was extracted using a pre-defined data extraction form (Appendix G). Data were extracted regarding study characteristics, including sample size, country, study

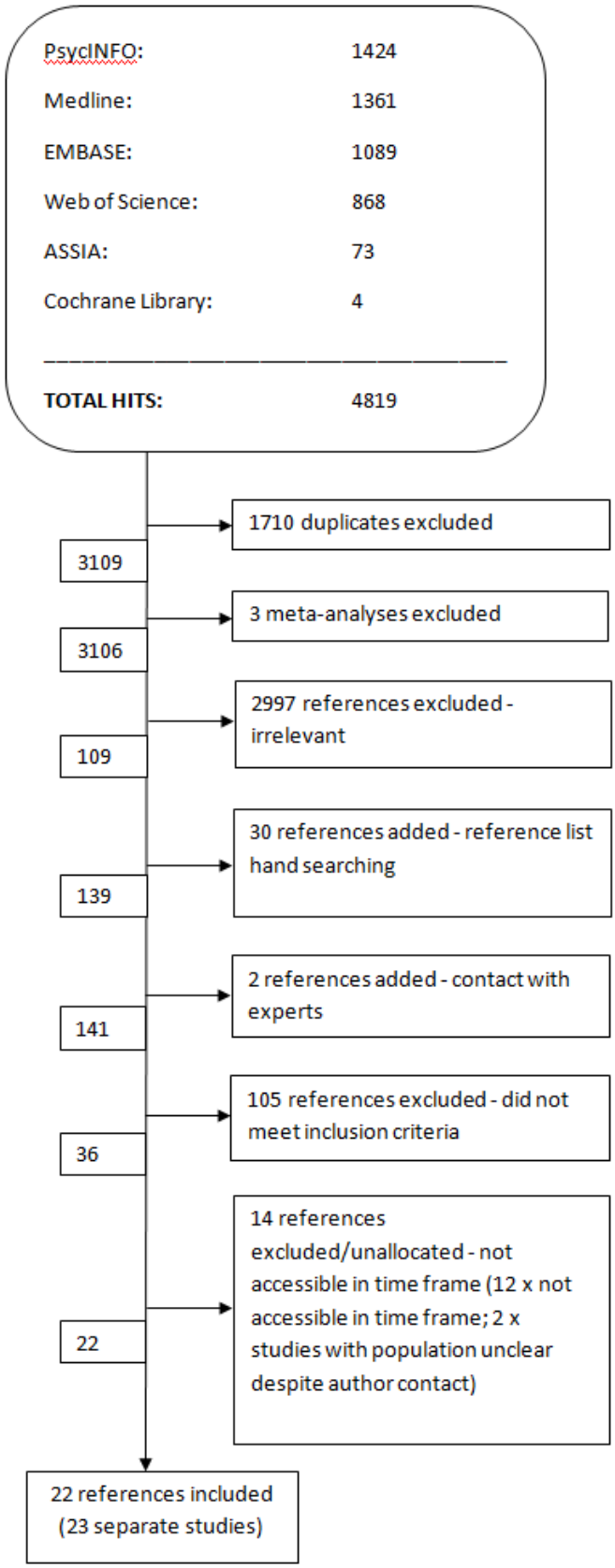


Figure 1. Full Search Strategy

population, and impulsivity measure used, in addition to participant characteristics, including mean age and age range. The reported scores for the impulsivity measure were also recorded. Following advice outlined by Fleeman and Dundar (2014), the data extraction process was repeated and checked to reduce possibility for human error in the extraction and recording process. Where necessary, authors were contacted directly to obtain and/or confirm data.

2.4 Results

2.4.1 Quality Assessment

All included studies (n=23) were assessed for quality. The majority of studies were case control studies (n=17). Six studies were cross-sectional. Each quality assessment question was either scored with 2 points ('yes'), 1 point ('partial'), or 0 points ('no'). Questions were marked with 'Unclear' if not enough information was provided. Quality scores for case control studies ranged from 9-26 (Mean = 17.4; SD = 5.00; Maximum score = 42), while quality scores for cross sectional studies ranged from 17-22 (Mean = 20.3; SD = 1.9; Maximum score = 34). Table 2 provides summarised outcomes of quality assessment. See Appendices H and I for detailed information on quality assessment outcomes.

Table 2. *Quality Assessment Summary*

	Sampling & Selection Bias	**Exposure Measurement Bias**	**Attrition Bias**	**Statistical Bias**
Case Control (n=17)				
Average Quality Score	8.29 (max = 22)	3.41 (max = 8)	1.17 (max = 4)	4.53 (max = 8)
Quality Score (%)	37.7%	42.6%	29.3%	56.6%
Average Number of Unclear	1.17 (max = 11)	1.35 (max = 4)	0 (max = 2)	1.23 (max = 4)

Unclear (%)	10.6%	33.8%	0 %	30.8%)
Cross Sectional (n=6)				
Average Quality Score	8.50 (max = 14)	5.00 (max= 8)	1.67 (max= 4)	5.17 (max = 8)
Quality Score (%)	60.7%	62.5%	41.8%	64.6%
Average Number of Unclear	0.50 (max = 7)	0.67 (max = 4)	0 (max= 2)	1.17 (max = 4)
Unclear (%)	7.1%	16.75%	0%	29.25%

Max = Maximum

The most common form of bias highlighted through quality assessment was attrition bias, followed by sampling and selection bias. The least common bias was statistical bias, followed by exposure measurement bias. Each will be discussed in turn.

2.4.1.1 Sampling and Selection Bias

Sampling and selection bias considers how much study participants are likely to be representative of the target population, and how generalisable the results of the study are.

Almost half of studies (10 studies, 43%) sourced data from a large number of participants (n ≥ 100). Only one study (4%; Kargel et al., 2016) recruited sex offenders across various settings. The remaining studies represented possible sampling bias, as cases were recruited through one setting only, such as prison (e.g. Schiffer & Vonlaufen, 2011), an outpatient treatment clinic (e.g. Cohen & Galynker, 2012), or an inpatient forensic unit (e.g. Deu & Edelmann, 1997). Hence, results of such studies may represent only facets of the cohort, and may not individually be generalisable to the wider sex offender population.

Additionally, when self-selecting participants were recruited from University (e.g. Mouilso, Calhoun, & Rosenbloom, 2016; Voller & Long, 2010) or online (e.g. Ray, Kimonis, & Seto, 2014), the cases and controls could not be reliably assessed as such, which lowered the generalisability of

results. The quality assessment also highlighted that, proportionally, cross sectional studies exhibited less risk of sampling bias compared to case control studies. It appears that future case control research would benefit from improved reporting on the characteristics of control participants, in addition to whether the case and control samples are comparable. Future research would benefit from the recruitment of larger samples, across a variety of settings. The quality of written papers would be improved by the inclusion of power calculations to ascertain whether the research has achieved the correct power to detect sought effects.

2.4.1.2 Exposure Measurement Bias

Exposure measurement bias considers whether the tool used to assess impulsivity was objective and reliable. The measure used to assess impulsivity was clearly stated and described in all studies. The quality assessment process highlighted that studies which employed behavioural measures of impulsivity (8 studies, 35%) demonstrated stronger objectivity in measuring impulsivity, compared to those which only used psychometric measures (15 studies, 65%). Future studies should give explicit definitions regarding whether they aim to measure state-impulsivity (using behavioural tasks), or whether they aim to measure trait-impulsivity (acknowledging that psychometric measurement tools may inherently carry a higher risk of measurement bias). Future research would benefit from authors making explicit statements regarding how missing data was dealt with, in addition to reporting the reliability estimates of the impulsivity assessment tool.

2.4.1.3 Attrition Bias

The risk of attrition bias was high because the studies did not routinely report information on drop-out rates, or state reasons for participant drop-out. Ten studies (58%) explicitly stated participant drop-out rates, with eight of those studies (47%) reporting the reasons for drop-out. This represents an area where future research would benefit from clearer reporting on.

2.4.1.4 Statistical Bias

All studies clearly conducted analyses and reported results which were appropriate to the study design. The slight majority of studies (12 studies, 52%) adjusted their results for confounding variables. It was unclear in the vast majority of studies (22 studies, 96%) whether the assumptions of the data had been tested in the statistical analysis. Future research would benefit from authors

making explicit statements regarding their data meeting the assumptions of certain statistical tests, in addition to accounting for confounding variables within the analyses.

2.4.2 Study & Participant Characteristics

This review of 23 studies combines data from 2,035 sexual offenders and 1,319 NOs. To note, these figures do not include the figures for contact sexual offenders (CSOs) and non-contact sexual offenders (NCSOs) reported by Elliott, Beech, Mandeville-Norden, and Hayes (2009), due to likely considerable overlap of participants analysed in the Elliott, Beech, and Mandeville-Norden (2013) paper. Furthermore, these figures do not include participants detailed in Bettles (2014) Analysis 1, as these participants were detailed in Elliott et al. (2013). It is also possible that participants overlapped in the Cohen & Galynker (2012) and Cohen et al. (2002) paper, hence the above figures do not include the Cohen et al. (2002) sample. Sexual offenders ranged between 18-70 years of age, and NOs ranged between 18-61 years of age.

Sexual offenders were recruited from 9 different countries: UK (8 studies), USA (6 studies), Germany (2 studies), Portugal (2 studies), Canada (1 study), Australia (1 study), Switzerland (1 study), Greece (1 study), and Brazil (1 study). The most common tool used to measure impulsivity was the BIS-11 (9 studies, 39%), though in total, 8 psychometric measures and 7 behavioural measures were located. Sixteen studies used only 1 measure of impulsivity within their study, four studies used 2 measures of impulsivity, and three studies used 3 or more measures of impulsivity. Fifteen studies solely used questionnaire-based measures of impulsivity, six studies used solely behavioural measures of impulsivity, and two studies used both a questionnaire-based and a behavioural measure of impulsivity.

Overall, 8 studies recruited sexual offenders from prisons, and 8 studies recruited sexual offenders from community treatment or outpatient treatment clinics, indicating the judicial status of participants as being convicted and sentenced. Four studies recruited sexual offenders from University research pools or via an online methodology, indicating the judicial status of offenders as being undetected. Data on study, participant, and outcome characteristics are presented in Table 3.

Table 3. *Study, Participant, and Outcome Characteristics*

Reference	**Country**	**Offender sample**	**Study Type**	**Sample (N)**	**Age M(SD)**	**Age Range**	**Outcome/ Measures Used**	**Main Findings**
Abracen, O'Carroll, & Ladha (1991)	Canada	Prison	Case Control	CSO=12 NO=13	CSO=44(10.19) NO=34.1(7.04)	Not reported (author confirmed via email all >18 years of age)	TMT-B (Behavioural)	NSD
Baltieri & de Andrade (2008)	Brazil	Prison	Cross Sectional	CSO one victim=149 CSO two victims=25 CSO three or more victims=24	CSO one victim=38.42(11.92) CSO two victims=43.12(11.12) CSO three or more victims=42.87(12.18)	Not reported, but stated all >18 years of age	BIS-11 (Psychometric)	Sexual offenders against three or more victims evidenced significantly higher impulsivity than sexual offenders against one victim
Becerra-García, García-León, & Egan (2013)	UK	Prison	Cross Sectional	CSO=33	CSO=47.79(9.71)	30-70	TMT-A; TMT-B (Behavioural)	Behavioural impulsivity measures could predict Openness and Extraversion in CSOs

Bettles (2014)	UK	Analysis 1:Obtained from Elliott et al. (2013) and community treatment programme Analysis 2&3:Community treatment programme	Case Control	Analysis 1: NCSOs=472 MSOs=142 NOs=32 Analysis 2&3: NCSOs=13 NOs=32	Analysis1: NSCOs=42.00(unknown) MSOs=43.60(unknown) NOs=26.2(unknown) Analysis 2&3: NCSOs=44.7(unknown) NOs=26.2(unknown)	Not reported, but stated all >18 years of age	Analysis 1:BIS-11 (Psychometric) Analysis 2:Stroop Task & IRTSS (Behavioural & Psychometric) Analysis 3: Emotional Stroop Task (Behavioural)	Analysis 1:MSOs & NCSOs significantly higher 'Attentional' impulsiveness than NOs. Analysis 2&3: NCSOs exhibited greater emotional interference than NOs. IRTSS=NSD.
Carvalho & Nobre (2013) - Study 1	Portugal	Prison	Case Control	CSO(adult victims)=32 CSO (Child victims)=31 NO=30	CSO(adult victims)=33.8(9.34) CSO(child victims)=38.5(9.61) NO=31.6(8.26)	CSO(adult victims)=20-58 CSO(child victims)=22-58 NO=23-53	BIS-11 (Psychometric)	Motor/Planning=CSOs significantly higher than controls Cognitive=NSD

Carvalho & Nobre (2013) - Study 2	Portugal	University	Case Control	MSO=37 NO=71	MSO=23.9(5.36) NO=23.6(5.4)	MSO=18-43 NO=19-50	BIS-11 (Psychometric)	Motor/Planning/ Cognitive=MSOs significantly higher than controls
Cohen & Galynker (2012) - Study 1	USA	Outpatient treatment clinic	Case Control	CSO=21 NO=24	CSO=38.6(1.2) NO=33.8(9.7)	Not reported (author confirmed via email all >18 years of age)	TCI (Novelty Seeking) DAPI-Q (Impulse Control) (Psychometric)	DAPI-Q Impulse Control Scale=CSOs significantly higher than controls. TCI Novelty Seeking Scale=NSD
Cohen et al. (2002)	USA	Outpatient treatment clinic	Case Control	CSO=20 NO=24	CSO=38.32(8.3) NO=36.71(9.7)	Not reported (author confirmed via email all >18 years of age)	TCI (Novelty Seeking & Harm Avoidance) DAPI-Q (Impulse Control) (Psychometric)	DAPI-Q Impulse Control Scale=CSOs significantly higher than controls. TCI Novelty Seeking Scale=NSD
Dennison, Stough, Birgden (2001)	Australia	Prison	Case control	CSO=60 NO=33	CSO=47(9.94) NO=39(11.1)	Not reported, but stated all >18 years of age	NEO-PI-R (impulsivity facet scale) (Psychometric)	NSD

Deu & Edelmann (1997)	UK	Forensic Inpatients	Case Control	Predatory offenders=12 Opportunist offenders=12 NO=12	Not reported	Not reported, but stated all >18 years of age	SHAPS (Impulsivity Scale) (Psychometric)	NSD
Eastvold, Suchy, & Strassberg (2011)	USA	Community treatment programme (following release from prison)	Cross Sectional	Paedophilic CSOs=30 Non-paedophilic CSOs=30	Paedophilic CSOs=34.5(8.3) Non-paedophilic CSOs=31.7(7.5)	19-49	TMT-B; Color-Word Interference Test; Tower Test (Behavioural)	Planning & overall performance accuracy=Pedophilic CSOs performed significantly better than non-pedophilic CSOs
Elliott, Beech, & Mandeville-Norden (2013)	UK	Community treatment programme (community sentences)	Cross Sectional	CSO=526 MSO=142 NCSO=459	CSO=42.2(14.3) MSO=42(11.9) NCSO=39.9(11.3)	Not reported, but stated all >18 years of age	BIS-11 (Psychometric)	Cognitive impulsivity=CSOs significantly higher than MSOs and NCSOs
Elliott, Beech Mandeville-Norden, & Hayes (2009)	UK	Community treatment programme (community sentences)	Cross Sectional	CSO=526 NCSO=505	CSO=42.2(14.3) NCSO=40.1(11.2)	Not reported, but stated all >18 years of age	BIS-11 (Psychometric)	CSOs had significantly higher cognitive impulsivity than NCSOs

Giotakos, Markianos, Vaidakis, & Christodoulou (2003)	Greece	Prison	Case Control	CSO=52 NO=250	CSO=30.2(8.9) NO=29.3 (6.6)	CSO=21-56 NO=22-38	BIS-11 (Psychometric)	CSOs scored significantly higher than controls
Habermeyer et al. (2013)	Switzerland	Outpatient treatment clinic	Case Control	CSO=11 NO=7	CSO=49(12.5) NO=47(8.6)	CSO=32-75 NO=35-61	Go/No-go Task (Behavioural)	CSOs demonstrated significantly higher inattention than controls
Kargel et al. (2016)	Germany	General Population, Community Treatment Programme, and Prison	Case Control	CSO=40 Non-Offending Pedophiles=37 NO=40	CSO=38.25(8.54) Non-Offending Pedophiles =37(8.84) NO=36.65(10.13)	CSO=20-53 Non-Offending Pedophiles =23-57 NO=20-57	Go/No-go Task (Behavioural)	Non-offending paedophiles exhibited superior inhibitory control (significantly lower rate of commission errors) than CSOs
Madsen, Parsons, & Grubin (2006)	UK	Community treatment programme (community sentence)	Cross Sectional	Personality disordered CSOs=21 Non-personality disordered CSOs=19	CSO=41(10.7)	22-67	NEO-PI-R (impulsivity facet scale) (Psychometric)	Personality disordered CSOs reported significantly higher impulsiveness than non-personality disordered CSOs

Mouilso, Calhoun, & Rosenbloom (2016)	USA	University	Case Control	CSO=42 NO=220	Combined groups=19.7(1.55)	Combined groups=18-24	UPPS-P (Psychometric)	Impulsivity distinguished CSOs from NOs
Parry & Lindsay (2003)	UK	Intellectually disabled forensic inpatients	Case Control	MSO=22 NO=6	Combined groups=32.86(12.46)	Combined groups=20-55 (author confirmed age range via email)	BIS-11 (Psychometric)	NSD
Ray, Kimonis, & Seto (2014)	USA	Online	Case Control	NCSO=34 NO=127	Combined groups=31.1(10.97)	Combined groups=18-65	NESS (Psychometric)	NSD
Schiffer & Vonlaufen (2011)	Germany	Prison	Case Control	Paedophilic CSOs=15 Non-paedophilic CSOs=15 NO=17	Paedophilic CSOs=38.7(8.9) Non-paedophilic CSOs=44.2(7.9) NO=37.7(10.1)	CSO=24-55 NO=24-54	TMT-A; TMT-B; Go/No-go Task; Tower of London Task (Behavioural)	CSOs (paedophilic or not) exhibited larger performance deficits in behavioural inhibition than NOs. Non-paedophilic child molesters showed the worst performance. NSD on Tower of London.
Smith & Waterman (2004)	UK	Prison	Case Control	CSOs=10 NO=13	CSOs=35.6(7.02) NO=23.6(5.71)	Not reported (author confirmed via email all	Emotional Stroop Task (Behavioural)	CSOs showed greater interference on emotional stroop. BIS-11=NSD

						>18 years of age)	BIS-11 (Psychometric)	
Voller & Long (2010)	USA	University	Case Control	CSO=69 NO=424	Combined groups=20.24(2.83)	Combined groups=18-55	NEO-PI-R (impulsivity facet scale) (Psychometric)	NSD

CSO = Contact Sex Offender; MSO = Mixed Sex Offender (contact and non-contact); NCSO = Non-Contact Sex Offender; NO = Non-offender; NSD = No Significant Difference

Psychometric measures: Barratt Impulsivity Scale (BIS-11; Patton et al., 1995); Dimensional Assessment of Personality Impairment-Questionnaire (DAPI-Q; Cohen et al., 2000); Impulsivity, Risk Tasking, and Sensation Seeking Scale (IRTSS; Schafer, Blanchard, & Fals-Stewart, 1994); Revised NEO-Personality Inventory (NEO-PI-R, Costa & McCrae, 1992); Nonsexual Experience Seeking Scale (NESS; Kalichman et al., 1994); Special Hospitals Assessment of Personality and Socialization (SHAPS; Blackburn, 1982); Temperament and Character Inventory (TCI; Cloninger, Svrakic, & Przybeck, 1993).

Behavioural measures: Emotional Stroop Test (Bettles, 2014; Smith & Waterman, 2003); Go-No/Go Task (e.g. Zimmermann & Fimm, 2009); Stroop Test (Stroop, 1935); Trail Making Task A & B (TMT-A; TMT-B; Reitan, 1992); Tower of London Task (Schall et al., 2003)

2.4.3 Narrative Synthesis

The studies included in this systematic review utilised different definitions of the impulsivity outcome. As such, different outcomes were measured. Studies which used psychometric measures to assess impulsivity recorded participant scores across different subscales of the measure, and/or a total score, where higher scores indicate higher impulsivity. The most commonly used psychometric tool was the BIS-11. Studies which used behavioural measures to assess impulsivity recorded various outcome measures, dependant on the task administered. Typically, outcomes such as mean reaction time, mean completion time, and mean number of errors were used to assess different behavioural facets of impulsivity.

Results were mixed. Of the seventeen studies which employed psychometric measures to assess impulsivity, four reported that sexual offenders were significantly more impulsive than controls, whereas six studies reported that there were no significant differences in impulsivity between sexual offenders and controls. Five studies reported significant differences between sexual offenders and controls on some subscales of the same measure, but not others, whereas two studies found significant differences between sexual offenders and controls on one impulsivity measure, but no significant difference on another measure. Of the eight studies which employed behavioural measures to assess impulsivity, two studies reported that sexual offenders were significantly more impulsive than controls, whereas another study did not report a significant difference. Three studies reported that sexual offenders were significantly more impulsive than controls on some aspects of a measure but not other aspects, and two studies reported significant differences between sexual offenders and controls on some measures, but no significant difference on other measures. In an attempt to resolve uncertainty and inconsistency of the individual studies and results, and to provide an estimate of the overall size of the effect, results were combined using meta-analysis.

2.4.4 Meta Analysis

To increase homogeneity of reporting in the ensuing meta-analyses, studies which utilised psychometric measures of impulsivity were considered separately to studies which considered behavioural measures of impulsivity. Meta analyses were conducted using random effects models in Review Manager (Cochrane Collaboration, 2014), so that inferences could be generalised beyond just the studies included in the review (Field & Gillett, 2010).

2.4.4.1 CSOs Vs NOs

Using the criteria outlined by Blundell (2014), the studies which compared CSOs to NOs were deemed to be appropriately homogeneous in terms of participants and exposure, so it was legitimate for meta-analyses to be undertaken. This resulted in the exclusion of 6 cross sectional studies, due to a lack of NOs. As the included studies assessed the same outcome, but used different measurement tools, results were transformed into Cohen's *d* to provide a standardised mean difference of scores on a uniform scale. Means, standard deviations, and sample sizes were used to compute Cohen's *d*. This resulted in one further study being excluded (Carvalho & Nobre 2013, study 2) due to an outlying effect size (more than two standard deviations from the mean; $-3.3 > z > 3.3$; Tabachnick & Fidell, 2007), and one study being excluded (Cohen & Galynker, 2012) due to overlap of participants with the included Cohen et al. (2002) study. To ensure the assumption of independence was not violated, where the same study used more than one measure of impulsivity, or reported scores across different offender groups separately (e.g. rapists and child sexual abusers), average effect sizes for each study were calculated following the steps outlined by Turner and Bernard (2006).

2.4.4.1.1 Psychometric Measures

Nine studies were combined in this meta-analysis. The psychometric measurement tools combined in this meta analysis include the BIS-11, the NEO-PI-R impulsivity facet scale, the UPPS-P, the SHAPS impulsivity facet scale, the TCI Novelty Seeking and Harm Avoidance subscales, and the DAPI-Q Impulse Control subscale. It was legitimate to combine various psychometric measures of impulsivity in the current analysis, as Cross, Copping, and Campbell (2011) reported in their meta-analysis that psychometric measures of impulsivity correlated with one another. This meta-analysis reported data on 1,149 participants (n=362 CSOs and n=787 NOs). The forest plot displaying effect sizes and confidence intervals of the psychometric studies comparing CSOs to NOs can be seen in Figure 2.

This meta-analysis yielded a medium effect size of $d = .61$ (95% CI -0.01 to 1.23). However, because the result crossed the 'line of no effect', the result is not statistically significant. A high level of heterogeneity was also present (χ^2 (8) = 113.94, $p < 0.01$; $I^2 = 93\%$). It appears likely that the size of the effect may have been overestimated due to publication bias. An examination of the funnel plot showed asymmetry (See Figure 3), which suggests the current meta-analysis may be biased due to a lack of published studies which reported insignificant effects (Sutton, 2009).

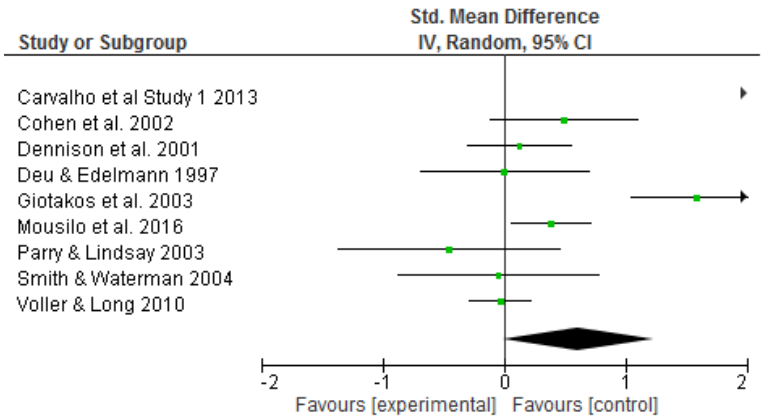


Figure 2. Forest plot: Psychometric studies comparing CSOs to NOs

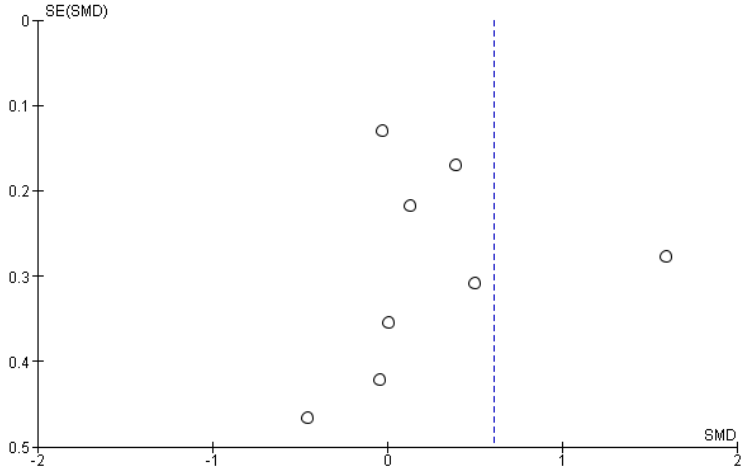


Figure 3. Funnel plot: Psychometric studies comparing CSOs to NOs

2.4.4.1.1.2 Subgroup Analysis

Subgroup analyses were conducted to investigate potential sources of heterogeneity, and to explore whether different subgroups had different effects. The sources of clinical and methodological heterogeneity considered included participant age, recruitment setting, sample size, measurement tool, study quality, and country where the research was conducted. No subgroup differences were found between studies which used: participants with a mean age of above or below 30 years (χ^2 (1) = 1.22, p=0.27); prison versus non-prison samples (χ^2 (1) = 2.13, p=0.14); larger or smaller sample sizes (defined as being above or below 30 participants in each group; χ^2 (1) = 0.73; p=0.39); BIS-11 versus

'other' measure of impulsivity (χ^2 (1) = 1.35, p=0.25); or higher versus lower quality studies (an overall quality score of 16 used as a cut-off point to define groups; χ^2 (1) = 0.07, p=0.79). It was not possible to complete subgroup analysis for offence type (e.g. CSOs against adults versus CSOs against children), as suggested by Joyal et al. (2014), because data were pooled in each study for different offence types, meaning it was not possible to separate this data.

However, a significant subgroup difference was found between studies originating from the UK, USA, and Australia when compared to Other European countries (χ^2 (1) = 6.97, p<.01). However, this was not significant because the result crossed the 'line of no effect'. So, whilst there was some evidence of higher levels of impulsivity in CSOs than NOs in UK, USA, and Australian samples, this difference was not significant. The forest plot displaying effect sizes and confidence intervals of this subgroup analysis can be seen in Figure 4.

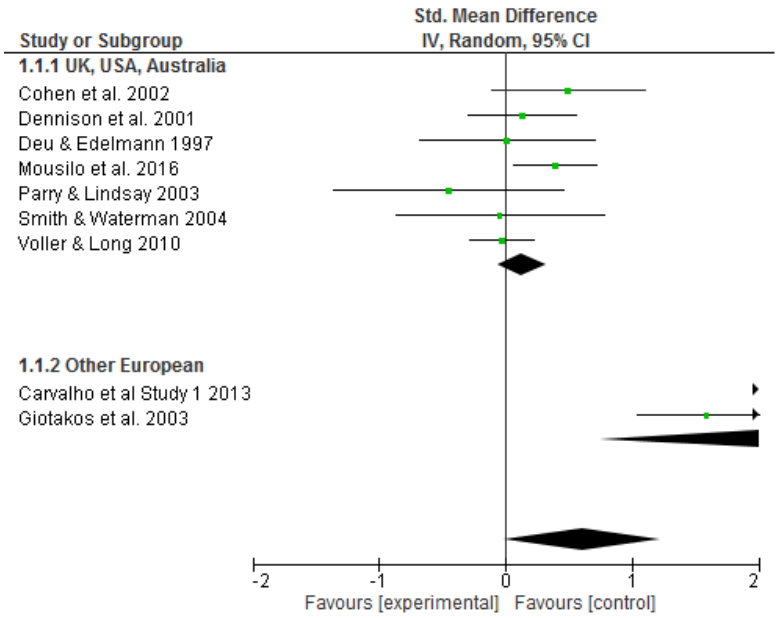


Figure 4. Subgroup analysis forest plot: Psychometric studies comparing CSOs to NOs grouped by country of origin

The heterogeneity of studies in the current meta-analysis might have also resulted from factors such as sexual offender subtype, differential drop-out rates between studies, or indeed how each psychometric assessment tool conceptualised and defined the broad concept of "impulsivity". Clinically, different sexual offender subtypes might be correlated with specific cognitive profiles; for example, broadly, the level of impulsivity involved in the offence process for contact sexual offences committed against strangers might be higher than the level of impulsivity involved in the offence

process committed against a known victim. It was not possible to complete subgroup analysis for offence type (e.g. CSOs against adults versus children; CSOs against strangers versus known victims), because data were often pooled in each study for different offence types, meaning it was not possible to separate this data. Differential drop-out rates between studies might have added a further source of heterogeneity, as impulsive persons might be more likely to drop out of a study prematurely. Likewise, because drop-out rates were not routinely reported, it was not possible to complete subgroup analysis for drop-out rate. Finally, the different conceptualisations of impulsivity across psychometric assessment tools could have added a further source of heterogeneity. Despite Cross et al. (2011) reporting meta-analytical findings where psychometric impulsivity measures correlated with one another, these data were based on samples of non-offending males and females. In sexual offender samples, the effect of different conceptualisations of impulsivity might provide more pronounced effects on the outcomes of impulsivity assessment – particularly if different subtypes of sexual offences are more specific to different facets of impulsivity.

2.4.4.1.2 Behavioural Measures

The first meta-analysis included five studies (Abracen et al., 1991; Habermeyer et al.; 2013, Kargel et al., 2016; Schiffer & Vonlaufen, 2011; Smith & Waterman, 2004) which reported mean reaction time across the Go/No-Go Task, Trail Making Tasks A & B, the Emotional Stroop Task, and the Tower of London Task. This comprised 230 participants (n=140 CSOs and n=90 NOs), and yielded a small effect size of d = .29 (95% CI 0.02 to 0.56) with a significant z score of 2.13 (p = 0.03). The direction of effect indicated that CSOs took significantly longer to respond than did NOs, indicating performance deficits (however detected) in CSOs compared to NOs. A chi-squared test indicated heterogeneity was not present (χ^2 (4) = 2.99, p = 0.56; I^2 = 0%). The second meta-analysis of included three studies (Habermeyer et al., 2013; Kargel et al., 2016; Schiffer & Vonlaufen, 2011) which reported mean commission error across the Go/No-Go Task and Trail Making Tasks A & B. This comprised 182 participants (n=118 CSOs and n=64 NOs), yielded a small effect size of d = .35 (95% CI -0.37 to 1.06) with a non-significant z score of 0.95 (p = 0.34). A chi-squared test indicated high heterogeneity (χ^2 (2) = 7.85, p =0.02; I^2 = 75%). Together, these results suggest that whilst CSOs evidenced performance deficits in behavioural inhibition, response accuracy between CSOs and controls was not significantly different.

2.4.4.2 NCSOs Vs NOs

2.4.4.2.1 Psychometric Measures

The systematic search returned two studies which explored differences in impulsivity between NCSOs and NOs using psychometric measures. The psychometric measurement tools combined in this meta-analysis are the BIS-11 and the NESS. This meta-analysis reported data on 665 participants (n=506 NCSOs and n=159 NOs). To note, only data from Bettles (2014) Analysis 1 were used in the present analysis, due to unequal sample sizes/overlap of participants in Analysis 2. The forest plot displaying effect sizes and confidence intervals of the psychometric studies comparing CSOs to NOs can be seen in Figure 5.

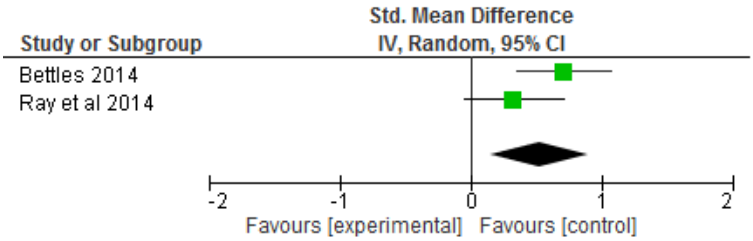


Figure 5. Forest plot: Psychometric studies comparing NCSOs to NOs

This meta-analysis yielded a medium effect size of d = .53 (95% CI 0.15 to 0.90) with a significant z score of 2.72 (p = <0.01), suggesting higher impulsivity was found in NCSOs compared to NOs. There was no evidence of heterogeneity (χ^2 (1) = 2.08, p =0.15); however, the I^2 statistic suggested the level of heterogeneity was moderate (I^2 = 52%). This meta-analysis may be limited due to only including two studies, as the accuracy increases with the number of studies included. Hence, this result should be interpreted with caution.

2.4.4.2.2 Behavioural Measures

Only one study (Bettles, 2014) used behavioural measures to assess impulsivity in NCSOs versus NOs. It was therefore not possible to conduct a meta-analysis.

2.4.4.3 CSOs Vs NCSOs

The systematic search returned two studies which explored differences in impulsivity between contact sexual offenders and NCSOs (Elliott et al., 2009; Elliott et al., 2013). Due to overlapping participants between the two studies, it was not possible to perform a meta-analysis.

2.5 Discussion

2.5.1 General Discussion

Twenty-three controlled studies examining impulsivity in sexual offenders were identified for inclusion. An abundance of literature was identified by the wide systematic search terms, but strict inclusion/exclusion criteria decreased the number to a somewhat small number. In an attempt to source a representative sample of all available published and unpublished material, reference lists were hand searched, and professionals in the field were also contacted.

This systematic review sought to answer three questions. First, how is impulsivity assessed in adult male sex offenders? Second, does impulsivity differ between adult male CSOs and NCSOs? Third, does impulsivity differ between adult male sex offenders and NOs?

This review was able to answer the first question, as the included studies provided a varied picture how research has assessed impulsivity in adult male sexual offenders, via a variety of assessment methods, including psychometric and behavioural measures. The BIS-11 was the most common instrument used to assess impulsivity, though in total, 8 psychometric measures and 7 behavioural measures were located.

There was limited evidence regarding the second review question, in that only two studies were located which explored whether impulsivity differed between adult male CSOs and NCSOs. This study found that CSOs scored higher on a psychometric measure of cognitive impulsivity compared to NCSOs. This review question highlights an area where future research is needed, as only two studies were identified which compared these two offender groups, meaning that strong conclusions could not be drawn for this research question.

Finally, the included studies provided a somewhat mixed result regarding whether impulsivity differed between adult male sexual offenders and NOs. The meta-analysis comparing CSOs to NOs suggested psychometric measures addressing this research question had an overall medium effect, indicating higher levels of impulsivity in CSOs compared to NOs, however this effect was not significant because the result crossed the 'line of no effect'. Breaking this down, sources of heterogeneity could not be explained via subgroup analysis, and the analysis itself was likely limited due to publication bias in the literature (Sutton, 2009). With this in mind, the effect size is likely an overestimate of the true effect and should be interpreted with caution. Behavioural measures showed a significant small effect which indicated performance deficits in behavioural indices in CSOs compared to NOs. Similarly, the meta-analysis comparing NCSOs to NOs on psychometric measures of impulsivity had a significant medium effect, indicating that NCSOs were more impulsive than NOs. However, this meta-analysis was limited due to only including two studies. Hence, this result should be interpreted with caution. It was not possible to meta-analyse studies which employed behavioural measures to compare NSCOs to NOs as there was a lack of data meeting this criterion.

The wide range of impulsivity assessments located by this systematic review further suggest that due to the inconsistencies amongst conceptualisations of impulsivity, and the heterogeneous nature of the construct itself, multiple assessment methods exist with an inconsistent literature. Whilst the availability of multiple assessment methods may have research utility, clinically, this may limit the generalizability of research findings, as different researchers have defined and conceptualised the broad domain of impulsivity differently. Hence, this systematic review highlights the need for and overarching conceptualisation of impulsivity to be developed and adopted. Indeed, Whiteside and Lynam (2001) developed the UPPS model of impulsivity, as an attempt to provide a more theoretical structuring of impulsivity than has previously existed (See Chapter Three for a critique of this measure).

Nevertheless, the findings of the current systematic review and meta-analysis support the meta-analytical findings reported by Joyal et al. (2014), in that sexual offenders were found to exhibit performance deficits when compared to NOs on behavioural measures of impulsivity. The current review built on these findings to provide evidence that sexual offenders also exhibit higher impulsivity when compared to NOs on psychometric measures of impulsivity. As per Joyal et al. (2014), it was not possible to complete subgroup analysis for offence type (e.g. CSOs against adults versus CSOs against children), because data were often pooled in each study for different offence types, meaning it was not possible to separate this data. Future research should endeavour to clearly report data for

subtypes of CSOs and NCSOs to provide more specificity to conclusions which can be drawn for group differences in impulsivity.

The methodological quality of included studies was varied: 41.4% for case control studies, and 59.7% for cross sectional studies, indicating acceptable quality. Particular strengths of the included studies were that the measure used to assess impulsivity was clearly stated and described. The included studies conducted analyses which were appropriate to the design, and clearly reported results. The majority of studies adjusted their results to account for confounding variables. However, the quality assessment process also highlighted areas for improvement, particularly concerning sampling, exposure, and attrition bias. For example, future research would benefit from recruiting larger samples of sexual offenders, from across various recruitment settings, to increase the generalisability of results. Future case control research would benefit from improved reporting on the characteristics of control participants, and whether the case and control samples are comparable. The quality assessment highlighted that future research would benefit from authors making explicit statements regarding how missing data was dealt with, as well as reporting the reliability estimates of the impulsivity assessment tool. Future research would also benefit from clearer reporting on the rates and reasons for participant drop-out. This is of particular importance when measuring the construct of impulsivity, as impulsive persons may be more prone to prematurely drop out from a research study. Hence, whilst the data overall did allow for the review questions to be provisionally answered, if the quality of included studies were higher, firmer conclusions may have been able to have been drawn. The current review obtained mixed results regarding whether impulsivity differed between CSOs/NCSOs and sexual offenders/NOs. Higher quality study design may have reduced some of the error, enabling clearer conclusions to be drawn.

This systematic review itself had a number of strengths. A number of bibliographic databases were searched, obtaining both published and unpublished material. The systematic search was further complimented by hand-searching reference lists and contacting professionals in the field, in an attempt to overcome publication bias. The quality of included studies were assessed by the reviewer and as well as an independent assessor, giving an excellent inter-rater reliability estimate of 0.81. The systematic review was strengthened by the inclusion of meta-analytical statistics, adding weight to the confidence of conclusions which could be drawn from this review.

However, the review process itself also had limitations. Whilst the systematic search obtained references for non-English papers and unpublished theses, it was not possible to source

every full-text article within the available time frame. This may have biased the review in favour of published, English-language research, as only one unpublished thesis was included in the present review. Whilst extracted data were cross-checked by the reviewer, it is possible that human error may have occurred in the extraction and recording process.

The findings of this review may also have been influenced by the strict inclusion/exclusion criteria set out by the research questions. For example, only studies which utilised psychometric or behavioural assessments of impulsivity were included in this review. However, many studies have reported outcome data for 'lifestyle indicators' of impulsivity (e.g. alcoholism, losing jobs). It is important to remember this when interpreting the results of this research. Therefore, the conclusions of this review might be extended to more formalised assessments of impulsivity in the sexual offender population, but caution should be taken when inferring the meaning of these results to 'real-world' behaviour.

The findings of this systematic review and meta-analysis may be cautiously generalised to the adult male sexual offender population. The review included participants across a range of recruitment settings and judicial statuses. Eight studies recruited offender samples from prison, and eight studies recruited offender samples from community-based treatment programmes or clinics. The remaining studies recruited offender samples from forensic inpatient units, and through university/online advertising. Hence, the results are not biased in favour of one specific recruitment setting. That said, whilst a number of countries were represented in this review, the results of this review may be biased towards Western sexual offenders, as only one study was based in a non-Westernised country. Additionally, the variation of recruitment settings and judicial statuses of the sample likely adds a source of heterogeneity when generalising the results. For example, it seems sensible to hypothesise that a university student who self-reports perpetration of a sexual assault may have substantial demographic and personality differences to an individual who has been incarcerated for perpetrating multiple rapes. This highlights the need for future research across a range of recruitment settings and non-European/primarily English-speaking countries, so that results from multiple studies using the same recruitment setting across various countries may be combined and analysed, so increasing the generalisability of results. Additionally, it must be emphasised that the current review focussed solely on the adult male sexual offender population, and so it is not appropriate to generalise the results to youth or female sexual offenders.

2.5.2 Implications for Practice and Conclusions

This systematic review provides some evidence which suggests higher impulsivity in sexual offenders compared to non-offending controls. There are a range of psychometric and behavioural measures which are available for use for assessing impulsivity in research and professional practice. As a result, researchers and clinicians should carefully consider and operationalise the type of impulsivity they wish to assess, and make informed choices of the most suitable measure in line with this definition.

Chapter Three – Critique of a Psychometric Assessment: Exploring the Psychometric Properties of the UPPS-P Impulsive Behaviour Scale

3.1 Introduction

Impulsivity is a broad, multi-dimensional concept, which has been conceptualised with a number of different terms, including *risk taking, sensation seeking,* and *lack of planning* (Patton, Stanford, & Barratt, 1995). Impulsivity is a central concept in personality theory and psychopathology (Whiteside &Lynam, 2001). Impulsivity is a well-established as a risk factor for recidivism in forensic populations (e.g. Andrews & Bonta, 2006). Researchers have suggested that exploring the construct of impulsivity within forensic populations, might help to identify specific re-offending risks and targets for intervention (Gordon & Egan, 2011).

Due to the heterogeneity of the construct itself, multiple conceptualisations of impulsivity, and multiple methods of assessing impulsivity exist (Whiteside, Lynam, Miller, & Reynolds, 2005). Impulsivity assessment methods include both self-report psychometric questionnaires, and behavioural laboratory tasks. However, a meta-analysis has demonstrated that experimental "performance" measures of impulsivity do not correlate well with self-reported impulsivity disposition scales (Cyders & Coskunpinar, 2011). The authors suggest this may be a result of laboratory tasks and self-report questionnaires measuring different aspects of impulsivity; for example, laboratory tasks measure present states, whereas self-report questionnaires measure general traits. Whilst self-report questionnaires remain the most commonly used technique for measuring impulsivity, even within this self-report domain different questionnaires focus on different aspects of the construct (Whiteside & Lynam, 2001).

The most commonly used self-report psychometric questionnaire used to assess impulsivity, as highlighted in Chapter Two, is the Barratt Impulsiveness Scale, which is currently in its eleventh revision (BIS-11; Patton et al., 1995; Stanford et al., 2009). The BIS was originally developed from a hypothesis that impulsivity was a unique and independent construct statistically independent from the construct of anxiety, and multi-dimensional in nature. Whilst the 'attentional' and 'motor' impulsiveness subscales of the BIS have been reliably replicated, the third subscale, 'non planning', has not (Whiteside & Lynam, 2001).

3.2 Overview of the UPPS-P

3.2.1 Development

Given the multitude of extant methods of assessing impulsivity, the literature in this area is somewhat disjointed and hard to navigate (Berg, Latzman, Bliwise, & Lilienfield, 2015). The disjointed literature poses problems when trying to assimilate research findings, and proves near-impossible to integrate research findings into an overarching theoretical model of impulsivity. Berg, et al. (2015) surmise that "impulsivity" is an umbrella term, under which a variety of empirically separate traits and dimensions sit. Neuropsychiatric research has suggested that different impulsive-like traits are served by distinct neural networks, providing some support for the heterogeneous conceptualisation of impulsivity (Dalley & Robbins, 2017). However, further neuropsychiatric research across larger and more varied samples are required so that more confidence can be placed in these research findings. In an attempt to clarify the multi-dimensional nature and to provide an overarching conceptualisation of impulsivity, Whiteside and Lynam (2001) conducted an exploratory factor analysis of participant responses across eight well-validated self-report impulsivity measures, including the BIS, as well as an omnibus personality measure (the NEO-PI-R; Costa & McCrae, 1992).

Whiteside and Lynam (2001) identified common aspects of impulsivity between different self-report measures, and placed these in a broad model of personality (The Five Factor Model of personality; FFM; McCrae & Costa, 1990). The authors proposed four distinct pathways to impulsive behaviour; urgency, (lack of) perseverance, (lack of) premeditation, and sensation seeking; each of which mapped to a distinct facet of the FFM. For example, the authors mapped urgency to neuroticism, (lack of) perseverance and (lack of) planning to conscientiousness, and sensation seeking to extraversion. The authors combined items with high factor loadings to create the UPPS Impulsive Behaviour Scale. As such, the UPPS reflects a more theoretical structuring of impulsivity than previous atheoretical and empirically derived measures, such as the BIS-11. Later research has located a fifth, separate, pathway to impulsive behaviour, termed positive urgency (Cyders et al., 2007). Together, these five pathways to impulsive behaviour are measured using the UPPS-P Impulsive Behaviour Scale (Lynam, Smith, Cyders, Fischer, & Whiteside, 2007). Cyders and Smith (2007) present confirmatory factor analytical findings which support a three-factor solution to the UPPS-P model of impulsivity; an urgency dimension (including positive and negative urgency), a conscientiousness dimension (including deficits in planning and perseverance), and a sensation seeking dimension.

This critique examines the UPPS-P Impulsive Behaviour Scale (UPPS-P; Lynam et al., 2007) in terms of its scientific properties, its clinical and research uses, and considers its use in forensic settings.

3.2.2 The Instrument

The UPPS-P is a 59-item self-report questionnaire, which uses five subscales to measure five facets of impulsive behaviour (Lynam et al., 2007). The UPPS-P subscales measure Negative Urgency (rash action resulting from negative emotions), Positive Urgency (rash action resulting from positive emotions), Lack of Perseverance (tendency to give up when activities become boring or difficult), Lack of Premeditation (tendency to act without deliberation), and Sensation Seeking (tendency to seek activities which involve risk or thrill). Participants respond using a 4-point Likert-type scale from 1 ('Strongly Agree') to 4 ('Strongly Disagree'). Thirty-nine items are reverse coded, so that higher scores on each subscale indicate higher levels of impulsivity. Positively, from a theoretical perspective, the three dimensions outlined in the confirmatory factor analysis reported by Cyders and Smith (2007) provides the ability to measure indicators of a general construct, in addition to the specific facets of impulsivity.

3.3 Psychometric Properties of the UPPS-P

3.3.1 Reliability

3.3.1.1 Internal Consistency

Internal consistency refers to the extent to which test items within the UPPS-P that measure the same attribute are related with each other. Using Cronbach's alpha to measure internal consistency of the UPPS-P in a sample of 1,372 undergraduate students, Cyders (2013) reported that internal consistencies for all UPPS-P subscales were good (.82 to .94). Data are increasingly accruing which validate the use of the UPPS-P in adult community, clinical, and forensic samples, in addition to the undergraduate sample on which is was derived and validated. The factor structure of the UPPS-P has been reliably replicated across populations, including community and clinical samples (e.g. Fossati et al., 2016; Cyders et al., 2007; Smith et al., 2007), which provides further support in favour of the UPPS-P holding a reliable factor structure.

The psychometric properties of the UPPS-P have been explored following translation of the measure into different languages. Verdejo-García, Lozano, Moya, Alcázar, & Pérez-García (2010) explored a Spanish translation of the UPPS-P in a sample of undergraduate students. The authors reported that internal consistencies for all UPPS-P subscales were good (.79 to .93). Additionally, Fossati et al. (2016) reported that an Italian translation of the UPPS-P yielded good alpha coefficients across the five UPPS-P subscales (.84 to 92) in an adult clinical sample. Whilst these findings provide some evidence supporting the consistency of the UPPS-P across varied populations, further research which explores the consistency of translations of the UPPS-P across adult community, clinical, and forensic samples in non-Westernised countries is warranted.

3.3.1.2 Test-retest Reliability

Test-retest reliability explores the stability of test results over repeated administrations of the test. Weafer, Baggott, and de Wit (2013) explored test-retest reliability across a battery of impulsivity assessments, including behavioural impulsivity assessments, the UPPS-P, and the BIS-11, in healthy adult participants. The authors conducted Pearson correlations to assess test-retest reliability. Reliability estimates for the UPPS-P were high, with significant correlations across the five subscales (.81 to . 93). Reliability estimates for the BIS-11 were also high, with significant correlations across the three subscales (.85 to .88). The authors reported that test-retest reliability estimates were higher for the two aforementioned self-report measures of impulsivity, compared to behavioural measures of impulsivity. These findings provide some evidence that the UPPS-P is stable over repeated administrations. This is important if, for example, one wants to objectively measure meaningful and reliable change after an intervention. The findings suggest that self-report measures of impulsivity may be more stable over repeated administrations than behavioural measures. However, this research is limited by a relatively short follow-up period (typically, the two test batteries were done 8.6 days apart). Future research exploring test-retest reliability could be strengthened by longer intersession intervals between testing, to explore if correlations are stable over time.

3.3.2 Validity

3.3.2.1 Face Validity

Face validity refers to whether the UPPS-P appears to measure what it claims to measure. The UPPS-P asks questions in natural language; e.g. *"Before making up my mind, I consider all the advantages*

and disadvantages"; *"I'll try anything once"*. It is less clear, however, whether "I'll try anything once" is a clear example of impulsivity. On one hand, "I'll try anything once" could be conceptualised as a facet of impulsivity (e.g. Sensation Seeking), but also as a more personality-based facet of openness (e.g. openness to experience). The development of items within the UPPS-P appears to be based on a sound research methodology, in which a series of factor analyses where strongest-loading items based on participant responses across eight existing self-report impulsivity measures were pooled to create individual UPPS-P facet scales. Nevertheless, the question of whether "I'll try anything once" is a clear example of impulsivity again leads back to the same issue which the development of the UPPS-P initially aimed to clarify: how the concept of 'impulsivity' itself is conceptualised. The UPPS-P defines impulsivity as being multi-faceted, in-line with recent meta-analysis commentary (e.g. Berg et al., 2015; Sharma et al., 2014). A tool such as the UPPS-P that captures impulsivity across both 'positive' behavioural impacts (e.g. openness to experience, thrill seeking, hedonism), as well as 'negative' behavioural impacts (e.g. seeking immediate gratification to the detriment of longer-term consequences) allows for greater flexibility in the use of the tool, but risks becoming contaminated by other individual differences.

As with all self-report methods, a main weakness of the self-report approach is the potential for participants to respond in a dishonest or socially desirable way by 'faking good' (Cyders, 2013; Hammond, 2004). A potential weakness of the UPPS-P is that there is no integrated scale within the measure to assess the potential for socially desirable responding, as there exists in some other tests (e.g. the Minnesota Multiphasic Personality Inventory-2; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989). However, researchers have now suggested that high scores on measures of social desirability, as opposed to reflecting the test taker's active attempt to 'fake good', likely instead reflects a test taker's trait agreeableness (Kurtz, Tarquini & Iobst, 2008). Meta-analytical evidence suggests that proportionate to the evidence, purported rates of socially desirable responding are overestimated (Richman, Kiesler, Weisband, & Drasgow, 1999). This suggests that the UPPS-P may not be invalidated by having no integrated measure to assess for socially desirable responding. Additionally, the UPPS-P items are not presented in subscale blocks, and the measure does have some reversed scoring for undoing response sets, which can help control for measurement bias.

As with all self-report measures in forensic settings, it is important to recognise that some offenders might be motivated to answer questions dishonestly and so disrupt assessment; for example, if the measure is being used to explore pre-/post-intervention change (Cyders, 2013). The use of self-report measures may also not be appropriate for offenders who lack insight into their thoughts, feelings, or behaviours (Mathie & Wakeling, 2011). Whilst the disclosure of impulsive-type behaviours as measured by the UPPS-P may not be as sensitive as other topics which can be

assessed by other self-report measures (e.g. offence-related sexual interests, behaviours, or cognitive distortions), from both a clinical and a research point of view, responding style still may be affected by the motivation of the test-taker.

When considering the test-taking environment itself, the UPPS-P may be administered via pen-and-paper, or via a computerised survey. A meta-analysis reported by Gnambs and Kaspar (2015) suggested that computerised surveys, compared to pen-and-paper, were more likely to yield the disclosure of more socially undesirable behaviours. Anonymity is also purported to reduce the likelihood of socially desirable responding (Egan, Hughes, & Palmer, 2015). Together, these findings suggest that the validity of the UPPS-P may be improved by administering the measure via an anonymous, computerised methodology. Whilst this may be possible in research applications, this may not always be possible in clinical or forensic settings.

3.3.2.2 Content Validity

Content validity refers to the extent to which the UPPS-P considers all aspects of impulsivity. It could be argued that a particular strength of the UPPS-P, when compared to alternative questionnaire-based assessments of impulsivity, lies in the rationale for the development of the UPPS-P measure itself. The UPPS-P was initially developed in an attempt to clarify the multi-dimensional nature of impulsivity, and to provide an overarching conceptualisation of this construct. Whiteside and Lynam (2001) conducted exploratory factor analyses of participant responses across multiple existing questionnaire-based impulsivity measures, guided by the FFM of personality (McCrae & Costa, 1990). As such, the UPPS-P reflects a more theoretical structuring of impulsivity than previous empirically derived measures. The UPPS-P meets the criteria for content validity because the questionnaire-based measure was derived from an attempt to provide a definition of the attribute it intends to assess.

3.3.2.3 Convergent Validity

Convergent validity refers to the extent to which test scores are related across different measures of the same construct. The convergent validity of the four-factor UPPS when compared to extant self-report measures of impulsivity was explored in a meta-analysis (Duckworth & Kern, 2011). The authors reported that the Sensation Seeking subscale of the UPPS demonstrated the strongest correlations between different sensation seeking questionnaires (r=.48); the correlations between tests measuring the same facets of the three remaining subscales ranged between .40 to .47. When

considering how well the Sensation Seeking subscale could be differentiated from the other three facets, the Sensation Seeking subscale demonstrated the lowest correlations between the remaining Urgency, Premeditation, and Perseverance subscales (.36 to .40). The remaining three subscales could not be reliably distinguished from each other. Taken together, these findings suggest that the Sensation Seeking subscale was found to be the most distinguishable facet of the UPPS, which also was the most convergent with other extant measures of impulsivity. However, in this meta-analysis, the authors did not find evidence to suggest that the remaining UPPS facets were unique and independent constructs.

3.3.2.4 Concurrent Validity

Concurrent validity considers how well the UPPS-P is able to predict scores of other tests or outcome variables. The UPPS-P is increasingly used to explore the relationship between different facets of impulsivity with various clinical and behavioural outcome measures.

Various meta-analyses have provided aggregate evidence in favour of the discriminatory ability, and concurrent validity, of the UPPS-P. For example, Negative Urgency has consistently been found to be associated with problem behaviour, such as problem gambling, self-harm, and bulimic symptoms (Coskunpinar, Dir, & Cyders, 2013; Hamza, Willoughby, & Heffer, 2015; Fischer et al., 2008). Coskunpinar et al. (2013) also provide meta-analytical evidence of the role of different facets of the UPPS-P impulsivity traits in alcohol misuse; for example, the authors reported that (lack of) Perseverance was best able to predict drinking quantity; that Negative Urgency and Positive Urgency were best able to predict drinking problems; and that Negative Urgency and (lack of) Premeditation were best able to predict alcohol dependence. Berg et al. (2015) present meta-analytic findings which explored the discriminatory ability of the UPPS-P across various forms of psychopathology. The authors reported that the Negative Urgency subscale was consistently the best predictor of problem behaviours, with the Positive Urgency subscale demonstrating similar correlational patterns to Negative Urgency. Similar correlational patterns were also found for the (lack of) Perseverance and (lack of) Premeditation pathways. As such, whilst overall evidence demonstrates good concurrent validity for the Negative Urgency subscale, this does call in to question how separable and independent the other subscales might be in practice. It might also be that Positive Urgency can be used to infer problematic behaviour without asking a negatively-loaded question.

3.4 Clinical Utility

Some research has focussed more specifically on the use of the UPPS-P in forensic samples. Bousardt, Hoogendoorn, Noorthoorn, Hummelen, and Nijman (2015) found Negative Urgency was the best predictor of in-patent physical violence, and Howard and Khalifa (2016) reported that Negative Urgency was strongly associated with the severity of personality disorder in a sample of forensic psychiatric inpatients. Both Positive and Negative Urgency are particularly helpful concepts in clinical and forensic practice. A strength of the UPPS-P when compared to other extant self-report and behaviour measures of impulsivity is the fact that the UPPS-P encompasses an emotional component of impulsivity, whereas other measures, such as the BIS-11, do not (Howard & Khalifa, 2015). Having the ability to measure emotional components of impulsivity might afford for greater flexibility in the use of the tool; for example, clinicians may integrate information about self-reported emotional impulsivity into patient risk assessments, and measure pre-/post-intervention change regarding a patient's risk of violence (Bousardt et al., 2015). Clinicians might also use information about a patient's Positive or Negative Urgency scores to tailor treatment towards relevant coping strategies (Bousardt et al., 2015).

Some practical limitations of the UPPS-P should be considered. For example, from a clinical and research perspective, the current author has gained first-hand feedback from participants that the measure is quite long and repetitive to complete. Data researching the psychometric properties and norms of the UPPS-P across different samples are still accruing; and the clinical utility of the UPPS-P might be further strengthened by the computation of standardised scores, to provide clinicians guidance for the cutting points to discern what test taker's scores on the measure actually mean.

3.5 Conclusion

This critique examined the UPPS-P Impulsive Behaviour Scale (Lynam et al., 2007) in terms of its scientific properties, its clinical and research uses, as well as considering its use in forensic settings.

Positively, the UPPS-P model was found to have been reliably replicated across populations, including community and clinical samples, which suggests the measure holds a reliable factor structure. A particular strength of the UPPS-P, when compared to alternative questionnaire-based assessments of impulsivity, lies in the rationale for the development of the measure itself. The UPPS-P Impulsive Behaviour Scale was initially developed in an attempt to clarify the multi-dimensional

nature of impulsivity, and to provide an overarching conceptualisation of this construct. As such, the UPPS-P reflects a more theoretical structuring of impulsivity than previous empirically derived measures. Additionally, from a clinical and research perspective, having the ability to measure emotional components of impulsivity (positive and negative urgency) affords for greater flexibility in the use of the tool in clinical and forensic settings; for example, for the development of tailored intervention and in informing risk assessment (Bousardt et al., 2015).

The UPPS-P has some weaknesses. The tool may be inherently limited by a main weakness shared by all self-report measures, namely the potential that test-takers may not respond honestly (Cyders, 2013). In clinical or forensic settings, the use of self-report assessments may also not be appropriate for those who lack insight into their thoughts, feelings, or behaviours, or seek to disguise or over-exaggerate difficulties (Mathie & Wakeling, 2011). Regarding the psychometric properties of the UPPS-P itself, meta-analytical evidence has raised questions about how separable and independent each of the five subscales might actually be (Berg at al., 2015; Duckworth & Kern, 2011), and research considering test-retest reliability needs further exploration over longer follow-up periods.

The UPPS-P Impulsive Behaviour Scale is a relatively new instrument, and data researching its psychometric properties are still accumulating. It is for this reason that it is being utilised in a study of men found to have downloaded indecent images of children (Chapter Four).

Chapter Four - Impulsivity and Hypersexuality in Internet Sexual Offenders: Comparisons with Community Controls on Selected Psychological Measures

4.1 Abstract

General and sexual self-regulation deficits in sexual offenders are amongst the strongest predictors of recidivism (Hanson, Harris, Scott, & Helmus, 2007; Hanson & Morton-Bourgon, 2005). Some research has provided preliminary evidence that Internet Sexual Offenders (ISOs) exhibit deficits in general and sexual self-regulation. This study sought to further explore the constructs of impulsivity, hypersexuality, and offence-related sexual interests in a sample of UK based adult male Internet-only sexual offenders. Adult male ISOs (n=102) and adult male Community Controls (CCs; n=104) participated in the research via an online survey. ISOs scored significantly higher than CCs across 3 of 5 subscales of an impulsivity measure (UPPS-P; Lynam Smith, Cyders, Fischer, & Whiteside, 2007), a hypersexuality measure (HBI-19; Reid, Garos, & Carpenter, 2011), and a measure of offence-related sexual interests (MPI; Williams, 2005). These measures were able to discriminate the ISO sample from the CC sample at better than chance levels. These results are considered in the context of existing sexual offender theories. Limitations of the empirical methodology are discussed, and recommendations for future research is given.

4.2 Introduction

4.2.1 Background

The advent of the Internet has created a new, unique offending environment whereby Indecent Images of Children (IIOC) can be feely accessed, from the apparent anonymity and privacy of one's own home (Webb, Craissati, & Keen, 2007). Arrests and convictions for crimes relating to the access, possession, and distribution of IIOC are steadily increasing (Wolak, 2011). In the USA, Wolak reported 1,700 arrests for offences related to IIOC in 2001, whereas in 2009 there were 4,900 arrests. The number of individuals contacting the confidential helpline operated by The Lucy Faithfull Foundation (LFF) for help regarding their own Internet sexual offending behaviour is increasing year on year (Personal communication, 2018). Whilst this may in part result from the growth and increased awareness of the charity, this could also indicate an increase in offending of this type, in part driven by advances in technology and availability of high-speed mobile internet. Developing an understanding of the role of different individual difference constructs in the sex offender population may help improve the treatment and management of these offenders (Egan, 2017). It is hoped that by modifying treatment to reflect what is known about relevant intervention targets, the potential for sexual recidivism will be reduced.

4.2.2. Impulsivity and Sexual Offending

Although past research has explored differences in the characteristics of Internet Sexual Offenders (ISOs) and Contact Sexual Offenders (ISOs; e.g. Babchishin, Hanson, & VanZuylen, 2015), there is a paucity of research on the differences between ISOs and non-offending community controls (CCs). Comparisons between CSOs and ISOs fail to highlight key differences that may exist between ISOs and CCs (Ray, Kimonis, & Seto, 2014). Understanding potential differences in both theoretically and empirically relevant characteristics between ISOs and CCs will aid the development of targeted assessment and treatment of the ISO population (Elliott & Babchishin, 2012). It will also help further our general understanding about specific risk factors that may account for the escalation to IIOC use.

Low self-control and impulsivity have often been associated with criminality (e.g. Andrews & Bonta, 2006), as well as problematic sexual behaviour (Mick & Hollander, 2006). Self-regulation deficits can be understood both in terms of general self-regulation (e.g. impulsivity), and specifically in terms of sexual self-regulation (e.g. sexual thoughts or behaviour; Pullman, Stephens & Seto, 2016). General and sexual self-regulation deficits in sexual offenders are amongst the strongest predictors of recidivism (Hanson, Harris, Scott, & Helmus, 2007; Hanson & Morton-Bourgon, 2005).

Models of sexual offending include self-regulation deficits (as discussed in Chapter One). Pullman et al. (2016) advance a Motivation-Facilitation model of adult male sexual offending. The authors state that offending behaviour is influenced by a number of motivations which increase the desire to sexually offend. If motivation to offend is present, offending is facilitated by a range of factors that make offending behaviour more likely to happen. Within the context of the present proposed study, Pullman et al. (2016) suggest that hypersexuality, including offence-related sexual interests, is a factor which might increase an individual's motivation to sexually offend. The authors also observe that poor self-regulation (e.g. impulsivity) is a trait-facilitator which increases the likelihood of an offence taking place if the motivation to offend is present.

The systematic review and meta-analysis of impulsivity in sexual offenders presented in Chapter Two provides some evidence that there is higher impulsivity in CSOs compared to CCs, across a variety of psychometric and behavioural measures of impulsivity. However, this systematic review and meta-analysis also highlighted the need for further exploration of the impulsivity construct in adult ISO samples.

Middleton, Elliott, Mandeville-Norden, and Beech (2006) provided preliminary evidence that self-regulation deficits may exist in ISOs. The authors found that over two thirds of their internet offender sample had elevations on one or more of the three subscales on an impulsiveness measure (BIS-11; Patton, Stanford, & Barratt, 1995) and suggested that increased impulsivity in internet offenders might be related to accessing IIOC for immediate sexual gratification (i.e. sensation seeking), without considering the consequences of this behaviour (i.e. lack of premeditation). Henry, Mandeville-Norden, Hayes, and Egan (2010), tested impulsivity via the BIS-11 in a sample of 422 British internet offenders. The authors reported a general effect of impulsivity in this sample, as impulsivity was able to distinguish offenders belonging to 'normal', 'inadequate', and 'deviant' groups. The sample used by Henry et al. (2010) also included offenders with a conviction for "taking" IIOC, as well as offenders who had previously received treatment in relation to a sexual offence (indicating that additional offences, which may include contact sexual offences, may be present in the sample). This could indicate the sample used by Henry et al. (2010) may not strictly comprise an "internet-only" offender sample. This evidences a need to further explore the construct of impulsivity within an internet-only sexual offender sample (Elliott & Beech, 2009).

4.2.3 Sexual self-regulation

Pullman et al. (2016) suggest that hypersexuality might increase an individual's motivation to sexually offend. Indeed, sexual preoccupation, or hypersexuality, is a subset of sexual self-regulation which has been cited as one of the most important dynamic risk factors in sexual offending (Hanson et al., 2007). Tully, Browne, and Craig (2015) also found the Sexual Preoccupation subscale of the Structured Assessment of Risk and Need (SARN) was the key predictor of reconviction. When comparing contact sexual offenders to community controls on measures of hypersexuality, Kingston and Bradford (2013) reported that 44% of sexual offenders met criteria for hypersexuality, whereas only 18% of the control sample was classified as such. Focussing more specifically on IIOC consumption, Webb et al. (2007) reported that ISOs were more likely than CSOs to have deficits regarding sexual self-regulation, as measured by the Stable 2000. Bettles (2014) provided some preliminary evidence for the presence of hypersexuality in an ISO sample, reporting that ISOs scored significantly higher than CCs on two measures of sexual compulsivity. However, the sample size was small (ISOs n=13; CCs n=32), suggesting further exploration of hypersexuality in a larger ISO sample is warranted. Webb et al. (2007) suggest that sexual preoccupation is likely to be linked to habitual use of both legal and illegal pornography in ISOs. Indeed, greater access of legal adult pornography is being increasingly considered a subtype of hypersexual behaviour (Grubbs, Volk, Exline & Pargament, 2015; Kingston & Firestone, 2008). Hence, the current study also included an open-ended demographic question about the frequency of adult internet pornography use, and average time spent accessing legal adult pornography (in the 6 months prior to their arrest for the offender sample; in the past 6 months for the control sample), as in Ray et al. (2014). The author of the current study is unaware of extant literature which has explored differences in hypersexuality and offence-related sexual interests between ISOs and CCs.

4.2.4 Aims

The present study aimed to obtain norms on measures hypothesised to be relevant to individuals who have accessed IIOC. The UPPS-P reflects a more theoretically structured and clinically useful conceptualisation of impulsivity than previous theoretical and empirically derived measures. Included within the chosen measures is one measure which explores offence-related sexual interests, the My Private Interests scale, which was designed specifically for sex offenders completing the UK Sex Offender Treatment Programme (MPI, Williams, 2005). No existing normative data is available for this measure. Babchishin, Hanson and Hermann (2011) note that while well-documented norms exist amongst samples of internet offenders across a range of demographic

variables, norms for psychological variables are lacking. The selected psychometric measures of impulsivity (UPPS-P, Lynam et al., 2007) and hypersexuality (HBI-19, Reid, Garos, & Carpenter, 2011) were chosen as the previously published normative data was gathered from either American college/undergraduate samples, or from American clinical samples. To the author's knowledge, no normative data exists across these psychometric measures either for a British sample of community adult males or a British sample of internet-only sexual offenders.

The proposed study will test whether significant differences exist in the aforementioned measures between an internet-only sexual offender sample and a non-sexual offending control group. Increasing our understanding of constructs such as impulsivity, hypersexuality and offence-related sexual interests in the general population may increase our understanding around why some men use IIOC (Elliott & Babchishin, 2012). This knowledge might help inform the development of targeted assessment and treatment of the internet sexual offender population and help further general understanding about specific risk factors that may account for IIOC use (Henshaw, Ogloff & Clough, 2017).

4.2.5 Hypotheses

1) ISOs will have significantly higher total and individual scores on each of the five subscales, of the UPPS-P Impulsive Behaviour Scale (Lynam et al., 2007) than CCs.

2) ISOs will have significantly higher total and individual scores on each of the three subscales on the Hypersexual Behaviour Inventory (Reid et al., 2011) than CCs.

3) ISOs will have significantly higher total scores and individual subscale scores on each of the four subscales on the My Private Interests (Williams, 2005) measure than CCs.

4) ISOs will report significantly higher use of legal adult pornography than CCs.

5) Impulsivity and hypersexuality will be significantly positively correlated with one another.

6) Impulsivity, hypersexuality, and offence-related sexual interests will discriminate the ISO sample from the CC sample.

4.3 Method

4.3.1 Ethics

This research project attained ethical approval from the University of Nottingham's ethical committee in May 2016 (ethics reference number F10052016).

4.3.2 Procedure

Adult male ISOs were primarily recruited via The LFF. The LFF operates a psycho-educative programme, *'Inform Plus'*, which is delivered on both a group-based and an individualised format to self-referring individuals known to the police in relation to IIOC offences. Information sheets (Appendix J) containing details about and a link to the current study, advertised as a 30-minute survey regarding "adult personality and behaviour", were posted to individuals who expressed interest in attending the programme, in addition to recent programme completers who had consented to being contacted for research purposes. Inform Plus is delivered across sites in Surrey, Bristol, Birmingham, Leeds, and Manchester, and programme facilitators further reminded attendees about the study, face-to-face. The LFF also operates a self-help website for behaviour relating to accessing IIOC, which can be accessed anonymously (www.get-help.stopitnow.org.uk); a link to the current study was advertised on this website. The information sheet to the current study was also distributed to individuals returning on bail dates in one Metropolitan Police station over a period of four months, and made available in the lobby of Probation premises in Kent and Surrey.

All adult male CCs were recruited via snowball sampling of the current author's friends, family, and colleagues. Friends, family, and colleagues of the current researcher were also asked to share the link more widely to their own social networks. The study link was posted on social media platforms, including Facebook and Twitter, as well as being advertised on a participant recruitment website, Call for Participants (www.callforparticipants.com). Specific Facebook groups were targeted in an attempt to recruit older male CCs; for example, the link to the study was posted on Facebook groups with interests centred around fishing, trains, and cars.

The information sheet was presented once the link to the study was followed. The information sheet explicitly outlined the inclusion and exclusion criteria. Three inclusion criteria were listed: that participants were required to be male, aged 18 years or older, and a UK resident. It was implicit that participants could read English, and had internet access. The survey was hosted on the Bristol Online Survey (BOS) website. The information sheet provided information regarding the

BOS software itself, including information regarding anonymity, noting that data could not be withdrawn once submitted due to the anonymous nature of the tool.

The online questionnaire was open for fifteen months between May 2016 and August 2017. During this time, 1,813 individuals accessed the link to the questionnaire, and 236 completed the questionnaire, giving a 13% completion rate. Due to the nature of the website, it was not possible to break this information down between ISO and CC groups. Engaged participants were presented with a demographic information questionnaire (Appendix K), followed by the three psychometric questionnaires, presented in the same order across all participants (UPPS-P, HBI-19, MPI). The ISO sample were instructed to complete the HBI-19 measure twice; once in relation to their sexual behaviour in the 6 months prior to their arrest, and once in relation to their current sexual behaviour. It was theorised that by having the chance to provide a 'current', perhaps more socially desirable, picture of current sexual behaviour, that ISOs might be more willing to disclose a truer extent of their sexual behaviour prior to arrest. In analyses, the figures reported on the HBI-19 for the 6 months prior to arrest were used. Once responses were submitted, participants were presented with an electronic debrief form, which directed to relevant sources of support (Appendix L).

Of completed responses, 30 participants were excluded; 20 from the ISO sample and 10 from the CC sample. Of the CC sample, 5 responses were excluded due to being completed by female participants, 1 response was excluded due to the individual currently residing outside of the UK, and 4 were excluded due to participants reporting they had committed a contact sexual offence. Of the ISO sample, 6 responses were excluded as participants reported they had committed a contact sexual offence in addition to an internet sexual offence (hence, represented a 'mixed' sample of sexual offenders), and 14 responses were excluded as participants reported they had committed additional non-contact sexual offences (e.g. voyeurism; indecent exposure). Excluding these participants allowed conclusions from the research to be drawn based on a self-reported ISO sample alone.

4.3.3 Participants

A priori analysis using G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2013) calculated the necessary sample size based on a medium effect size, power of 0.8 and *p* value 0.05 with a two-tailed hypothesis. These variables meant this study was expected to require a minimum of n=96

participants in each group, making a total minimum required sample size of n=192. The final sample included 102 adult male ISOs, and 104 adult male CCs. See Table 4 for full demographic information.

As shown in Table 4, ISOs were significantly older than CCs (p <.001; Appendix M). Sexual orientation significantly differed between groups. The CC sample had a higher prevalence of exclusively heterosexual males compared to the ISO sample (p <.001; Appendix N). Education also significantly differed between groups. The CC sample reported significantly higher levels of higher education compared to the ISO sample (p <.05; Appendix O). Due to Chi-Square analysis cells with low counts for ethnicity, employment status (CC current, ISO at time of arrest), relationship status (CC current, ISO at time of arrest), and presence of previous non-sexual convictions not meeting the minimum expected count value, significance data could not be calculated. The majority of participants in the ISO and CC sample reported their ethnicity as Caucasian (96.1% and 94.2%, respectively). In terms of employment, the ISO and CC sample reported similar levels of full-time/part-time/self-employment status (77.5% and 80.8%, respectively). ISOs and CCs reported similar levels of being in a relationship (66.6% and 70.2%, respectively). For the ISO sample, previous non-sexual convictions included drink driving, credit card fraud, trespass, disturbing the peace, breaking and entering, burglary, Actual Bodily Harm, and a restraining order. For the CC sample, previous non-sexual convictions included theft, possession of a Class B substance, and disturbing the peace. The two groups did not significantly differ regarding whether they were fathers to children either under, or over, 18 years of age.

The ISO sample reported having spent significantly more hours per week viewing legal adult pornography, and accessed legal adult pornography significantly more frequently, in the 6 months prior to arrest, compared to the CC sample in the past 6 months (p <.001; Appendix P), supporting hypothesis 4.

Within the ISO sample, the majority of participants reported having heard about the study via The LFF (87.3%). A minority (3.9%) of ISO participants reported to have heard about the study via the Police. A further 7.8% of ISO participants reported having accessed the study via an 'other' option, although declined to provide information relating to what these routes were. The majority of ISO participants reported to have been detected and known to the police in relation to their access of IIOC. This included participants who were currently under investigation/arrested/on police bail (55.9%), who had been charged or cautioned (5.9%), who had attended Magistrates' or Crown Court (8.8%), or who had been sentenced for online sexual offending behaviour (20.6%). A minority of ISO participants were undetected at the time of participation (4.9%). The most commonly cited form of Internet Sexual Offending was downloading IIOC; 80.4% of the ISO sample reported to have engaged

in this behaviour. Other forms of Internet Sexual Offending behaviour previously engaged in included distribution of IIOC (18.6%), online sexual chat with a child (3.9%) and taking IIOC (2%). The mean number of months since arrest for the ISO sample was 9.3, however, this ranged between 0-132 months.

Table 4. *Demographic Information*

	Internet Sexual Offenders (ISOs) n = 102	Community Controls (CCs) n = 104	*P*
Age M(SD), Range	46.92(13.72), 20-80	37.19(13.63), 19-72	**
Ethnicity (%)			
Caucasian	96.1	94.2	-
Mixed race or Ethnic minority	3.9	5.8	
Sexual Orientation (%)			
Kinsey Scale 0 (exclusively heterosexual)	54.9	79.6	
Kinsey Scale 1	23.5	12.6	χ^2 = 15.23
Kinsey Scale 2, 3, 4 and 5	11.8	2.9	*
Kinsey Scale 6 (exclusively homosexual)	9.8	4.9	
Education Level (%)			
No Qualifications / GCSEs	23.5	4.8	
A Levels/ BTECs/ Vocational Qualifications	36.3	17.3	χ^2 = 36.08
University Undergraduate	25.5	33.7	**
University Postgraduate	14.7	44.2	
Employment Status (%) (ISO = status at time of arrest)			
Full time/ Part time/ Self Employed	78.2	82.4	
Unemployed	3.0	3.9	-
Retired	12.9	5.9	
Student	5.9	7.8	

Relationship Status (%) (ISOs = status at time of arrest)			
Single	28.7	25.5	
Married	44.5	33.4	-
In a relationship (not married)	22.8	38.2	
Divorced/ Separated/ Widowed	4.0	2.9	
Parent to children under 18 (%)			
Yes	25.5	24.0	ns
No	74.5	76.0	
Parent to children over 18 (%)			
Yes	30.4	18.3	ns
No	68.6	81.7	
Any previous non-sexual convictions (%)			
Yes	7.8	2.9	-
No	92.2	96.2	
Average hours of legal adult pornography consumption per week in past 6 months (ISO = 6 months prior to arrest)			
M(SD)	7.09(6.90)	2.05(4.27)	**
Legal adult pornography frequency (%) (ISOs = 6 months prior to arrest)			
Daily	31.4	10.6	
At least once a week	52.9	42.3	χ^2 = 29.42
At least once a month	10.8	23.1	**
Never/ a few times a year	4.9	24.0	

** = p <0.01, * = p <0.05, ns = non-significant

4.3.4 Measures

4.3.4.1 The UPPS-P Impulsive Behaviour Scale (UPPS-P; Lynam, Smith, Cyders, Fischer, & Whiteside, 2007)

The UPPS-P Impulsive Behaviour Scale measures five facets of impulsivity using 59 items. Participants respond using a 4-point Likert-type scale from 1 ('Strongly Agree') to 4 ('Strongly Disagree'). Thirty-nine items are reverse coded. Internal consistency in the current study was very good across each facet: Negative Urgency (rash action resulting from negative emotions; α = 0.93), Lack of Perseverance (tendency to give up when activities become boring or difficult; α = .85), Lack of Premeditation (tendency to act without deliberation; α = 0.85), Sensation Seeking (tendency to seek activities which involve risk or thrill; α = 0.87), and Positive Urgency (rash action resulting from positive emotions; α = 0.96).

4.3.4.2 The Hypersexual Behaviour Inventory-19 (HBI-19; Reid, Garos & Carpenter, 2011)

The HBI-19 measures hypersexual behaviour. It is a 19-item scale with three subscales. Participants respond using a 5-point Likert-type scale ranging from 1 ('Never') to 5 ('Very Often'). Internal consistency in the current study was very good across each subscale: Control (difficulties controlling sexual thoughts; α = .97), Coping (using sexual behaviour to cope with difficult emotions; α = .95), and Consequences (experiencing negative consequences as a result of sexual behaviour; α = .93).

4.3.4.3 My Private Interests Measure (MPI; Williams, 2005)

MPI is a 54-item scale which measures offence-related sexual interests across four subscales. Participants respond to a dichotomous yes/no question on each item. Two items are reverse coded. Items are scored: yes = 2, no = 0, missing = 1. These scores are summed to produce overall subscale scores, as well as an overall MPI total score. Internal consistency in the current study was very good for the Sexual Preference for Children (α = .90) and Obsessed with Sex (α = .82) subscales, and acceptable for the Preferring Sex to Include Violence or Humiliation (α = .78), and Other Offence-Related Sexual Interests (α = .70) subscales.

4.4 Results

4.4.1 Structure of the Correlational Data

Preliminary exploration of the data set revealed irregular distribution between samples. This may have resulted from splitting the sample into ISO and CC groups. Hence, the data set was first considered as a whole, and the structure of the data set was explored.

4.4.2 Correlations between Psychological Measures

Correlation analysis revealed highly significant positive correlations between impulsivity and hypersexual behaviour (Appendix Q), in support of Hypothesis 5 (See Table 5). The strongest positive correlations were observed between the Negative Urgency facet of the UPPS-P with each of the three subscales of the HBI-19, indicating that those more likely to engage in rash action resulting from negative emotions are more likely to also have difficulties in controlling sexual thoughts, use sexual behaviour to cope with difficult emotions, and experience negative consequences as a result of sexual behaviour.

In order to explore the underlying relationship patterns and potential latent constructs between the UPPS-P, HBI-19 and MPI, all 12 subscales were entered into a Principal Components Analysis with varimax rotation. Visual inspection of the scree plot showed an "elbow" between a three- and four-factor solution. The placement of this "elbow" suggested that use of an eigenvalue of greater than 1, which is traditionally used, was warranted. Visual inspection of the scree plot was borne out by Parallel Analysis, which suggested setting the Eigenvalue threshold at 1.4 to avoid chance factors. Three factors with an Eigenvalue greater than 1.4 were extracted. Loadings for the rotated factors and the variance explained by each factor are presented in Table 6. Overall, 64.16% of the variance was explained by these 3 rotated factors. The first rotated factor contained all 3 HBI-19 subscales, as well as the Negative Urgency facet of the UPPS-P and the 'Obsessed with Sex' facet of the MPI. This factor therefore suggests an underlying construct of the centrality of hypersexuality – particularly in response to regulating negative emotions. The second factor contained the 4 remaining UPPS-P subscales, as well as the 'Sexual Preference for Children' subscale of the MPI. This factor therefore suggests an impulsivity construct. Finally, the third factor had a high positive loading for the 2 remaining subscales of the MPI; 'Preferring Sex to Include Violence or Humiliation' and 'Other Offence-Related Sexual Interests' (Appendix R), suggesting a perverse sexual interests construct.

Table 5. Correlations between UPPS-P, HBI-19, and MPI subscale scores (n=206)

		UPPS-P					HBI-19			MPI			
		Negative Urgency	Lack of Premeditation	Lack of Perseverance	Sensation Seeking	Positive Urgency	Coping	Consequences	Control	Sexual Preference for Children	Obsessed with Sex	Preferring Sex to Include Violence or Humiliation	Other Offence related Sexual Interests
UPPS-P	Negative Urgency	-	.41**	.36**	.13	.68**	.57**	.64**	.61**	.39**	.49**	.22**	.27**
	Lack of Premeditation	-	-	.46**	.21**	.41**	.27**	.29**	.29**	.11	.16	.05	.05
	Lack of Perseverance	-	-	-	-.11	.28**	.31**	.34**	.34**	.19**	.19**	.04	.09
	Sensation Seeking	-	-	-	-	.37**	-.06	-.11	-.19**	-.02	.01	.13	.02
	Positive Urgency	-	-	-	-	-	.28**	.41**	.36**	.27**	.35**	.28**	.21**
HBI-19	Coping	-	-	-	-	-	-	.78**	.68**	.31**	.40**	.10	.14
	Consequences	-	-	-	-	-	-	-	.82**	.40**	.49**	.05	.15
	Control	-	-	-	-	-	-	-	-	.50**	.49**	.06	.16
MPI	Sexual Preference for Children	-	-	-	-	-	-	-	-	-	.37**	.26**	.35**
	Obsessed with Sex	-	-	-	-	-	-	-	-	-	-	.31**	.31**
	Preferring Sex to Include Violence or Humiliation	-	-	-	-	-	-	-	-	-	-	-	.55**
	Other Offence related Sexual Interests	-	-	-	-	-	-	-	-	-	-	-	-

** = Correlation is significant at the 0.01 level

Table 6. Principal Components Analysis (with varimax rotation, factors extracted with Eigenvalues over 1.4)

	F1	F2	F3
Control	.91		
Consequences	.90	.16	
Coping	.82		
Negative Urgency	.59	.56	.27
Obsessed with Sex	.53	.16	.45
Sexual Preference for Children	.49	.77	.47
Lack of Premeditation	.17	.75	-.11
Positive Urgency	.24	.75	.30
Sensation Seeking	-.35	.62	.18
Lack of Perseverance	.41	.45	-.13
Preferring Sex to Include Violence or Humiliation		.11	.84
Other Offence-Related Sexual Interests	.12		.81
Eigenvalue	4.46	1.74	1.50
Variance (%)	37.17	14.47	12.52
Total Variance = 64.16%			

4.4.3 Group Differences on Selected Psychological Measures

It was not possible to conduct multivariate analyses of covariance (MANCOVA) to test the hypotheses that ISOs would score higher on impulsivity, hypersexuality, and offence-related sexual

interests than CCs, as the data violated MANCOVA assumptions. It was not possible to conduct multivariate analyses of covariance (MANCOVA) to test the hypotheses that ISOs would score higher on impulsivity, hypersexuality, and offence-related sexual interests than CCs, as the data violated the MANCOVA assumptions of variance-covariance (explored via Levene's test of equality of error variances). Independent variables which violated variance-covariance were transformed via square root transformation (SQRT). Assumptions for MANCOVA were not satisfied following data transformation. Hence, group differences were explored by a series of ANCOVAS and ANOVAS (Appendix S). Where assumptions were met, age, sexual orientation, education level, frequency of non-illegal adult pornography use and time spent using non-illegal adult pornography were entered as covariates in ANCOVA analyses, due to the significant differences which existed between groups on these variables. A post hoc ANCOVA power analysis using the sample size of 206 was conducted using G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2013). The alpha level used for this analysis was $p < 0.01$, and the model was set to include 5 covariates. The recommended effect sizes used for this assessment were: small ($f = 0.10$), medium ($f = .25$), and large ($f = .40$). The post hoc analyses revealed the statistical power for this study was 0.12 for detecting a small effect and 0.84 for detecting a medium effect. The power exceeded .99 for detecting a large effect. Thus, there was more than adequate power (> .80) at the medium to large effect size level, but less than adequate power to detect small effect sizes. Where ANCOVA assumptions could not be met, even following data transformation, the characteristic was instead explored via ANOVA using the Welch statistic to correct for unequal variances between groups. Group means, standard deviations, F values and *p* levels are presented in Table 7. The *p* level was set at a significance of <0.01 in these comparisons, rather than the typical <0.05 level, to account for multiple group comparisons.

4.4.3.1 UPPS-P

The ISO sample reported significantly higher impulsivity scores than the CC sample on the Negative Urgency, Positive Urgency, and Lack of Perseverance subscales of the UPPS-P, as well as the total UPPS-P score, when age, sexual orientation, education level, time spent using legal adult pornography, and frequency of legal adult pornography use were controlled. ANOVA analysis indicated that sensation seeking significantly differed between groups, although in the opposite direction of the original hypothesis (in this comparison, CCs reported significantly higher Sensation Seeking scores than ISOs). The Lack of Premeditation subscale did not differ between groups. Overall, this provides partial support of Hypothesis 1; ISOs reported significantly higher impulsivity

than CCs in the Negative Urgency, Lack of Perseverance, Positive Urgency, and the Total score of the UPPS-P.

4.4.3.2 HBI-19

When age, sexual orientation, education level, time spent using legal adult pornography, and frequency of legal adult pornography use were controlled, ISOs reported significantly higher hypersexuality scores than CCs on the Control and Coping subscales of the HBI-19, in addition to the total HBI-19 score. ANOVA analysis also indicated that ISOs scored significantly higher than CCs on the Consequences subscale. This supports Hypothesis 2; ISOs reported significantly higher hypersexuality than CCs.

Table 7. Group Differences on Selected Psychological Measures

		Internet Sexual Offenders (ISOs) n=102		Community Controls (CCs) n=104		F (1, 199)	*P*	Effect size (Partial Eta Squared)
		M	SD	M	SD			
UPPS-P	Negative Urgency[1]	31.29	8.04	24.53	7.43	11.60	***	.26
	Lack of Premeditation[3]	23.00	5.87	21.20	4.05	6.52	ns	-
	Lack of Perseverance[2]	22.33	5.31	19.31	4.37	5.02	***	.13
	Sensation Seeking[3]	30.15	7.76	33.43	7.05	10.12	**	-
	Positive Urgency[1]	26.69	9.78	22.89	8.89	4.64	***	.12
	Total[1]	133.46	25.53	121.37	22.47	7.77	***	.19
HBI-19	Control[2]	28.48	7.91	12.88	6.06	48.00	***	.59

	Coping[2]	21.16	8.25	15.08	5.85	13.22	***	.29
	Consequences[3]	10.87	4.80	5.85	2.38	89.98	***	-
	Total[2]	60.51	19.28	33.81	12.30	32.44	***	.49
MPI	Sexual preference for children[4]	7.18	6.11	1.56	4.04	95.67	***	-
	Obsessed with sex[2]	9.35	6.03	4.58	4.31	15.46	***	.32
	Preferring sex to include violence or humiliation[2]	1.31	2.45	1.56	3.61	3.28	**	.09
	Other offence-related sexual interests[4]	2.37	3.31	1.56	2.74	4.59	ns	-
	Total[2]	20.22	11.74	9.25	11.60	19.83	***	.37

** = <0.01; *** = <0.001; ns = Not Significant

[1] = ANCOVA analysis controlling for age, sexual orientation, education level, adult pornography time, and adult pornography frequency using raw data

[2] = ANCOVA analysis controlling for age, sexual orientation, education level, adult pornography time, and adult pornography frequency using transformed data (unadjusted M and SD of raw data presented)

[3] = ANOVA analysis with Welch correction using raw data (due to unequal variances in ANCOVA which could not be corrected via data transformation)

[4] = ANOVA analysis with Welch correction using transformed data (due to unequal variances in ANCOVA which could not be corrected via data transformation; unadjusted M and SD of raw data presented)

4.4.3.3 MPI

When age, sexual orientation, education level, time spent using legal adult pornography, and frequency of legal adult pornography use were controlled, ISOs reported significantly higher offence-related sexual interests than CCs on the 'Obsessed with Sex' subscale of the MPI, in addition to the MPI total score. ANCOVA analysis indicated that the 'Preferring Sex to Include Violence or Humiliation' subscale significantly differed between groups, although in the opposite direction of the original hypothesis (in this comparison, CCs reported significantly higher scores than ISOs). ANOVA analysis indicated that the ISO group scored significantly higher on the 'Sexual Preference for

Children' than the CC group. The 'Other Offence-Related Sexual Interests' subscales did not differ between groups. Overall, this provides partial support of Hypothesis 3; ISOs reported significantly higher offence-related interests relating to sexual preference for children and obsession with sex.

4.4.4 How Group Membership was Predicted

Each of the subscales within the UPPS-P (5 subscales), HBI-19 (3 subscales), and MPI (4 subscales) were used to predict group membership (ISO or CC) in a hierarchical binary logistic regression. Hence, this model used 12 independent variables to predict a dichotomous dependent variable. A hierarchical binary logistic regression was chosen so that the impact of the addition of each measure could be explored; this would not have been possible if all 12 independent variables were explored concurrently.

The hierarchical logistic regression was run with n=102 ISO participants and n=104 CC participants. Whilst the assumptions regarding sample size and multicollinearity were met, the assumption of outliers was violated. Outliers (cases with a very large ZResid value; +/- 2.5) were removed from the data file. Three ISO participants and 5 CC participants were removed, leaving a remaining sample of n=99 ISO participants and n=99 CC participants. The hierarchical binary logistic regression analysis was repeated and assumptions regarding sample size, multicollinearity, and outliers were then met. The five subscales of the UPPS-P were entered in step 1, the three subscales of the HBI-19 were entered in step 2, and the four subscales of the MPI were entered in step 3 (Appendix T).

A post hoc power analysis for a logistic regression with a dichotomous predictor was conducted using G*Power 3.1 (Faul et al., 2013). The alpha level used for this analysis was $p < 0.05$ and a one-tailed test (higher scores across all predictor variables were expected to increase the likelihood of being correctly classified in the offender group), with a total sample size of 198 (99 ISOs and 99 CCs included in the analysis), and probability of belonging to the offender or control group set at 0.5 (due to equal group sample sizes). The recommended effect sizes used for this assessment were: small (Odds Ratio (OR) = 1.2), medium (OR = 1.72), and large (OR = 2.48), following the guidelines in Lipsey (1990). The post hoc power analyses revealed the statistical power of the study was 0.16 for detecting a small effect, 0.59 for detecting a medium effect, and 0.92 for detecting a large effect. Thus, there was more than adequate power (> .80) at the large effect size level, but less than adequate power to detect medium or small effect sizes.

At step 1, the model containing the five UPPS-P subscales was statistically significant, χ^2 = (5, N = 198) = 67.06, p < .001, suggesting it could distinguish between ISO and CC participants using the impulsivity measure alone. Following step 1, the model explained between 28.7% and 38.3% of the variance, with an overall classification accuracy of 73.2%. Of the five UPPS-P subscales, Negative Urgency and Sensation Seeking made a unique statistically significant contribution to the model. Higher scores on the Negative Urgency scale increased the odds of the model correctly classifying a participant into the ISO sample, whereas higher Sensation Seeking scores significantly increased the odds of the model correctly classifying a participant into the CC sample.

At step 2, with the addition of the three HBI-19 subscales, the model again was significantly able to distinguish between ISO and CC participants, χ^2 = (8, N = 198) = 204.69, p < .001. The model explained between 64.4% and 85.9% of the variance, with an overall classification accuracy of 92.4%, demonstrating a marked improvement from step 1. Higher scores on the UPPS-P Lack of Perseverance scale and HBI-19 Control scales significantly increased the odds of the model correctly classifying a participant into the ISO sample. Higher UPPS-P Lack of Premeditation scores and HBI-19 Coping scores significantly increased the odds of the model correctly classifying a participant into the CC sample.

At step 3, the full model containing all 12 predictor variables including MPI subscales was statistically significant, χ^2 = (12, N = 198) = 226.22, p < .001, suggesting the model was able to distinguish between ISO and CC participants (Table 8). The model explained between 68.1% and 90.8% of the variance, with an overall classification accuracy of 94.9% (Table 9), a 2.5% increase on the classification accuracy from step 2. Overall, five of the independent variables made a unique statistically significant contribution to the model. The HBI-19 Control, HBI-19 Coping, MPI Sexual Preference for Children, and MPI Obsessed with Sex subscales all significantly increased the odds of the model correctly classifying a participant into the ISO sample, whereas the MPI Preferring Sex to Include Violence or Humiliation subscale significantly increased the odds of the model correctly classifying a participant into the CC sample. The strongest predictor for ISO group membership was HBI-19 Control; those who reported deficits in controlling sexual thoughts, feelings, and behaviour were over twice as likely to belong to the ISO group than the CC group. The inclusion of the MPI subscales at step 3 resulted in the UPPS-P subscales becoming non-significant in predicting group membership.

Table 8. Logistic Regression Predicting Group Membership

		B	S.E.	Wald	*p*	Odds Ratio
UPPS-P	Negative Urgency	.103	.072	2.078	ns	1.109
	Lack of Premeditation	-.132	.110	1.455	ns	.876
	Lack of Perseverance	.164	.101	2.632	ns	1.178
	Sensation Seeking	-0.13	.060	.046	ns	.987
	Positive Urgency	-0.64	.081	.610	ns	.938
HBI-19	Control	.753	.185	16.567	***	2.124
	Coping	-.468	.166	7.942	**	.626
	Consequences	-.054	.275	.038	ns	.948
MPI	Sexual Preference for Children	.242	.081	8.918	**	1.273
	Obsessed with Sex	.233	.103	5.149	*	1.263
	Preferring Sex to Include Violence or Humiliation	-.414	.168	6.089	*	.661
	Other Offence-Related Sexual Interests	.183	.202	.818	ns	1.201

* = <0.05; ** = <0.01; *** = <0.001; ns = Not Significant

Table 9. Binary Logistic Regression Model Classification Accuracy

		Predicted		
		CC	ISO	Percentage Correct
Observed	CC	94	5	94.9
	ISO	5	94	94.9
Overall Percentage				94.9

4.4.5 Receiver Operating Characteristic (ROC) and Area Under Curve (AUC)

Finally, ROC and AUC analyses were used to further assess how well the test scores across the UPPS-P, HBI-19 and MPI could predict the dichotomous group membership outcome variable (Appendix U). See Appendix U for AUC 95% confidence intervals. Results of the ROC analysis are presented in Table 10.

Table 10. ROC Analysis - AUC Values

		AUC Value	Standard Error	*p*
UPPS-P	Negative Urgency	.739	.035	***
	Lack of Premeditation	.608	.040	**
	Lack of Perseverance	.679	.038	***
	Sensation Seeking	.367	.039	***
	Positive Urgency	.624	.039	**
	Total	.652	.039	**
HBI-19	Control	.865	.026	***
	Coping	.702	.037	***
	Consequences	.783	.033	***
	Total	.823	.030	***
MPI	Sexual Preference for Children	.823	.031	***
	Obsessed with Sex	.737	.034	***
	Preferring Sex to Include Violence or Humiliation	.502	.040	ns
	Other Offence-Related Sexual Interests	.573	.040	ns
	Total	.787	.032	***

* = <0.05; ** = <0.01; *** = <0.001; ns = Not Significant

n.b. The *p* value refers to whether the area under the ROC curve is significantly different from 0.5 (the null hypothesis).

As outlined in Table 10, ROC analysis indicated that whilst the majority of measures were significantly able to discriminate between the ISO and CC samples above chance level, some

subscales were not (UPPS-P Sensation Seeking, MPI Preferring Sex to Include Violence or Humiliation, and MPI Other Offence-Related Sexual Interests). To note, in applied Psychology, an AUC value of ≥0.7 is considered indicative of a strong effect (Rice & Harris, 2005). AUC values between 0.6-0.7 might therefore be indicative of a moderate effect in the current study. Of the impulsivity subscales, Negative Urgency was best able to predict group membership. Of the three psychometric measures, generally the HBI-19 demonstrated the highest accuracy when discriminating between ISOs and CC participants.

4.5 Discussion

4.5.1 Summary of Research Findings

This study explored differences between internet-only sexual offenders and non-sexual offending community controls on psychological measures hypothesised to be relevant to internet sexual offending. It was proposed that increasing understanding of self-regulation deficits in ISOs would help inform the development of targeted assessment and treatment of the ISO population and help further general understanding about specific risk factors that may account for IIOC use.

Analyses provided partial support for Hypothesis 1, that ISOs would report significantly higher total and individual scores on each of the five UPPS-P Impulsive Behaviour Scale subscales (Lynam et al., 2007) than CCs. When age, sexual orientation, education level, time spent using legal adult pornography, and frequency of legal adult pornography use were controlled, ISOs reported significantly higher impulsivity than CCs across the Negative Urgency, Positive Urgency, and Lack of Perseverance subscales, as well as on the Total Score for the UPPS-P. The Lack of Premeditation subscale did not differ between groups. Sensation Seeking significantly differed between groups, although in the opposite direction of the original hypothesis, in that CCs reported higher sensation seeking than ISOs. As a concept, it may be that sensation seeking has a higher stigma when linked to illegal sexual behaviour compared to other facets of impulsivity; for example, an individual might perceive it to be less socially acceptable to commit a sexual offence in the context of hedonism and pleasure seeking, compared to the context of a way to manage intense, negative emotions. It is possible that CCs scored significantly higher than ISOs on the Sensation Seeking subscale due to the transparent nature of the UPPS-P scale; for example, ISOs may have anticipated a hypothesis of Internet sexual behaviour being linked to sensation seeking behaviour, and as such understated the extent of their sensation seeking. Internet sexual offending behaviour appeared most related to the

tendency to use rash action in response to experiencing negative emotions, and the tendency to give up when an activity becomes boring or difficult. Together, these facets of impulsivity could relate to the effect of immediate gratification by online stimuli when used as a coping mechanism for dealing with negative emotions (Negash, Sheppard, Lambert, & Fincham, 2016).

Analyses provided full support for Hypothesis 2, in that ISOs reported significantly higher total and individual scores on each of the three HBI-19 subscales (Reid et al., 2011) than CCs. When age, sexual orientation, education level, time spent using legal adult pornography, and frequency of legal adult pornography use were controlled, ISOs reported significantly higher hypersexuality than CCs across the Control and Coping subscales of the HBI-19, in addition to the Total HBI-19 score. ISOs scored significantly higher than CCs on the Consequences subscale when covariates were not controlled. Internet sexual offending behaviour appeared related to the experience of difficulties controlling sexual thoughts, using sexual behaviour to cope with difficult emotions, and experiencing negative consequences as a result of sexual behaviour.

Analyses provided partial support for Hypothesis 3, that ISOs would report significantly higher total and individual scores on each of the four subscales of the MPI (Williams, 2005). When age, sexual orientation, education level, time spent using legal adult pornography, and frequency of legal adult pornography use were controlled, ISOs reported significantly higher offence-related sexual interests than CCs on the 'Sexual Preference for Children' and 'Obsessed with Sex' subscales of the MPI, in addition to the MPI total score. The 'Preferring Sex to Include Violence or Humiliation' subscale significantly differed between groups, although in the opposite direction of the original hypothesis (in this comparison, CCs reported significantly higher scores than ISOs). The 'Other Offence-Related Sexual Interests' subscale did not differ between groups.

In line with Hypothesis 4, ISOs reported significantly more use of legal adult pornography than CCs, as measured by average hours spent accessing this material per week. Correlation analysis revealed highly significant positive correlations between impulsivity and hypersexual behaviour, in support of Hypothesis 5. The strongest positive correlations were observed between the Negative Urgency facet of the UPPS-P, with each of the three subscales of the HBI-19, indicating that those more likely to engage in rash action resulting from negative emotions are more likely to also have difficulties in controlling sexual thoughts, use sexual behaviour to cope with difficult emotions, and experience negative consequences as a result of sexual behaviour.

ROC and AUC analysis demonstrated support for Hypothesis 6; all HBI-19 subscales, and 4 of 5 UPPS-P subscales, were able to discriminate the ISO sample from the CC sample at better than chance levels. Two of the four MPI subscales were able to discriminate the ISO sample from the CC

sample at better than chance levels, whereas two were not able to discriminate above chance. Hypothesis 6 was further supported by the hierarchical binary logistic regression model. When this model included all UPPS-P and HBI-19 subscales, the model had an overall classification accuracy of 92.4%. Higher scores on the UPPS-P Lack of Perseverance scale and HBI-19 Control scales significantly increased the odds of the model correctly classifying a participant into the ISO sample. When MPI scores were added to the model, alongside UPPS-P and HBI-19 scores, the model had an overall classification accuracy of 94.9%. The inclusion of the MPI subscales resulted in the UPPS-P subscales becoming non-significant in predicting group membership.

When the 'real world' utility of this research finding is considered, on the surface these findings indicate that simply asking individuals whether they have a sexual interest in children might be a more efficacious, direct way of assessing for risk of internet sexual offending behaviour. However, it is important to consider that the composition of the sample used in this research – a sample sought from help-seeking individuals – who might be more 'compliant' than a typical ISO population. In the 'real world', individuals may be more inclined to deny such sexual interest, due to factors including stigma and shame, and concern regarding possible repercussions. The model which included only the UPPS-P and HBI-19 had an extremely high classification accuracy (92.4%), which in the 'real world' may be less affected by socially desirable responding. The Principal Components Analysis provided further insight to potential latent constructs between the UPPS-P, HBI-19, and MPI measures. Of note, the Negative Urgency subscale of the UPPS-P was found to load more positively alongside the HBI-19 subscales, evidencing the centrality of sexual behaviour in regulating negative emotions.

4.5.2 Links to Existing Theory and Previously Published Research

The results of the current study fit alongside the proposal made by the Motivation-Facilitation model of adult male sexual offending (Pullman et al., 2016). Pullman et al. (2016) suggested that hypersexuality, including offence-related sexual interests, are amongst factors which might increase an individual's motivation to sexually offend. The authors proposed that poor self-regulation is a trait-facilitator which increases the likelihood of an offence taking place, if the motivation to offend is present. The current study provided evidence of some general and sexual self-regulation deficits in ISOs compared to non-sexual offending CCs. The ITSO proposes sexual offending behaviour results from deficits in the 'action selection/control system' (i.e. impulsivity; deficits in self-regulation) interacting with deficits in the 'perception and memory system' (i.e. maladaptive beliefs). In the current study, the Negative Urgency facet – the tendency to act with rash action in response to

experiencing negative emotions - could successfully differentiate ISOs from CCs when covariates were controlled for. The Negative Urgency facet of the UPPS-P has repeatedly been implicated as a central facet across various forms of psychopathology and addictive behaviour in previous research (e.g. Berg, Latzman, Bliwise, & Lilienfeld, 2015; Coskunpinar, Dir, & Cyders, 2013; Hershberger, Um, & Cyders, 2017).

A strength of the current study lies in the application of the UPPS-P model of impulsivity to understanding sexual offending behaviour on the Internet. The UPPS-P model itself was derived as a result of a need for a more theoretical structuring of impulsivity than previous theoretical and empirically derived measures, such as the BIS-11 (Whiteside & Lynam, 2001). To the author's knowledge, this is the first exploration of the UPPS-P model of impulsive behaviour applied to an internet-only offending sample. One extant paper was located, in which the UPPS-P model of impulsivity was explored in a sample of sexual assault perpetrators (Mousilo, Calhoun, & Rosenbloom, 2016). Mousilo et al. (2016) reported that Negative Urgency, Positive Urgency, and Lack of Premeditation were significantly higher in sexual assault perpetrators from non-perpetrators. This somewhat differs to the results of the current study, where Negative Urgency, Positive Urgency, and Lack of Perseverance were found to be significantly higher in ISOs compared to CCs. One explanation may be that different types of sexual offending behaviour are underpinned by different facets of impulsivity. This evidences the need for the application of the UPPS-P model of impulsivity across distinct sexual offender subtypes. Overall, the current research provides evidence of good power, based on a large sample of both ISOs and CCs, for the presence of higher impulsivity facets and hypersexuality in an internet sexual offender sample, furthering the evidence already reported by Middleton et al. (2006), Henry et al. (2010), and Bettles (2014).

4.5.3 Limitations

In order to maintain replicability of the research procedure, all data was gathered via online survey methodology, rather than a combination of online and pen-and-paper participation. However, it was recognised that this likely excluded some eligible ISOs from participating, due to bail conditions restricting internet access following arrest, or conditions of Sexual Harm Prevention Orders following conviction. As with all self-report measures, it must be recognised there was a potential for socially desirable responding, or conversely, the possibility of over-exaggeration of difficulties in order to rationalise past illegal online behaviour. It was hoped that the anonymous nature of the online data gathering tool might somewhat mitigate for socially desirable responses, as anonymity is purported

to reduce the likelihood of socially desirable responding (Egan, Hughes, & Palmer, 2015). However, it is recognised this possibility cannot be ignored.

With regard to demographic composition, the vast majority of ISOs and CCs who participated in this study were white, heterosexual, well-educated males. Importantly, these results may not generalise across cultures, across sexualities, or indeed to female or juvenile ISOs. The ISO sample in this study was significantly older than the CC sample. Where possible, steps were taken in analyses to control for potential interfering effects of age, yet this was not possible in each analysis. Nonetheless, the demographic makeup of the current ISO sample is much in-line with existing reported demographics of ISOs across other studies (Henshaw et al., 2017).

Finally, it is important to consider that the majority of ISO participants (87.3%) reported to have heard about the study via The LFF. Hence, the composition of the ISO sample may be somewhat atypical of the general ISO population, as this sample had mostly self-selected to voluntarily seek treatment in relation to their detected illegal online behaviour. Steps were taken in an attempt to overcome this potential population bias, such as recruiting participants from the Metropolitan Police and advertising in probation lobbies, but these additional recruitment avenues generated only 12.7% of the final ISO sample. The ISO sample did not include currently incarcerated ISOs. However, it is increasingly being recognised that the issue of internet sexual offending behaviour is not one which can simply be 'arrested out of'. Hence, recruiting a community ISO sample may increase the clinical utility of research findings, as increasingly the ISO population are being treated, risk assessed, and managed in the community. It therefore appears appropriate to cautiously generalise the results of this study to community-dwelling, UK based, adult male ISOs.

4.5.4 Conclusions and Directions for Future Research

Increased understanding of motivational and facilitative factors associated with internet sexual offending will help guide the development of evidence-based prevention, intervention, and risk assessment (Pullman et al., 2016). Risk factors such as impulsivity, hypersexuality, and offence-related sexual interests can be understood as "psychologically meaningful risk factors", because these factors can be specifically targeted in psychological intervention (Mann, Hanson & Thornton, 2010). The results of this study supports the need for ISO intervention to include specific focus on the development of adaptive self-management skills, with particular focus on the need to teach self-regulation skills in response to experiencing negative emotions. Future research might usefully

explore how deficits in self-regulation in ISO populations relate to recidivism rates, and whether increased self-management skills reduce sexual recidivism rates in ISO populations.

As Henshaw et al. (2017) emphasised, the ISO population is not homogeneous. Various subtypes of ISO likely exist; not least is the important distinction to make between fantasy-driven and contact-driven ISOs (Merdian, Curtis, Thakker, Wilson, & Boer, 2013). Future research would therefore benefit from exploring the constructs of impulsivity, hypersexuality, and offence-related sexual interests across subgroups of ISOs to better parse the heterogeneity of psychological constructs between these subgroups. This would add to current understanding regarding risk and possible processes involved in an ISO 'crossing over' to commit contact sexual offences. High quality future research might utilise longitudinal study design, to aid ability to infer causality between deficits in self-regulation and engaging in illegal online sexual behaviour.

Chapter Five - Evaluation of a psychological intervention designed to treat specifically Internet Sexual Offending risks: A single case study

5.1 Abstract

This case study explored the assessment, formulation and implementation of intervention with an individual who, at the time of the intervention, was under investigation for downloading Indecent Images of Children (IIOC). The client self-referred to engage in psychological intervention within a community setting. Following assessment which included a clinical interview and completion of a psychometric test battery, a short-term psycho-educational intervention was designed to address prominent factors within the formulation. The formulation highlighted the Client's offending resulted from multiple interacting factors, which included an internal locus of control, emotional loneliness, not talking about problems, offence-level cognitive distortions, and using sex as a coping strategy to manage negative emotional states. Comparisons of psychometric scores between pre- and post-intervention highlighted changes in the desired direction which reached both statistical and clinical significance on measures of Emotional Loneliness, Impulsivity, and a measure of offence-level cognitive distortions. This case study demonstrated that a short-term intervention was beneficial in terms of psychometric score change for an Internet Offender, and illustrated the importance of a single case methodology to inform intervention to target relevant factors. Limitations and future directions for research were considered.

5.2. Introduction

As discussed in Chapter Four, the advent of the Internet has created a new, unique offending environment whereby Indecent Images of Children (IIOC) can be freely accessed, from the seeming anonymity of one's own home. Increasing IIOC convictions mean that more offenders than ever require treatment and education to reduce reoffending risk (McManus & Almond, 2014).

Research has reported that Internet Sexual Offenders (ISOs), compared with Contact Sexual Offenders (CSOs), are more likely to be Caucasian, younger, more likely to be better educated and have a higher IQ, and more likely to score lower on measures of antisociality and cognitive distortions (Babchishin, Hanson, & Hermann, 2011; Babchishin, Hanson, & VanZuylen, 2015). This suggests ISOs likely constitute a different type of sexual offender, with differing risks and treatment needs compared to CSOs (Sheldon & Howitt, 2007). Indeed, meta analyses reported by Seto, Hanson, and Babchishin (2011) suggest that whilst some ISOs may cross-over to commit contact sexual offences (*contact-driven offenders*; Merdian et al., 2016), it is more likely a separate subgroup of ISOs exist, whose engagement with IIOC is unrelated to contact sexual offending (*fantasy-driven offenders*; Merdian et al., 2016).

5.2.1 Theories of Internet Sexual Offending

Previously, theories of contact sexual offending have been applied to explain the origin and maintenance of Internet sexual offending behavior (Elliott & Beech, 2009). This is largely due to the relatively new nature of Internet sexual offending. Whilst research has informed general understanding about Internet offending behavior, this area is still under-researched in comparison to contact sexual offending. Merdian, Perkins, Dustagheer, and Glorney (2018) note that there may be limited utility in applying sexual offence theory to ISOs, if ISOs constitute a different type of sexual offender with unique risks and treatment needs.

A theory of child sexually abusive behaviour which has been applied to Internet sexual offending is the Pathways Model of child sexual abuse (Ward & Siegert, 2002). Ward and Siegert (2002) integrated elements of previous single-factor theories of sexual offending against children to attempt to provide a more holistic theoretical explanation which accounts for differences in developmental experiences, psychological mechanisms and offender typology. The authors proposed that sexual offending results from offenders primarily following one of five distinct clinical pathways: (1) intimacy deficits; (2) distorted sexual scripts; (3) emotional dysregulation; (4) anti-social cognitions; and (5) multiple dysfunctions. The authors propose that the pathway followed will

exert the main causal influence on offence behaviour, with exception of the 'multiple dysfunctions' pathway, whereby individuals will possess dysfunctions across each of the other pathways.

The applicability of the Pathways Model (Ward & Siegert, 2002) to ISOs was examined by Middleton, Elliott, Mandeville-Norden, and Beech (2006). Across 72 ISOs, 60% (n=43) demonstrated psychometric profiles indicative of fitting at least one of the five proposed pathways (the majority fitted the intimacy deficits (n=15) and emotional dysregulation (n=14) pathways). However, of this 60%, 10 participants produced psychometric profiles which were indicative of fitting two or three pathways, and so these participants were excluded from pathway assignment. Furthermore, 40% (n=29) of Middleton et al.'s (2006) sample did not demonstrate any psychometric elevations, so were not assigned to a pathway. Whilst pathway assignments may have been increased by not excluding offenders whose profiles fitted multiple pathways, the finding that nearly half the sample did not fit a pathway highlights the limited utility and sufficiency of applying sexual offence theory to ISOs, as a large proportion of ISOs in this study did not display psychological deficits associated with contact sexual offenders.

The Situational Approach outlined by Wortley and Smallbone (2006) suggests a theoretical gap in the Pathways Model applied to ISOs. Whilst the Pathways Model states that each pathway results from differential interaction of developmental experiences with environmental factors (which produces a core set of psychological mechanisms leading to a vulnerability of committing a contact sexual offence), the Situational Approach states that offending can result from the influence of certain environmental conditions on emotional states, in the absence of psychological vulnerabilities. The role of the Internet itself has been highlighted in the 'Triple A Engine' (Cooper, 1998). This highlights how the accessible, affordable and anonymous nature of the Internet may create an appealing offending environment. A further criticism of the original Pathways Model is that it does not accommodate biological/neurobiological factors in Internet offending, as has been included in the Integrated Theory of Sexual Offending (ITSO; Ward & Beech, 2006).

Additionally, the Pathways Model can be criticized as it focuses on observable clinical symptoms of offending rather than causal mechanisms driving these symptoms. The Self-Regulation Model (SRM; Ward et al., 1998) of the offence process may instead provide some guidance around the causal mechanisms driving offending behaviour, which in turn can enable clinicians to better identify targets for intervention. Ward et al. (1998) integrated various theories which state self-regulation is an internal process that allows humans to engage in goal-directed behaviour; goals may be either 'approach' or 'avoidance'. Ward et al. (1998) stated that an individual's perception about whether or not they are meeting their goals will likely change their affective state and behaviour.

The authors outline three general self-regulation styles which are related to sexual offending; underregulation (goal to avoid offending, but passive in attempts to control behaviour), misregulation (goal to avoid offending, but efforts to avoid offending are misplaced); and, paradoxically, effective self-regulation (goal is to sexually offend; self-regulation is intact). Considering the role that self-regulation may play in the Internet sexual offence process, therefore, may have both clinical and research utility in furthering understanding Internet-specific risk factors.

5.2.2 Assessment and Intervention with IOs

Merdian et al. (2018) suggested that the limited applicability of theories of contact sexual offending to Internet offending may result in a lack of understanding for Internet offending-specific risks and needs. Indeed, pre-existing static risk assessment tools, originally developed to classify risk of recidivism in contact child sexual offenders lack predictive accuracy in ISOs (Henshaw, Ogloff, & Clough, 2017), and authors call for sub-group analysis of the effectiveness of sex offender risk assessment tools so as to validate (or not) their use (Tully & Browne, 2015). Despite the overall low base-rate of recidivism in ISOs (Seto, et al., 2011), Osborn, Elliott, Middleton, and Beech (2010) found both the Risk Matrix 2000 (Thornton et al., 2003) and the Static-99 (Harris, Phenix, Hanson, & Thornton, 2003) greatly over-estimated the risk of sexual recidivism in ISOs. Only one static risk checklist has been developed specifically for use with ISOs; the Child Pornography Offender Risk Tool (CPORT; Seto & Eke, 2015). Overall, the CPORT was found to significantly predict general and sexual recidivism. However, the CPORT did not significantly predict recidivism for ISOs without previous sexual or non-sexual offending history (Seto & Eke, 2015). Whilst the authors suggested this finding may be an artefact of the low base-rate of recidivism in ISOs, these findings highlight the potential unethical nature of applying risk assessment tools to samples where the reliability/ validity of the tool has not been established (Merdian et al., 2018).

Merdian et al. (2018) suggest that, following the approach of Mann, Hanson, and Thornton (2010), exploring some empirically supported sexual offending risk factors in ISOs, and exploring the causal influence of these risk factors to the offending process and recidivism, would allow for risk management and intervention planning in the absence of actuarial risk prediction. This approach enables contextual/personality factors to inform the interpretation of why an individual may have committed online sexual offences, which therefore would impact on the treatment targets in the ensuing intervention.

5.2.3 Use of a Single Case Study

With increasing pressure on the prison system, low-risk ISOs are increasingly being given community or suspended sentences as opposed to custodial sentences (Beech, Elliott, Birgden, & Findlater, 2008). ISOs managed in the community may be ordered by the court to engage in psychological intervention, or they may choose to engage voluntarily with support and education to understand their online behaviour, inform relapse prevention strategies, or to positively impact on criminal justice proceedings (Gillespie et al., 2016).

Some research has begun to demonstrate the efficacy of community group interventions with which ISOs voluntarily engage (e.g. Beier et al., 2015; Gillespie et al., 2016). Overall, by comparing pre-/post-intervention psychometric test scores, this research demonstrated support for positive effects of community intervention on measures of affective/interpersonal functioning and offence-supportive attitudes in help-seeking ISOs.

One benefit of using proximal measures (i.e. psychometric test scores) during the course of an assessment or research is that measurement of Statistically Significant Change (SSC) across psychological variables targeted by the intervention can be explored, as well as examining the overall effectiveness of sex offender treatment (Jung & Gulayets, 2011). However, group-based analyses such as those conducted by Gillespie et al. (2016) and Beier et al. (2015) lack emphasis on exploring change at an individual clinical, as well as statistical level (Nunes, Babchishin, & Cortoni, 2011). Utilizing a case study methodology to explore whether an individual's functioning falls within a targeted range following intervention, known as Clinically Significant Change (CSC; Jacobson, Follette, & Revenstorf, 1984), would help to provide a fuller account of intervention efficacy at an individual level (Nunes et al., 2011). Furthermore, whilst group-based interventions are a cost-effective way of providing intervention, they do not allow for individual differences in terms of contextual/personality factors, learning style, motivation for offending and primary intervention targets. A case study methodology allows for an individualised approach to intervention planning and implementation.

The aim of this case study was to explore the impact of a short-term (6-session) psycho-educational intervention on pre-/post-intervention psychometric score change. In particular, the case study aimed to measure SSC and CSC at an individual level on measures relating to the four risk domains outlined by Ward and Beech (2004): interpersonal functioning, distorted attitudes, sexual interests, and self-regulation. Behavioural change was also considered.

5.3 Method

M (anonymised) was a Caucasian male in his late 30s, under investigation and on police bail for downloading and distributing IIOC at the time of assessment and intervention. He had no previous forensic history nor had received any offence-focused psychological intervention regarding his index offence as he had not been convicted. M acknowledged his offending behaviour and voluntarily approached The LFF, a UK-based child protection charity, the day following his arrest. Since completion of the Case Study, M has been processed by the Criminal Justice System, and received a suspended prison sentence for downloading and distributing IIOC, thus justifying the use of the term 'ISO' when referring to M. M self-referred and privately paid to engage in an individualised psycho-educative intervention. His reported reason for self-referral was a wish to better understand his offending behaviour, inform relapse prevention, and represent a mitigating factor for upcoming criminal justice proceedings. M provided informed consent to participate in the case study (Appendix V). He lived alone having separated from his wife the previous year, had 2 children aged under 10, and was full-time employed.

M's assessment comprised self-report information, in the form of clinical interviews and a psychometric test battery. Official reports (hard-drive analysis, psychiatric reports, notes from previous therapy, pre-sentence report) for cross-comparison did not exist. M completed 8 psychometric measures, chosen based on factors found to be relevant to Internet offending, observable clinical symptoms characteristic of sexual offenders, and in response to arising themes from M's interviews (Babchishin et al., 2015; Beech & Ward, 2004; Elliott, Beech, Mandeville-Norden & Hayes, 2009; Thornton, 2002). The Paulhus Deception Scales (PDS; Paulhus, 1999) helped control for social desirability (pre-and post-intervention psychometric test scores are presented in Table 11).

Due to the lack of norms on the Internet Behaviours and Attitudes Questionnaire (IBAQ; O'Brien & Webster, 2007), M's scores were examined clinically to explore which questions he indicated higher responses to (circling 4 or 5 out of 5 on the Likert-type scale). M did not circle higher than 3 on any IBAQ item; this measure was not included in the formulation. Likewise, due to the lack of available norms on the My Private Interests (MPI; Williams, 2005) scale, M's scores were examined clinically to explore which questions he positively endorsed. These were: "I have sexy thoughts about girls", "I like looking at sex magazines/ books/ videos", and "Men who have lots of sex are happier than those who do not".

During the assessment, M provided self-reported information regarding the content and process involved in his online offending behaviour.

M reported that his increased use of online legal adult pornography coincided when he his business was losing money in 2009. He said he accessed legal adult pornography via websites in his study whilst living at home, whilst his partner was asleep upstairs. He likened online pornography to be like a "corridor", with different rooms representing different types of pornography. M described a gradual desensitisation to legal adult pornography and reported engaging in viewing types of pornography that "in his real life, [he] was not interested in". For example, he identified himself as heterosexual, but would view gay and transgender online pornography. He described this as “wanting to see everything and anything, to see if it would satisfy me in any form".

M said he began to use a peer-to-peer (P2P) file sharing software to bulk download legal adult pornography in late 2014. Furthering his 'corridor' analogy, M described that he felt he was "drawn deeper and deeper", and that IIOC represented another "door" of this "corridor". M could not recall the exact date he first saw an IIOC image; stating that is was hard to know when he was accessing "borderline" images whether they were illegal or not. Examples of such images were ‘teens’ wearing school uniforms. M described that once he had "peeked into the room" he was interested in what else there might be and wanted to "explore that room further". M described feeling a "buzz" that the file names of the downloads were not necessarily indicative of the content of the file and he found this element of the P2P software addictive ("you never knew what you were going to get"). M continued to bulk download files in an attempt to find the “perfect” image, although when asked, he was unable to describe what elements of an image he was looking for that might have made it “perfect”. M distributed IIOC due to the nature of the P2P software he was using, as he had not switched his own upload off; he said that when he realised this feature of the software, he switched his upload off.

There was evidence of sexual preoccupation in M's account of his online behaviour; stating that his PC was set up with 4 screens, each of which would contain legal adult pornography, and IIOC, with "God knows how many tabs open on each screen". M spoke about alcohol misuse coinciding with his online behaviour, and felt as though he were in a "trance like state" when accessing IIOC. He described not viewing the children in the images as "real children" but as "images on a screen". M stated that the thought of being caught by the police crossed his mind daily, but as time went on and he was "doing it and getting away with it", combined with alcohol misuse, these thoughts were minimised. M did not report engaging with other individuals online; he said he has never engaged in online chat with adults or children. He said he was never involved in the production of IIOC.

M admitted to having possessed and distributed images across Categories A-C (Sentencing Council Sexual Offences Definitive Guideline, 2013; see Appendix W). M said he was aroused to Category C images of post-pubescent females, but stated that in his bulk-downloaded 'collection', which was entirely unorganised, he had material of children as young as babies up to the age of 18, of both male and female genders. M estimated possessing "thousands, if not hundreds of thousands" indecent images of children, in addition to images depicting bestiality and sadism.

5.4 Formulation

Forensic Case Formulation refers to a process where information about a client gathered during assessment/treatment is integrated and interpreted alongside psychological theory to explain the origin and maintenance of offending behaviour. A formulation looks to provide an explanatory, testable, mechanism of the behaviour, formed collaboratively by the clinician and the client which provides a framework highlighting treatment needs and targets to guide the ensuing intervention (Hart, Sturmey, Logan & McMurran, 2011). The CBT-based '5 P's' formulation model (Dudley & Kuyken, 2006) was used to guide the formulation process:

5.4.1 Presenting Issue

M was arrested and was under investigation for possession and distribution of IIOC across image Categories A-C (Sentencing Council, 2013).

5.4.2 Predisposing Factors

M's early experience of being bullied and the act of not disclosing this to significant others may have distorted his internal working model of relationships, meaning he may have developed beliefs that the world is dangerous and that other people cannot be trusted, akin to the Intimacy Deficits pathway (Ward & Siegert, 2002). Indeed, results from a longitudinal birth cohort study showed that experience of being bullied in childhood was associated with a lack of social relationships at age 50 (Takizawa, Maughan, & Arseneault, 2014). M appeared to learn to cope with the experience of being bullied by externalising the blame (i.e. 'it is their problem, not mine') and likely resulted in him learning to cope with problems on his own and not wanting to speak about his problems with

others, keeping with the Emotional Dysregulation pathway (Ward & Siegert, 2002). This is supported by M's internal score on the Locus of Control scale, as well as his high Emotional Loneliness score.

M experienced exposure to legal adult pornography at age 9, which was accompanied by feelings of curiosity, naughtiness and excitement. M reported being preoccupied with adult pornography from this age, and felt 'well informed' about sexual practices. Merdian et al. (2018) also recorded early exposure to adult pornography in a sample of ISOs, and the authors suggest that development of habitual use of pornography may represent a coping mechanism particularly if the individual is socially isolated. This pattern fitted M's presentation. M was further impacted by male role models, who he looked up to and wanted to impress whilst he was still maturing, regarding the normalisation of sexual behaviour (e.g. visiting strip clubs, using prostitutes). This led to M experiencing a gradual desensitisation to sexual imagery and behaviours which led him to want to push sexual boundaries. M self-reported to be a 'player' with women (i.e. multiple fleeting one-night stands, infidelity in relationships) when he felt 'lonely and lost', reporting he used 'girls, sex, and porn to make me feel better'. M learned to use sex as a dysfunctional coping mechanism for dealing with negative emotions. Certainly, the notion of using sex to cope with stress has been empirically supported (Reid et al., 2011).

5.4.3 Precipitating Factors

M's business failures appeared an important precipitating factor in his Internet offending behaviour. He used dysfunctional coping mechanisms in response to business failures; i.e. misusing alcohol in an attempt to cope with depression, and wanting to fix problems on his own. It is likely that failure and embarrassment, coupled with increased stress around sourcing a new job, meant that M used legal Internet pornography to escape from reality. As such, Internet pornography acted as a negative reinforcer as negative feelings and emotions resulting from his personal circumstances were removed. It appeared as though M lacked the ability to internally boost his self-esteem; as such, he turned to 'quick fixes', such as online sensation-seeking behaviour and immediate gratification (pushing the limits of the sexual imagery he viewed on the Internet) to make himself feel better. This self-regulation deficit appears strongly linked to the ‘negative urgency’ facet of the UPPS-P model of impulsivity (Whiteside & Lynam, 2001). M reported being drawn to different areas of sexual interest and hence to accessing IIOC images on a file-sharing programme, alongside concurrently accessing adult pornography. Within M's purported motivation (Finkelhor, 1984) for accessing IIOC, M reported curiosity, as well as a developing sexual arousal to viewing images of post-pubescent females. M did not identify as a paedophile.

5.4.4 Perpetuating Factors

M's continued use of the Internet to escape from reality likely acted as a negative reinforcer of his illegal online behaviour. The reward of viewing both legal and illegal online pornography also acted as a positive reinforcer, as M received sexual gratification and excitement from pushing the limits of the sexual imagery he viewed. The 'buzz' that file names of his downloads were not indicative of file content also acted as a positive reinforcer.

As well as being a precipitating factor, M's alcohol misuse acted to perpetuate his illegal online behaviour. M's alcohol misuse represented both a coping strategy to deal with negative emotional states and as a disinhibitor which distracted him from the reality of his behaviour. M reported being concerned, when sober, that he would be arrested and that he drank alcohol when online to numb this concern. Alcohol also represents a mechanism that M would use to avoid experiencing negative emotional states, and further indicates the role of self-regulation deficits in M's offence process.

Lastly, M's continued dysfunctional coping strategy of emotional suppression and not talking about problems meant he continued to try to cope with problems by himself so as not to appear 'weak' by asking for help from others.

M evidenced offence-level distorted cognitions which have previously been documented in ISO samples (Elliott & Beech, 2009), including permission-giving thoughts that the children in the images were 'not real', that being online felt like being in a 'different world', and feeling 'anonymous' online. The concept of 'anonymity' is in-fitting with the 'Triple A Engine' (Cooper, 1998). Distorted cognitions likely enabled M to minimise the harm he was causing by reducing cognitive dissonance (Festinger, 1957) regarding knowing his behaviour was 'wrong' but continuing to offend online; this perpetuated M's offending.

5.4.5 Protective Factors

Empirical research exploring protective factors in sex offenders is still in its infancy. From a literature review, de Vries Robbé, Mann, Maruna, and Thornton (2015) surmised some potential protective factors for desistance from sexual offending. M exemplified some of these protective factors including; a constructive social and professional support network (M had good support from his ex-partner and his parents); being engaged in employment (M continued to maintain employment

throughout the assessment and intervention); sobriety (M reported he had desisted from alcohol consumption since the point of arrest); and a motivated attitude to desistance (M presented as highly motivated to engage in intervention). These potential protective factors could be utilised and built on within the ensuing intervention.

5.4.6 Responsivity issues identified from assessment

Responsivity issues which might have impacted on the intervention design needed to be considered. Although M scored within the 'normal' range on the PDS, his boastful presentation around fast cars/money - despite being in debt and no longer living the fast-paced wealthy life he previously did - was interpreted as being possibly narcissistic. Throughout the intervention, it was important to remain aware that behind the ultra-confident narcissistic mask is possibly a fragile self-esteem (Tracy & Robins, 2003). M's internal locus of control score might have also prevented him from discussing pertinent issues. In M's case, his internal locus of control perpetuated his illegal internet behaviour so he was overly rigid, overly reliant on himself to cope with problems in his life, and reluctant to request help from others, fearing he would look 'weak' or 'incapable'. It was therefore important to focus on building rapport and establishing a trusting professional relationship by using a warm, non-confrontational, empathic approach (Beech & Hamilton-Giachritatsis, 2005), so that M was able to engage in some process of change at a deeper, more meaningful level.

5.5 Intervention

The aim of this case study was to explore the impact of a short-term (6-session) psycho-educational intervention on pre-/post-intervention psychometric score and behavioural change. The individual version of the group-based psycho-educational programme, *"Inform Plus"*, written and delivered by The Lucy Faithfull Foundation (The LFF) is 5 sessions in length (each session lasting 2 hours). M paid the cost of the typical 5 session intervention, which could be extended by 1 session at no extra cost to M, agreed by The LFF. Prior to this, M attended 2 assessment sessions during which the clinical interview was conducted, and pre-intervention psychometrics administered. Following the 6 intervention sessions, M attended one further session to review his formulation and complete post-intervention psychometrics, and one follow-up meeting 2 months after the intervention ended in order to review his Relapse Prevention Plan. Overall, the current author met M on 10 separate occasions.

The assessment and formulation highlighted intervention targets, which included: emotional loneliness, using sex as a coping strategy, impulsiveness in response to negative emotion, and offence-level cognitive distortions.

This intervention was adapted from the "Inform Plus" manual (Lucy Faithfull Foundation, 2015); some material was added with content more relevant to M's formulation. Inform Plus is a psycho-educative course for Internet offenders, based on contact sexual offending theory, Internet-offending specific material, and relapse prevention. M attended one two-hour session per week for 6 consecutive weeks, and completed his post-intervention psychometric tests the following week. He attended a follow-up 7 weeks after the final intervention session.

Sessions 1 and 2 included a review of the formulation and offence-analysis content. The author introduced M to CBT principles that the intervention would follow, the Finkelhor (1984) offence-process theory, as well as the Pathways Model (Ward & Siegert, 2002) and the Self-Regulation Model (SRM; Ward, Hudson, & Keenan, 1998) of sexual offending. The author found the process of reviewing the formulation alongside M helpful, as it meant the ensuing intervention could be more collaborative. Sessions 3 & 4 focused on fantasy, addiction, and self-regulation. M was introduced to the concepts of positive and negative reinforcement (Skinner, 1938); the role of positive reinforcement was linked to discussions around fantasy and immediate gratification of online stimuli (Quayle, Vaughan, & Taylor, 2006) and addiction (Carnes et al., 2007) maintaining offending behaviour; the role of negative reinforcement was linked to using the Internet to escape from reality. The role of self-regulation – particularly negative urgency – was used to enable M to break down his online behaviour in a CBT 'hot cross bun' model. Sessions 5 & 6 covered victim empathy, including moral disengagement (Bandura, 2002) and Cognitive Dissonance Theory (Festinger, 1957). This session helped initiate discussions around offence-level cognitive distortions. Finally, the intervention used the Good Lives Model (GLM; Ward & Brown, 2004; Ward et al., 2007) to facilitate relapse-prevention discussions.

M was motivated to engage in intervention, and arrived punctually to each session. M engaged particularly well with the CBT-based 'Footsteps to Offending' Personal Work (Appendix X), which required him to break down the steps in the lead-up to his offending across different thoughts/feelings/behaviours; he verbalised this helped him recognise that behaviours did not necessarily have to be illegal to be unhelpful. M struggled to adopt a motivated focus when reviewing the GLM, as his criminal investigation was ongoing: he struggled to look past this, for the effect that receiving a conviction might have on his future.

Following discussions during supervision, the author provided feedback to M about the observed 'ultra-confident' mask and the author's belief that for M moving forward that letting people see the real 'him' would be a great help to him in beginning to feel closer to others. M was receptive to this and agreed with these observations.

5.6 Results

M completed post-intervention psychometric testing one week following the final intervention session. See Table 11 for a comparison of pre-/post-psychometric test scores, which includes the Reliable Change Index Value (RCI; Jacobson & Truax, 1991) for each measure. The RCI is calculated to test the statistical significance of the difference between pre-/post-intervention scores, to explore whether observed changes are likely due to errors of measurement/chance rather than resulting from the intervention itself. An individual's RCI value across each individual measure is statistically significant if their change score (the post-intervention raw score minus pre-intervention raw score) is greater than the RCI value. Across each measure, if an individual's RCI Value is significant, CSC (Jacobson & Truax, 1991) can then be explored. CSC is used to test whether a SSC is likely to be large enough to produce changes in an individual's functioning/behaviour. The RCI and CSC Values were calculated using the Excel programme and accompanying manual written by Morley and Dowzer (2014). This case study used 'Criterion B' for analysing CSC: to test whether, following intervention, M's scores fell within 1.96 standard deviations of the mean of a non-clinical comparison group. Group means and standard deviations used to calculate RCI and CSC for each measure were sourced from a combination of test manuals and published research (Cyders, 2013; Elliott et al., 2009; Gillespie et al., 2016; O'Brien & Webster, 2007; Paulhus, 1999; Reid et al., 2011; Russell et al., 1980; and Schmitt & Allik, 2005).

Positive pre-/post-intervention change reached statistical significance across scales of Emotional Loneliness, Negative Urgency (as measured by the UPPS-P), and Distorted Thinking (as measured by the IBAQ). The SSC on the scales measuring Emotional Loneliness and Negative Urgency also met the criteria for CSC.

M's scores on the Paulhus Deception Scales, Locus of Control, Interpersonal Reactivity Index, and the Positive Urgency, Sensation Seeking, Lack of Premeditation and Lack of Perseverance subscales of the UPPS-P remained constant following intervention. With regard to M's post-intervention score on the MPI measure, M did not positively endorse the three items he had at pre-intervention.

Table 11: *M's pre/post-intervention psychometric scores, including RCI & CSC*

Domain	Measure	Subscale	Pre-Intervention Raw Score	Post-Intervention Raw Score	Difference	RCI Value	CSC (Criterion b)
Validity	*Paulhus Deception Scales (PDS; Paulhus, 1999)*	Impression Management	8	8	0	4.43	-
		Self-Deceptive Enhancement	1	1	0	3.19	-
Socio-Affective Functioning	*UCLA Emotional Loneliness Scale (Russell, Peplau, & Cutrona, 1980)*	-	53	45	-8	7.41*	CSC met
	Nowicki-Strickland Locus of Control scale (Norwicki, 1976)	-	3	4	+1	8.03	-
	Interpersonal Reactivity Index (IRI; Davis, 1980)	Perspective Taking	20	19	-1	6.87	-
		Fantasy	21	11	-10	6.24	-
		Empathic Concern	18	15	-3	6.9	-
		Personal Distress	11	6	-5	6.65	-
Self-Regulation	*UPPS-P Impulsive Behaviour Scale (UPPS-P; Lynam, Smith, Whiteside, & Cyders, 2006)*	Negative Urgency	34	18	-16	6.29*	CSC met

		Positive Urgency	14	15	+1	5.61	-
		Sensation Seeking	37	38	+1	6.57	-
		Lack of Premeditation	24	20	-4	5.53	-
		Lack of Perseverance	19	18	-1	4.94	-
	Hypersexual Behaviour Inventory-19 (HBI-19; Reid, Garos & Carpenter, 2011; before arrest/ medication)	Control	35	9	-26	4.01*	CSC met
		Coping	34	9	-25	5.61*	CSC met
		Consequences	14	4	-10	3.9*	CSC met
	HBI-19 (after arrest / medication)	Control	8	9	1	4.01	-
		Coping	12	9	-3	5.61	-
		Consequences	4	4	0	3.9	-
Distorted Attitudes	*Internet Behaviours and Attitudes Questionnaire (IBAQ; O'Brien & Webster, 2007)*	Distorted Thinking	30	16	-14	7.92*	N/A - no appropriate comparison group available
		Self-Management	21	23	+2	9.29	-

Sexual Interests	*My Private Interests (MPI; Williams, 2005)*	Sexual Preference for Children	1	0	-1	-	-
		Obsessed with Sex	2	0	-2	-	-
		Preferring Sex to include Violence/Humiliation	0	0	0	-	-
		Other Offence-Related Interests	0	0	0	-	-

* = RCI Value is statistically significant at the 0.05 level

Whilst completing pre-intervention psychometrics, M requested to complete the HBI-19 twice, for the effect he perceived that his arrest and how beginning anti-depressant medication – which contained anti-libidinal effects - impacted on his hypersexual behaviour. When comparing his pre-intervention score of his rating of behaviour prior to arrest/medication with his post-intervention score, the change was statistically and clinically significant. However, when comparing his pre-intervention score of his rating of behaviour following arrest/medication with his post-intervention score, the observed change was not significant.

M's behaviour change, in addition to psychometric test score change, over the course of the intervention is also important to consider. Across the intervention, the author encouraged M to keep himself busy with constructive hobbies and leisure-time activities, to help build on his protective factors against further offending (de Vries Robbé et al., 2015). Each week, M showed the author photographs of his up-to-date progress with a DIY project which he had started following Session 1. This DIY project encouraged M to contact a friend on separate occasions to ask for some help - which M verbalised was out of character for himself - as well as encouraging him to spend more time with his ex-partner and children. M commented throughout the intervention that he was spending more time with his family than previously, and engaging in activities as part of the family that he wouldn't previously have found enjoyable (e.g. staying in for a 'movie night' with jelly & ice cream).

M attended a follow-up meeting 7 weeks following the final intervention session, where the author reviewed M's current situation and Relapse Prevention progress.

5.7 Discussion

This case study explored the assessment, formulation and implementation of a short-term psycho-educational intervention with an ISO. The assessment and formulation suggested M's offending as deriving from multiple interacting factors, which included an internal locus of control, emotional loneliness, negative urgency, offence-level cognitive distortions, and using sex as a learned coping strategy. Depression and alcohol misuse perpetuated his offence cycle. Legal online pornography increased M's positive emotions and distracted from his negative emotions, and his continued boundary-pushing of the content of material viewed online led to accessing IIOC. M's continued use of the Internet to escape from reality acted as a negative reinforcer of his illegal online behavior. According to Cognitive Dissonance Theory (Festinger, 1957), M's offence-level cognitive distortions

likely enabled him to minimise the harm he was causing which enabled him to continue offending online.

The formulation was informed by the Pathways Model (Ward & Siegert, 2002), with particular reference to both the Intimacy Deficits and Emotional Dysregulation pathways. However, the Pathways Model was insufficient alone to explain the onset and maintenance of M's online offending behaviour, because M could not clearly map to one pathway alone. Furthermore, the Pathways Model failed to capture some causal and motivational aspects of M's offending. In his account, M emphasised that he believed his access to IIOC stemmed from an addiction to legal adult pornography and that his offending resulted from boundary-pushing of the content of online pornography he viewed. M reported that he experienced no sexual interest towards children prior to offending, a sexual interest developing when he accessed IIOC. This is comparable with the Situational Approach (Wortley & Smallbone, 2006), which states that offending can result from the influence of certain environmental conditions on emotional states, in the absence of psychological vulnerabilities.

The SRM (Ward et al., 1998) was also used to aid formulation. Aspects of both the avoidant-active and approach-automatic pathway were identified in M's offence process. The author found it difficult to distinguish if M's goal was to avoid or approach offending behaviour; M's account suggested he viewed his offending as 'inevitable', resulting from desensitisation to legal adult pornography, rather than actively attempting to access or not access IIOC. M exhibited affective processes following offending characteristic of both the avoidant pathway (i.e. shame/guilt about offending behaviour) and the approach pathway (i.e. receiving sexual gratification from offending behaviour). M identified himself as belonging to the underregulation pathway during intervention, highlighting his awareness of using pornography and sex as a coping strategy to deal with negative emotions. Importantly, this strongly links with the conceptualisation of the 'negative urgency' pathway described by Whiteside and Lynam (2001), in that M's inability to effectively regulate negative emotions led him to engaging in rash, risky, online sexual behaviour.

Regarding psychometric change, this case study has demonstrated the utility of a short-term psycho-educational intervention with an ISO. Following intervention, M's psychometric score change in the desired direction reached both statistical and clinical significance on measures of Emotional Loneliness and Negative Urgency. Change in the desired direction also reached statistical significance on a measure of offence-level cognitive distortions. Emotional Loneliness, acting impulsively in response to negative feelings, and offence-level cognitive distortions were prominent aspects of the

formulation of M's offending, and were identified as intervention targets for the ensuing intervention.

With regard to Emotional Loneliness, the findings suggest that over the course of the intervention, M has advanced both statistically and clinically in his feeling of 'connectedness' to others. Part of M's improved Emotional Loneliness score may be accounted for by the rapport and therapeutic, non-judgmental relationship which was built with the author (Beech & Hamilton-Giachritsis, 2005). Behaviourally, M also reported that he made more active efforts over the course of the intervention to be interacting with friends, his children, and his ex-partner. Additionally, it is important to consider aspects of the content of this intervention itself which may account for M's post-intervention positive shift in Emotional Loneliness. Psycho-education may have improved his understanding why people commit Internet offences and may have helped M to better understand his own behaviour and put it into context; i.e. other people have experienced similar offending pathways as M, and that M was not alone in navigating the 'limbo' period whilst waiting to answer bail.

Across the intervention, M developed knowledge of coping strategies to use when experiencing negative emotions, making it less likely he would react impulsively to such emotions in the future. In terms of the intervention itself, information was presented to educate M around the psychological processes which previously maintained his offending behaviour (i.e. the roles of positive and negative reinforcement). Through this awareness, the author was able to engage M in discussions around alternative coping strategies to implement and practice around managing negative emotions, which included both shorter (i.e. removing self from situation; talking to somebody) and longer (i.e. healthy lifestyle, self-care) term strategies. These represent important skills for M to continually maintain and develop, particularly as M demonstrated previous susceptibility to opt for immediate gratification of online stimuli as a coping mechanism for dealing with negative emotions (Negash, Sheppard, Lambert, & Fincham, 2016). Hence, this case study has illustrated the importance of a single case methodology to inform intervention to target relevant factors, and illustrated that significant change was possible to achieve in only a short-term intervention.

Whilst M's other psychometric score changes did not meet statistical significance, it is important to note that many of his pre-intervention scores fell within the 'normal' range, meaning that reaching significant change may be difficult - and unnecessary - to achieve.

Limitations of this research and intervention must be recognised. Foremost, this case study was limited by the reliance on self-reported information. Due to the fact that M was under

investigation during the course of the assessment and intervention, the validity of his self-reported information could not be cross-referenced with additional documentation, as such documentation did not exist. This is an inherent difficulty in working within voluntary over statutory agencies, and particularly when working with individuals prior to conviction. Whilst M's scores on the PDS (Paulhus, 1999) indicated that his scores across other psychometric measures were not invalid, the potential for socially desirable responding remains salient. Although M self-referred to The LFF to engage in intervention (which suggests he may have been less motivated to provide socially desirable answers than if he were mandated to engage in intervention), part of his motivation to engage was linked to mitigating factors for the upcoming criminal justice process, the want to 'look good' may have been present. He likely also wanted to look good to himself, as well as to others, having been shamed by his interest in IIOC. Mathie and Wakeling (2011) also suggest that the use of self-report information during the course of an assessment may also be limited by an offenders' difficulty with self-reflection; certainly, this could have been true of M, particularly when taking into account his 'ultra-confident mask' presentation.

Theoretically, the formulation of M's online sexual offending, and the ensuing intervention, was informed by various theories of contact sexual offending. As was highlighted in the introduction, Merdian et al. (2018) note that there may be limited utility of applying sexual offence theories to ISOs, if indeed ISOs do constitute a different type of sexual offender with differing risks and treatment needs to CSOs.

This case study has demonstrated the utility of conducting a short-term psycho-educational intervention with an ISO, and illustrated the potential of using a single case methodology to inform intervention to target relevant factors in his offence process. These findings would have been strengthened by testing whether effects of intervention on psychometric test score change remained over a longer follow-up period; unfortunately, practically, this was not possible to complete due to funding and time constraints. There is an outstanding need for Internet-sexual offending specific models and theories to be developed, so that this population might be more accurately assessed and treated.

Chapter Six – Discussion

This research thesis aimed to explore impulsivity in adult male sexual offenders. To achieve this aim, a novel systematic review and meta-analysis was completed, a psychometric critique of a newer measure of impulsivity was presented, a novel research study examining impulsivity and hypersexuality in a sample of ISOs was undertaken, and finally, a single case study of the assessment, formulation, and intervention with an ISO was completed.

6.1. General Discussion

Whilst impulsivity has been repeatedly and consistently cited as a risk factor for sexual offending behaviour (e.g. Ward and Beech, 2004), and that despite self-regulation deficits in sexual offenders are cited as one of the strongest predictors of recidivism (Hanson, Harris, Scott, & Helmus, 2007; Hanson & Morton-Bourgon, 2005), there has been little consensus to date regarding a widely-accepted definition of "impulsivity". Navigating the literature is complex, due to the number of different terms and conceptualisations of the construct of impulsivity itself (Ward, Hudson, & Keenan, 1998). Moeller, Barratt, Dougherty, Schmitz, and Swann (2001) defined impulsivity as a rash behavioural response, characterised by a lack of planning or forethought. Different conceptualisations of impulsivity have also included factors such as: lack of future planning (Patton, Stanford, & Barratt, 1995); risk taking (Eysenck & Eysenck, 1985); spontaneity (Carver, 2005); novelty seeking (Cloninger, 1987); and lack of inhibitory control (Bechara & Van der Linden, 2005). In an attempt to clarify the multi-dimensional nature of impulsivity, and to provide an overarching conceptualisation of this construct, the UPPS model of impulsivity (Whitesie & Lynam, 2001) was developed. The resulting UPPS-P Impulsive Behaviour Scale (Lynam et al., 2007) was a focus of this research thesis.

As discussed in Chapter One, the construct of impulsivity is present in many theories and models of sexual offending, including the General Theory of Crime (Gottfredson & Hirschi, 1990), the Motivation-Facilitation Model of adult male sexual offending (Pullman et al., 2016), the Self-Regulation Model of sexual offending (Ward et al., 1998), and The Integrated Theory of Sexual Offending (Ward & Beech, 2006). The systematic review and meta-analysis presented in Chapter Two provided some evidence supporting the presence of higher impulsivity in sexual offenders compared to non-offending controls. The meta-analysis comparing CSOs to NOs suggested psychometric measures addressing this research question was non-significant. Behavioural measures showed a

significant small effect which indicated performance deficits in behavioural measures of impulsivity in CSOs compared to NOs. Similarly, the meta-analysis comparing NCSOs to NOs on psychometric measures of impulsivity had a medium effect, indicating that NCSOs were more impulsive than NOs. However, this meta-analysis was limited due to only including two studies. Hence, this result should also be interpreted with caution. It was not possible to meta-analyse studies which employed behavioural measures to compare NSCOs to NOs as there was a lack of data meeting this criterion.

The empirical research study presented in Chapter Four explored general and sexual self-regulation deficits in an ISO sample, compared to a non-sexual offending community control sample. The overall results indicated that when the covariates of age, sexual orientation, education level, time spent using legal adult pornography, and frequency of legal adult pornography were controlled, ISOs reported significantly higher impulsivity than CCs across the Negative Urgency, Positive Urgency, and Lack of Perseverance subscales of the UPPS-P, as well as the UPPS-P Total Score. ISOs also scored significantly higher than controls across all subscales of a measure of hypersexuality (HBI-19; Read et al., 2011), and evidenced significantly higher offence-related sexual interests across the Sexual Preference for Children and Obsessed with Sex subscales of the MPI (William, 2005). The presence of general and sexual self-regulation deficits were also present within the formulation of the case study participant presented in Chapter Five. The case study chapter demonstrated that focussing on 'psychologically meaningful risk factors' (Mann et al., 2010) such as impulsivity had utility in the formulation and intervention in a case of Internet sexual offending.

Together, these results indicate the efficacious nature of considering the role of impulsivity and hypersexuality in risk assessment and intervention planning, with the aim of reducing the risk of sexual recidivism (Egan, 2017).

6.2 Implications

Based on the results presented in the systematic review in Chapter Two, there is some evidence which indicates the presence of higher impulsivity in sexual offenders compared to non-offending controls. When considering the role of impulsivity assessment in professional practice and research, a range of psychometric and behavioural measures of impulsivity were located. This review highlighted the importance of the need for researchers and clinicians to carefully consider and operationalise the type of impulsivity they wish to assess, and make informed choices of the most suitable measure in line with this definition. The issue of multiple conceptualisations and associated assessment methods of

impulsivity was noted. Clinically, this academic thesis has positioned the UPPS-P Impulsive Behaviour Scale as a viable option for the continued assessment of impulsivity in forensic populations, in-keeping with the need for a more theoretically informed and structured assessment of trait-based impulsivity.

Clinically, as discussed in Chapter Three, a strength of the UPPS-P when compared to other extant self-report and behavioural measures of impulsivity is the fact that the UPPS-P encompasses an emotional component of impulsivity, whereas other measures, such as the BIS-11, do not (Howard & Khalifa, 2015). Both Positive and Negative Urgency are particularly helpful concepts in clinical and forensic practice. Having the ability to measure emotional components of impulsivity might afford for greater flexibility in the use of the tool; for example, clinicians may integrate information about self-reported emotional impulsivity into patient risk assessments, and measure pre-/post-intervention change regarding a patient's risk of committing further sexual offences. This is not to say that the UPPS-P measure is without its flaws. As discussed in Chapter Three, the use of self-report assessments may not be appropriate for those who lack insight into their thoughts, feelings, or behaviours, or seek to disguise or over-exaggerate psychological difficulties (Mathie & Wakeling, 2011). Regarding the psychometric properties of the UPPS-P itself, meta-analytical evidence has raised questions about how separable and independent each of the five subscales might actually be (Berg at al., 2015; Duckworth & Kern, 2011), and further research is required to further explore and confirm the psychometric properties of the measure. Nonetheless, the empirical research presented in Chapter Four did evidence distinguishability of the Positive and Negative Urgency pathways of the UPPS-P within ISO and CC populations of adult males in the UK.

The results of the empirical research presented in Chapter Four carries important clinical significance, because increased understanding of motivational and facilitative factors associated with Internet sexual offending will help guide the development of evidence-based prevention, intervention, and risk assessment (Pullman et al., 2016). Dynamic sexual offending risk factors such as impulsivity and hypersexuality can be understood as ‘psychologically meaningful risk factors’ because these factors can be specifically targeted in psychological intervention (Mann et al., 2010), more so than generalised personality factors such as ‘neuroticism’ or ‘conscientiousness’. The results of this empirical research supports the need for ISO intervention to include specific focus on the development of adaptive self-management skills, with particular focus on the need to teach self-regulation skills in response to experiencing negative emotions. The potential benefits of such an intervention were tested and discussed within the case study presented in Chapter Five. This case study provided evidence of the beneficial impact of a short-term psychological intervention with an

ISO. The evidence provided in this research thesis regarding the role of impulsivity in sexual offending - Internet sexual offending in particular – should be used to inform the targeted treatment and management of these offenders (Elliott & Babchishin, 2012), so that further offending might be prevented, and the potential for sexual recidivism will be reduced (Egan, 2017).

6.3 Limitations

Limitations of the research process need to be acknowledged, in order to interpret the findings of this thesis in the correct context. Whilst limitations have been considered individually within each chapter, an overview will here be presented. For the systematic review presented in Chapter Two, it is important to reiterate that it cannot be stated that the conclusions are based on all available published or unpublished research – for example, it was not possible to obtain every full-text article within the available time frame, and due to the size of the literature pool, it is likely that the systematic search did not find every available study. Therefore, the review may have been biased in favour of published, English-language research. The findings of this review may also have been influenced by the strict inclusion/exclusion criteria set out by the research questions. For example, only studies which utilised psychometric or behavioural assessments of impulsivity were included. However, many studies reported outcome data for 'lifestyle indicators' or impulsivity (e.g. alcoholism, losing jobs). It is important to remember this when interpreting the results of this research. Therefore, the conclusions of this review might be extended to more formalised assessments of impulsivity in the sexual offender population, but caution should be taken when inferring the meaning of these results to 'real-world' behaviour. Throughout the thesis, the limitation resulting from the reliance on self-reported information has been acknowledged and discussed. This may have impacted on the current research in the form of socially desirable responding, or by the over-exaggeration of difficulties in order to rationalise sexual offending behaviour. In the context of the empirical research study presented in Chapter Four, the decision was made to gather data via an online, anonymous, tool. It was hoped this would limit the potential confounding effects of self-report, as anonymity is purported to reduce the likelihood of socially desirable responding (Egan, Hughes, & Palmer, 2015). However, it was recognised this safeguard was not absolute. No such safeguard was in place for gathering data from the individual case study participant discussed in Chapter Five. The ISO and CC participants were not closely matched in the empirical research study. Whilst statistics were used to correct for some effects, this was not possible in all analyses. Additionally, due to the online data gathering procedure utilised in Chapter Four, it was recognised that this likely excluded some eligible ISOs from participating in the research, due to bail conditions

restricting internet access following arrest, or conditions of Sexual Harm Prevention Orders following conviction.

6.4 Future Directions

Future research in the area of impulsivity in sexual offending might be helpfully guided by the conclusions and recommendations presented in this academic thesis.

Centrally, this thesis has called for future research regarding impulsivity in sexual offending to adopt a more unified conceptualisation and measurement of impulsivity, with the UPPS-P Impulsive Behaviour Scale being positioned as a viable and clinically useful tool to achieve this end. Future research, therefore, might helpfully seek to further explore impulsivity using the UPPS-P measure across different samples of sexual offenders according to offence type, across cultures, and across different recruitment contexts/judicial statuses. As also recommended by Joyal et al. (2014), future research might seek to deconstruct contact/non-contact sexual offender samples with more specific focus on the type of contact or non-contact sexual offence committed (e.g. contact sexual offenders who have committed sexual offences against adults versus children; or splitting an Internet sexual offender sample by some typological distinction, such as *fantasy-driven* versus *contact-driven* ISOs; Merdian et al., 2013). Such research would allow firmer conclusions to be drawn regarding the role of impulsivity in the commission of specific sexual offences, and allow for the development of more targeted risk assessment and intervention. Such future research might helpfully integrate recommendations discussed in the systematic review regarding study design and implementation, to increase methodological quality and allow firmer conclusions to be drawn. An important avenue for future research relates to the need for the utilisation of longitudinal study designs when examining of impulsivity in sexual offending, to enable the inference of causality between deficits in self-regulation and engaging in sexual offending behaviour.

More generally, the systematic review presented in Chapter Two highlighted a need for further research regarding impulsivity in non-contact sexual offending samples. Whilst the empirical study presented in Chapter Four was developed in an attempt to help to fill this gap of knowledge, further research regarding impulsivity in non-contact sexual offending samples is warranted. Some research regarding the role of self-regulation deficits relating to the risk of an individual 'crossing over' from committing an Internet sexual offence to a contact sexual offence has been conducted (Bettles, 2014). The results presented by Bettles (2014) argue that the risk of 'crossing over' should be viewed

as some sort of continuum, whereby increased impulsivity might place an ISO further up the continuum in relation to risk of committing a contact sexual offence. With still so relatively little known about risk-increasing factors of an ISO committing a contact sexual offence, future research might helpfully employ a tool such as the UPPS-P to add to knowledge in a clinically and practically useful way.

Focussing on ISOs specifically, future research might helpfully benefit from exploring how the online environment itself might interact with self-regulation deficits in ISOs. From a preventative perspective, increased understanding of how the internet itself might interact with self-regulation deficits could allow for situational prevention of illegal online sexual behaviour (Wortley & Smallbone, 2012). The role of the Internet itself has been highlighted in the 'Triple A Engine' (Cooper, 1998). This highlights how the accessible, affordable and anonymous nature of the Internet may create an appealing offending environment. The concept of 'anonymity' was at the forefront of M's account of his online offending behaviour, presented in the case study in Chapter Five. It seems highly probable that in the case of this individual, the perceived anonymity afforded by the internet allowed him to overcome an internal inhibitor to engage in sexual offending behaviour (Finkelhor, 1984). The Negative Urgency conceptualisation of impulsivity was also at the forefront of the formulation of M's offending; it is possible that M's capacity to respond with rash behaviour in response to experiencing negative emotions was further facilitated by the 'anonymous' nature of the online environment. Future research which explores the unique impact of how the internet might interact with self-regulation deficits could allow firmer conclusions to be drawn, which would give government, Internet Service Providers (ISPs) and law enforcement agencies clear direction for more situational-based prevention of internet-enabled sexual offending behaviour. Future studies might also seek to apply objective tests of sexual interest and impulsivity in sexual offender samples, along with further exploring the constructs of impulsivity and hypersexuality in Intellectually Disabled, juvenile, and female sexual offender samples.

6.5 Conclusions

This research thesis aimed to explore impulsivity in adult male sexual offenders. Across the six chapters, some evidence across primary and secondary empirical research studies was presented of increased impulsivity in the sexual offender population. Limitations and implications of these research findings were discussed. The UPPS-P Impulsive Behaviour scale was positioned as a viable

option for the continued assessment of impulsivity in forensic populations, in-keeping with the need for a more theoretically informed and structured assessment of trait-based impulsivity.

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* = included in the systematic review

Appendices

Appendix A. PRISMA Guidelines

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	

Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	

Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

Appendix B. Search Syntax

Database	Date	Search terms	Hits
PsycINFO	29.11.16	1. exp PARAPHILIAS/	1. 7364
		2. paraphilia*.mp.	2. 2881
		3. exp PEDOPHILIA/	3. 1421
		4. p?edophil*.mp.	4. 2094
		5. exp RAPE/	5. 5377
		6. (rape OR rapist).mp.	6. 8843
		7. incest.mp.	7. 4135
		8. exp SEX OFFENSES/	8. 31577
		9. sex* offen*.mp.	9. 10970
		10. sex* assault*.mp.	10. 5391
		11. exp VOYEURISM/	11. 130
		12. voyeur*.mp.	12. 569
		13. exhibitionis*	13. 1196
		14. (groom* OR molest* OR indecen* OR solicit*).mp.	14. 11369
		15. (child porn* OR internet sex* OR indecent image*).mp.	15. 583
		16. hebeph*.mp.	16. 635
		17. gerontoph*.mp.	17. 25
		18. exp Impulsiveness/	18. 7218
		19. impuls*.mp.	19. 37378
		20. exp Risk taking/	20. 23735
		21. exp Sensation seeking/	21. 2443
		22. exp Delay discounting/	22. 687
		23. exp Response inhibition/	23. 2629
		24. exp Behavioral disinhibition/	24. 325
		25. disinhibit*.mp.	25. 5873
		26. exp Self-control/	26. 8048
		27. exp Delay of gratification/	27. 742
		28. delay gratification.mp.	28. 271
		29. (rash OR risky) ADJ (action OR behavio*).mp.	29. 3061
		30. Inhibitory control.mp.	30. 3574
		31. Boredom susceptibility.mp.	31. 178
		32. (reward OR punishment) ADJ (sensitiv*).mp.	32. 692
		33. (positive OR negative) ADJ (urgency).mp.	33. 291
		34. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17	34. 52951
		35. 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33	35. 80472
		36. 34 and 35	36. 1596
		37. Limit 36 to yr="1980-Current"	37. 1424

Medline	29.11.16	1. exp Paraphilic disorders/	1. 5236
		2. paraphilia*.mp.	2. 442
		3. exp PEDOPHILIA/	3. 867
		4. p?edophil*.mp.	4. 1008
		5. exp RAPE/	5. 6197
		6. (rape OR rapist).mp.	6. 9554
		7. incest.mp.	7. 2128
		8. exp SEX OFFENSES/	8. 21755
		9. sex* offen*.mp.	9. 8385
		10. sex* assault*.mp.	10. 3845
		11. exp VOYEURISM/	11. 70
		12. voyeur*.mp.	12. 144
		13. exhibitionis*	13. 514
		14. (groom* OR molest* OR indecen* OR solicit*).mp.	14. 12770
		15. (child porn* OR internet sex* OR indecent image*).mp.	15. 206
		16. hebeph*.mp.	16. 335
		17. gerontoph*.mp.	17. 26
		18. exp Impulsive behavior/	18. 18489
		19. impuls*.mp.	19. 44324
		20. exp Risk-taking/	20. 31827
		21. sensation seeking.mp.	21. 2034
		22. exp Delay discounting/	22. 380
		23. response inhibition.mp.	23. 3322
		24. behavio?ral disinhibition.mp.	24. 414
		25. disinhibit*.mp.	25. 7630
		26. exp Self-control/	26. 494
		27. delay gratification.mp.	27. 107
		28. (rash OR risky) ADJ (action OR behavio*).mp.	28. 2746
		29. Inhibitory control.mp.	29. 4603
		30. Boredom susceptibility.mp.	30. 70
		31. (reward OR punishment) ADJ (sensitiv*).mp.	31. 562
		32. (positive OR negative) ADJ (urgency).mp.	32. 227
		33. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17	33. 43508
		34. 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32	34. 98901
		35. 33 AND 34	35. 1443
		36. Limit 35 to yr="1980-Current"	36. 1361
EMBASE	29.11.16	1. paraphilia*.mp.	1. 797
		2. exp PEDOPHILIA/	2. 1177
		3. p?edophil*.mp.	3. 1362
		4. exp RAPE/	4. 7021
		5. (rape OR rapist).mp.	5. 10659

		6. incest.mp.	6. 2421
		7. exp Sexual crime/	7. 10471
		8. sex* offen*.mp.	8. 3609
		9. sex* assault*.mp.	9. 5441
		10. exp VOYEURISM/	10. 31
		11. voyeur*.mp.	11. 173
		12. exp EXHIBITIONISM/	12. 494
		13. exhibitionis*	13. 651
		14. (groom* OR molest* OR indecen* OR solicit*).mp.	14. 15559
		15. (child porn* OR internet sex* OR indecent image*).mp.	15. 397
		16. hebeph*.mp.	16. 936
		17. gerontoph*.mp.	17. 54
		18. exp Impulsiveness/	18. 18394
		19. impuls*.mp.	19. 57857
		20. exp High risk behavior/	20. 22781
		21. exp Sensation seeking/	21. 1031
		22. exp Delay discounting/	22. 882
		23. response inhibition.mp.	23. 4186
		24. disinhibit*.mp.	24. 9648
		25. exp Self-control/	25. 5782
		26. delay gratification.mp.	26. 123
		27. (rash OR risky) ADJ (action OR behavio*).mp.	27. 3279
		28. Inhibitory control.mp.	28. 5759
		29. Boredom susceptibility.mp.	29. 76
		30. (reward OR punishment) ADJ (sensitiv*).mp.	30. 806
		31. (positive OR negative) ADJ (urgency).mp.	31. 317
		32. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17	32. 40279
		33. 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31	33. 102573
		34. 32 AND 33	34. 1113
		35. Limit 34 to yr="1980-Current"	35. 1089
Web of Science	29.11.16	1. TS=(paraphilia* OR p?edophil* OR rape OR rapist OR incest OR sex* offen* OR sex* assault* OR voyeur* OR exhibitionis* OR groom* OR molest* OR indecen* OR solicit* OR "child porn*" OR "internet sex*" OR "indecent image*" OR hebeph* OR gerontoph*) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH Timespan=1980-2016	1. 54092

		2. TS=(impuls* OR "risk taking" OR "sensation seeking" OR "delay discounting" OR "response inhibition" OR "Behavio?ral disinhibition" OR disinhibit* OR "self control" OR "delay gratification" OR "rash action" OR "rash behavio*" Or "risky action" OR "risky behavio*" Or "inhibitory control" OR "boredom susceptibility" OR "reward sensitiv*" OR "punishment sensitiv*" OR "positive urgency" OR "negative urgency") Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH Timespan=1980-2016 3. #2 AND #1 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH Timespan=1980-2016	2. 145885 3. 868
ASSIA	29.11.16	1. (paraphilia* OR p?edophil* Or rape OR rapist OR incest OR "sex* offen*" OR "sex* assault*" OR voyeur* OR exhibitionis* OR groom* OR molest* OR indecen* OR solicit* OR "child porn*" OR "internet sex*" OR "indecent image*" OR hebeph* OR gerontoph*) 2. (impuls* OR "risk taking" OR "sensation seeking" OR "delay discounting" OR "response inhibition" OR "Behavio?ral disinhibition" OR disinhibit* OR "self-control" OR "delay gratification" OR "rash action" OR "rash behavio*" OR "risky action" OR "risky behavio*" OR "inhibitory control" OR "boredom susceptibility" OR "reward sensitiv*" OR "punishment sensitiv*" OR "positive urgency" OR "negative urgency") 3. 1 and 2. After Dec 1979	1. 4263 2. 8258 3. 73
Cochrane	29.11.16	1. ""sex* offen*" OR rape OR "sex* assault" in Title, Abstract or Keywords and impuls* OR "sensation seeking" OR disinhibit* OR "self-control" in title, Abstract or Keywords, from 1980 to 2016 in Cochrane Central Register of Controlled Trials”	1. 4

Appendix C. Inclusion/Exclusion Form

Inclusion/Exclusion Form

Study ID:

Full reference:

Country:

Inclusion Criteria	Criterion met?	Comment
Population Adult male? (Note: Please answer 'Yes' if studies include mixed male/female participants and/or mixed participants aged under/over 18 years, if data can be separated by gender and age). **AND** Sex offender? (Note: Sexual offences may be self-reported, convicted/cautioned, or being currently investigated).	**Yes** **Unclear** **Discuss** **No**	
Exposure Was a psychometric or behavioural measure of impulsivity administered?	**Yes** **Unclear** **Discuss** **No**	**Which tool(s)?**
Outcome Have the scores/outcomes of the impulsivity assessment been reported?	**Yes** **Unclear** **Discuss** **No**	
Study Type Is the research quantitative?	**Yes** **No**	

If all questions answered with yes, include study.

Decision: **INCLUDE** **UNCLEAR** **EXCLUDE**

Appendix D. Relevant studies excluded

Study	Reason for exclusion
Baltieri & Boer (2015)	Outcome
Baltieri & Andrade (2008)	Exposure/outcome
Barbaree, Seto, Serin, Amos, & Preston (1994)	Population/exposure/outcome
Barnard, Fuller, & Robbins (1988)	Study type
Barnett, Wakeling, Mandeville-Norden, & Rakestrow (2012)	Outcome
Beier, Amelung, & Pauls (2010)	Exposure/outcome
Beier, Scherner, Kuhle, & Amelung (2015)	Population/exposure/outcome
Bergenheim (2014)	Study type
Borchard, Gnoth, & Schulz (2003)	Exposure/outcome (based on abstract)
Borges, Ordacgi, Garcia, Nazar, & Fontenelle (2007)	Study type
Brown, Dargis, Mattern, Tsonis, & Newman (2015)	Exposure/outcome
Bullens & Mulder (2006)	Study type
Chan & Beauregard (2016)	Exposure/outcome
Chesire (2001)	Study type
Clevenger, Navarro, & Jasinski (2016)	Population/exposure/outcome
Cohen, Frenda, Mojtabai, Katsavdakis, & Galynker (2007))	Population/exposure/outcome
Cohen, Grebchenko, Steinfeld, Frenda, & Galynker (2008)	Population
Cohen, Nesci, Steinfeld, Haeri, & Galynker (2010)	Population
Conway (2015)	Unobtainable
Craig, Browne, Beech, & Stringer (2004)	Outcome
Craissati, Bierer, & South (2011)	Exposure/outcome
Crossman (1995)	Population/outcome
da Silva Costa & de Mello (2012)	Exposure/outcome
Deu (1998)	Population/outcome
Dolan, Millington, & Park (2002)	Population
Dunsieth, Nelson, Brusman-Lovins, Holcomb, Beckman, Welge, ... & McElroy (2004)	Exposure/outcome
Ebrahimjee (2015)	Outcome
Egan & Parmar (2013)	Population/exposure/outcome
Eher, Aigner, Fruehwald, Frottier, & Gruenhut (2000)	Exposure/outcome

Eher, Neuwirth, Fruehwald, & Frottier (2003)	Exposure/outcome
Elliott (2011)	Outcome
Evans (2016)	Study type
Gannon, Terriere, & Leader (2012)	Outcome
Gerard, Mormont, & Kocsis (2007)	Population/exposure/outcome
Gillespie & McKenzie (2000)	Population
Giotakos, Markianos, & Vaidakis (2005)	Outcome
Giotakos, Vaidakis, Markianos, & Christodoulou (2003)	Non-English language not accessible
Grebchenko, Steinfeld, Kaleem, Cullen, Kunik, Galynker, & Cohen (2005)	Population
Grubin (1994)	Population
Grubin & Kennedy (1989)	Opinion paper
Habermeyer, Händel, Lemoine, Seifritz, Mager, Dittmann, & Graf (2010)	Study type
Hanson (2012)	Emailed 09.12.16 - Exclude as did not respond
Harenski, Harenski, Thornton, & Kiehl (2011)	Study type
Hart (1996)	Population
Henry, Mandeville-Norden, Hayes, & Egan (2010)	Population
Hoberman (2016)	Study type
Hoertel, Le Strat, Schuster, & Limosin (2012)	Exposure/outcome
Howard & Lumsden (1996)	Population/outcome
Hoyer, Kunst, Borchard, & Stangier (1999)	Population (based on abstract only)
Jabbour (2009)	Exposure
Joyal, Black, & Dassylva (2007)	Population unclear despite author contact
Jung, Ennis, Stein, Choy, & Hook (2013)	Exposure/outcome
Kafka & Coleman (1991)	Commentary
Kafka & Prentky (1992)	Population/exposure/outcome
Kafka & Prentky (1997)	Population/exposure/outcome
Kafka (1995)	Study type
Kalal (2000)	Unobtainable
Kendall, Moses, & Finch (1980)	Outcome

Konopacki & Oei (1990)	Letter to editor
Krasowska, Jakubczyk, Czernikiewicz, Wojnar, & Nasierowski (2013)	Opinion paper
Kruger & Schiffer (2011)	Unobtainable
Lagan (2010)	Exposure/outcome
Langevin (1989a)	Population (based on abstract)
Langevin (1989b)	Exposure/outcome
Langstrom & Seto (2006)	Population/exposure/outcome
Leue, Borchard, & Hoyer (2004)	Exposure/outcome
Leue, Brocke, & Hoyer (2008)	Population
Lisak & Roth (1988)	Population/exposure/outcome
Luo, Feng, Tang, Huang, & Li (2011)	Outcome
Lussier, Proulx, & Leblanc (2005)	Exposure/outcome
Matsuzawa (2009)	Exposure/outcome
McDonald & Paitich (1982)	Unobtainable
Merdian (2012)	Exposure/outcome
Meyer (1985)	Unobtainable
Middleton, Elliott, Mandeville-Norden, & Beech (2006)	Outcome
Middleton, Mandeville-Norden, & Hayes (2009)	Outcome
Miller (1998)	Population
Mills & Kroner (2003)	Exposure
Myers & Berah (1983)	Exposure/outcome
Neutze (2011)	Exposure/outcome
Niveau (2010)	Exposure/outcome
Nussbaum, Collins, Cutler, Zimmerman, Farguson, & Jacques (2002)	Population
O'Carroll (1989)	Unobtainable
Orlando (1983)	Unobtainable
Ouimette (1997)	Exposure (based on abstract)
Overholser & Beck (1986)	Outcome
Parkhill & Pickett (2016)	Exposure/outcome
Pearson (1990)	Letter to editor

Pinto, Carvalho, & Nobre (2013)	Population/exposure/outcome
Ponseti, Vaih-Koch, & Bosinksi (2001)	Population
Prentky, Knight, Lee, & Cerce (1995)	Exposure/outcome
Prentky & Knight (1986)	Exposure/outcome
Quinsey, Arnold, & Pruesse (1980)	Exposure/outcome
Reijnen, Bulten ,& Nijman (2009)	Exposure/outcome
Rimmer (1998)	Population
Rooney (2003)	Unobtainable
Rosenberg & Knight (1988)	Exposure/outcome
Rubenstein (1992)	Unobtainable
Ryan, Huss, & Scalora (2016)	Population
Shechory, Weiss, & Weinstain (2013)	Exposure/outcome
Skovran, Huss, & Scalora (2010)	Population unclear despite author contact
Smith (2000)	Exposure/outcome
Snoyman & Aicken (2011)	Population
Stein, Black & Pienaar (2000)	Opinion paper
Stone & Thompson (2001)	Unobtainable
Suchy, Whittaker, Strassberg, & Eastvold (2009)	Outcome
Symbaluk (1998)	Exposure/outcome
Tarter, Hegedus, Alterman, & Katz-Garris (1983)	Population
Thompson, Kingree, Zinzow, & Swartout (2015)	Exposure/outcome
Tomak (2009)	Exposure/outcome
Veneziano,Veneziano, Legrand, & Richards (2004)	Population
Wakeling (2007)	Outcome
Wakeling, Beech, & Freemantle (2013)	Population/outcome
Wall (2011)	Exposure/outcome
Westergren (2002)	Unobtainable
Woodworth, Freimuth, Hutton, Carpenter, Agar, & Logan (2013)	Population/exposure/outcome
Wu & Clark (2003)	Population
Young, Justice, & Edberg (2010)	Outcome
Zinzow & Thompson (2015)	Outcome

Appendix E. Quality assessment form: Case control

Quality Assessment Form (Case Control)

Study ID:

Full reference:

Question	Score				Comments
	Y (2)	P (1)	N (0)	U	
Screening or Threshold Questions					
Were the study objectives clear?					
Will a case control study address the objectives?					
Sampling and Selection Bias					
1. Were cases and controls recruited in an acceptable way? (I.e. selected using random, systematic or interval sampling)					
2. Were cases reliably assessed as such?					
3. Were controls reliably assessed as such?					
4. Are cases likely to be representative of the target population?					
5. Are controls likely to be representative of the target population?					
6. Were cases clearly defined? Were demographics clear?					
7. Were controls clearly defined? Were demographics clear?					
8. Were demographics of cases and controls comparable?					
9. Was there a power calculation?					
10. Was there a sufficient number of participants selected? (i.e. reached recommended power)					
11. Have the authors accounted for confounding factors?					

(Please record any listed)					
Measurement Bias					
12. Was the impulsivity measurement tool(s) described clearly?					
13. Was this measure objective?					
14. Does this measure have good reliability? (>0.8)					
15. Was missing information dealt with appropriately?					
Attrition					
16. Was the drop-out rate recorded? If yes, what was it? (%)					
17. Were the reasons for drop-out recorded? (Please record any listed)					
Results					
18. Are the results clearly presented?					
19. Is the analysis appropriate to the design?					
20. Are the results adjusted for confounding variables?					
21. Were the assumptions of the data tested?					

Summed Quality Score: _____ (46 maximum)

No. of Unclear: _____

Scoring:

0 = Condition not met

1 = Condition partially met

2 = Condition met

U = Unclear/insufficient information

Appendix F. Quality assessment form: Cross sectional

Quality Assessment Form (Cross Sectional)

Study ID:

Full reference:

Question	Score				Comments
	Y (2)	P (1)	N (0)	U	
Screening or Threshold Questions					
Were the study objectives clear?					
Will a cohort study address the objectives?					
Sampling and Selection Bias					
1. Were the participants recruited in an acceptable way? (i.e. selected using random, systematic or interval sampling)					
2. Are participants likely to be representative of the target population?					
3. Were cases clearly defined?					
4. Were the demographics of participants clear?					
5. Was there a power calculation?					
6. Was there a sufficient number of participants selected? (i.e. reached recommended power)					
7. Have the authors accounted for confounding factors? (Please record any listed)					
Measurement Bias					
8. Was the impulsivity measurement tool described clearly?					
9. Was this measure objective?					
10. Does this measure have good reliability? (>0.8)					
11. Was missing information dealt with appropriately?					

Attrition					
12. Was the drop-out rate recorded? If yes, what was it? (%)					
13. Were the reasons for drop-out recorded? (Please record any listed)					
Results					
14. Are the results clearly presented?					
15. Is the analysis appropriate to the design?					
16. Are the results adjusted for confounding variables?					
17. Were the assumptions of the data tested?					

Summed Quality Score: _____ (34 maximum)

No. of Unclear: _____

Scoring:

0 = Condition not met

1 = Condition partially met

2 = Condition met

U = Unclear/insufficient information

Appendix G. Data extraction form

Data Extraction Form

Study ID:

Full reference:

General Information	
Date of data extraction	
Country	
Reviewer	
Study type?	
Population	
Sample (e.g. general population, MI, PD, LD etc.)	
Recruitment procedures & setting	
Contact sexual offender characteristics	Offence type: Offence status (convicted/cautioned/under investigation/self-reported): Number of participants: Age (M, SD, range):
Non-contact sexual offender characteristics	Offence type: Offence status (convicted/cautioned/under investigation/self-reported): Number of participants:

	Age (M, SD, range):
Control characteristics	Number of participants: Age (M, SD, range):
Exposure	
Type (psychometric/ behavioural) & name of impulsivity measurement	
Outcome - Sexual Offender	
Score(s) of the impulsivity measurement?	
Mean, SD, number of participants Effect size/confidence intervals (if reported)	
Who carried out the measurement?	
Drop-out rates & reasons for drop-out	
Outcome - Comparison group	
Score(s) of the impulsivity measurement?	
Mean, SD, number of participants Effect size/confidence intervals (if reported)	

Who carried out the measurement?	
Drop-out rates & reasons for drop-out	
Analysis	
Stats used	
How was missing data dealt with?	
Main Findings & Notes	

Appendix H. Quality assessment: Case control

	Sampling & Selection bias											Measurement bias				Attrition		Results				Total	No. of Unclear
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
Abracen, O'Carroll, & Ladha (1991)	0	1	1	0	0	2	1	0	0	0	2	1	2	U	U	0	0	2	1	2	U	15	3
Bettles (2014)	1	1	0	2	1	1	0	U	2	2	2	2	2	U	2	2	1	2	2	U	U	25	4
Carvalho & Nobre (2013) - Study 1	0	2	1	1	0	1	1	0	0	1	1	1	0	1	U	2	2	1	2	2	U	19	2
Carvalho & Nobre (2013) - Study 2	0	0	0	1	1	1	U	2	0	1	0	1	0	1	U	0	0	2	2	0	U	12	3
Cohen & Galynker (2012) Study 1	0	1	1	0	1	2	1	2	0	U	2	2	0	2	U	0	0	2	2	U	U	18	4
Cohen, Gans, McGeoch, Poznansky, Itskovich, Murphy, … Galynker (2002)	0	2	2	0	1	2	2	2	0	U	2	2	0	U	1	0	0	2	2	0	U	20	3

Dennison, Stough, Birgden (2001)	0	2	U	1	1	1	0	U	0	1	0	2	0	0	U	0	0	1	2	0	U	11	4
Deu & Edelmann (1997)	0	1	0	0	0	0	0	U	0	U	2	2	0	2	U	2	2	1	0	U	U	12	5
Giotakos, Markianos, Vaidakis, & Christodoulou (2003)	0	2	U	1	2	2	1	2	0	1	1	2	0	U	U	2	0	1	2	2	U	21	4
Habermeyer, Esposito, Händel, Lemoine, Kuhl, Klarhöfer, ... & Graf (2013)	1	2	U	0	0	1	1	2	0	0	2	2	2	U	U	0	0	2	2	2	U	19	4
Kargel et al (2016)	1	2	1	2	1	2	2	2	0	1	2	2	2	U	U	0	0	2	2	2	U	26	3
Mouilso, Calhoun, & Rosenbloom (2016)	1	0	0	1	1	1	U	U	0	1	0	2	0	2	U	0	0	2	2	U	U	13	5
Parry & Lindsay (2003)	0	2	1	0	0	U	U	U	0	0	1	2	0	U	U	0	0	1	2	U	U	9	7

Ray, Kimonis, & Seto (2014)	1	0	0	1	1	2	1	2	0	U	2	2	0	2	U	2	2	2	2	2	U	24	3
Schiffer & Vonlaufen (2011)	0	2	0	0	U	2	0	1	0	U	2	2	2	U	U	2	1	2	1	0	U	17	5
Smith & Waterman (2004)	0	2	U	0	0	1	1	0	0	U	2	2	2	U	U	0	0	2	2	2	U	16	5
Voller & Long (2010)	0	0	0	1	1	1	1	1	0	1	1	2	0	0	2	0	0	2	2	2	2	19	0

Appendix I. Quality assessment: Cross sectional

	Sampling & Selection bias							Measurement Bias				Attrition		Statistical				Total	No. of Unclear
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		
Baltieri & de Andrade (2008)	1	1	2	2	0	1	2	2	0	2	U	2	2	1	2	0	U	20	2
Becerra-García, García-León, & Egan (2013)	1	1	2	2	0	U	2	2	2	2	U	0	0	2	2	2	U	20	3
Eastvold, Suchy, & Strassberg (2011)	1	1	2	2	1	U	2	2	2	1	2	0	0	2	2	2	U	22	2
Elliott, Beech, & Mandeville-Norden (2013)	1	2	2	2	0	2	1	2	0	2	U	1	1	2	2	2	U	22	2
Elliott, Beech, Mandeville-Norden, & Hayes (2009)	1	2	2	1	0	2	1	2	0	2	U	1	1	2	2	2	U	21	2
Madsen, Parsons, & Grubin (2006)	1	1	2	2	0	U	0	2	0	1	2	2	0	2	2	U	U	17	3

Appendix J – Research Information Sheet

University of Nottingham
Faculty of Medicine and Health Sciences
Medical School
Queen's Medical Centre
Nottingham
NG7 2UH

Title of project: Comparison of internet offenders with non-offending controls on selected psychological measures.

Name of investigators: Rebekah Dervley, Dr Vincent Egan & Dr Ruth Tully

Healthy Volunteer's Information Sheet

Invitation

You have been invited to take part in a research study. Before you decide whether to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with your friends and relatives if you wish to. Please contact the investigator(s) if there is anything that is not clear or if you would like more information. Please take time to decide whether you wish to take part or not. Thank you for reading this.

Background

This study aims to compare two groups of men: men who are known to the police for committing internet sexual offences (such as accessing or distributing indecent images of children, or online grooming) and men who have not committed sexual offences on a range of psychological measures.

The measures have been chosen because they are expected to be relevant to internet offending. It is hoped that gaining knowledge about the similarities and differences of these two groups will help inform the development of effective treatment and assessment of internet offenders.

What does the study involve?

This research involves you completing an online survey, which is expected to take approximately 15-20 minutes to complete.

Why have you been chosen?

You have been chosen to participate in this study as you were given information about the study and you have followed the link to the research. This project aims to gather data from approximately 150 individuals in total.

To participate in this study, you are required to be male and over 18 years of age.

You cannot participate in this study if you are female or under 18 years of age. You cannot participate if you have ever been arrested, charged, or convicted of a contact sexual offence of any kind or a non-contact offline sexual offence such as indecent exposure.

Do you have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part, you will be asked to tick to accept an electronic consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. You can withdraw from participating in the study simply by closing the internet browser. Participation will form no part of, or impact on, any on-going criminal proceedings.

Due to the anonymous nature of the Bristol Online Survey tool, once you have submitted your responses, you will be unable to withdraw your data.

What do I have to do?

You will be asked to provide some demographic information and then to complete a series of questionnaires about human beliefs and behaviour.

What are the possible disadvantages and risks of taking part?

The researcher does not expect that participating in this study will put you at greater risk of experiencing harm that you would be in your day-to-day life. It is possible that some of the questions in this survey could be upsetting. Some questions also ask for personal information regarding sexual behaviours. If the questions cause you to feel upset, please remember that you can pause or terminate participation in the study.

What if something goes wrong?/ Who do I complain to

In case you have a complaint on your treatment by a member of staff or anything to do with the study, you can initially approach the lead investigator. If this achieves no satisfactory outcome or if something serious happens during or following your participation in the study, you should then contact the Ethics Committee Secretary, Mrs Louise Sabir, Division of Therapeutics and Molecular Medicine, D Floor, South Block, Queen's Medical Cnetre, Nottingham, NG7 2UH. Telephone 0115 8231063.

Will my taking part in this study be kept confidential?

Your participation in this study will be completely confidential and anonymous. The Bristol Online Survey tool is fully compliant with all UK data protection laws and participation in this research is anonymous. You will not be asked for any identifying information such as your name, address, or contact details and so your identity cannot be linked to the data. All of the information which is

collected about you during this study will be kept on a password protected database and is strictly confidential. Any information about you which leaves the research unit will be anonymous so that you cannot be recognised from it.

What will happen to the results of the research study?

The results of the study aim to be analysed and written by September 2017 as part of a Research Thesis in partial fulfilment for the degree of Doctorate in Forensic Psychology.

Who is organising and funding the research?

This study is being conducted by the University of Nottingham in partial fulfilment for the degree of Doctorate in Forensic Psychology. This research is not funded.

Who has reviewed the study?

This study has been reviewed and approved by The University of Nottingham Medical School Ethics Committee.

Contact for further information

If you wish to find out more information about the study before deciding to take part, please do not hesitate to contact the investigator(s) of the study.

Rebekah Dervley, Trainee Forensic Psychologist: The Lucy Faithfull Foundation, 2nd Floor Nightingale House, 46-48 East Street, Epsom, Surrey, KT17 1HB. Telephone: 01372 847160. E-mail: msxrd4@nottingham.ac.uk

Dr Vincent Egan: mczve@exmail.nottingham.ac.uk

Dr Ruth Tully: mszrjt1@exmail.nottingham.ac.uk

Thank you for taking the time to read this information and for volunteering to take part in this study.

Please read this form and tick the boxes below to confirm you have read and understood the information sheet which contained the aims and procedures of the study.

- I voluntarily agree to take part in this study. ☐
- I confirm that I have been given a full explanation of the research and that I have read and understood the information sheet which was presented to me. ☐
- I have been given the opportunity to ask questions and discuss the study with one of the above investigators (or their deputies) on all aspects of the study and have understood the advice and information given as a result. ☐

- I authorise the investigators to disclose the general results of my participation in the study as part of group statistics but not individual results or my name. ☐
- I understand that information about me recorded during the study will be kept in a secure and password-protected database. All data will be anonymised. Data will be kept for 7 years after the results of the study have been published. ☐
- I understand that I am free to withdraw from the study at any time, without having to give a reason for withdrawing. ☐

By clicking "I consent to participate in this study" I am confirming that I have read and understood all the information that has been provided to me above, and I am willing to participate in this study.

Appendix K – Demographic Information Questionnaire

Age: _____

Gender:

☐ Male ☐ Female

Have you ever committed a contact sexual offence against an adult or a child?

☐ Yes ☐ No

Have you ever committed an offline non-contact sexual offence? (e.g. voyeurism, indecent exposure)

☐ Yes ☐ No

Do you have any additional previous convictions or cautions, excluding your current offence?

☐ Yes ☐ No

Please specify: _____

Sexual orientation:

Kinsey Scale 0 (exclusively heterosexual)

Kinsey Scale 1

Kinsey Scale 2

Kinsey Scale 3 (equally hetero-/homosexual)

Kinsey Scale 4

Kinsey Scale 5

Kinsey Scale 6 (exclusively homosexual)

Prefer not to say

Marital status at time of arrest:

☐ Single ☐ Married
☐ Cohabiting ☐ Widowed
☐ Divorced ☐ Separated

Current marital status:

☐ Single ☐ Married
☐ Cohabiting ☐ Widowed

☐ Divorced ☐ Separated

Employment status at time of arrest:

☐ Employed ☐ Self-employed
☐ Unemployed ☐ Retired

Current employment status:

☐ Employed ☐ Self-employed
☐ Unemployed ☐ Retired

Ethnicity: _____

Education level:

☐ No qualifications
☐ GCSEs
☐ A Levels/ BTECs
☐ University Undergraduate
☐ University Postgraduate

Do you have any children under 18 years of age?

☐ Yes ☐ No

Do you have any children over 18 years of age?

☐ Yes ☐ No

[End of Control Demographic Information]

How did you offend on the internet?

☐ Possessing Indecent Images of Children
☐ Downloading Indecent Images of Children
☐ Distributing Indecent Images of Children
☐ Online sexual chat with a child
☐ Other: Please Specify _____

How many months ago did you last offend online?

_____ months

How many months ago were you arrested for online offences?

_____ months

Prior to your arrest, how many hours per week did you spend viewing legal adult pornography?

_____ hours

Prior to your arrest, how often did you view legal adult pornography?

- Daily
- A few times weekly
- Weekly
- Fortnightly
- Monthly
- Yearly
- Never
- Other

Where did you hear about this study?

- The Lucy Faithfull Foundation
- The Police
- Other
- Prefer not to say

Which stage of the Criminal Justice System are you at?

- Undetected
- Under Investigation/ Arrested/ On Police Bail
- Charged/ Cautioned
- Attended Magistrates'/ Crown Court
- Sentenced
- Prefer not to say

Appendix L – Debrief Sheet

University of Nottingham
Faculty of Medicine and Health Sciences
Medical School
Queen's Medical Centre
Nottingham
NG7 2UH

Title of project: Comparison of internet offenders with non-offending controls on measures of personality and behaviour.

Name of investigators: Rebekah Dervley, Dr Vincent Egan & Dr Ruth Tully

Debrief Sheet

Thank you for participating in this study.

This study is an investigation into measures of impulsivity and sexuality comparing men who are known to the police for committing sexual offences on the internet, compared to men who have never been arrested/convicted for sexual offences of any kind.

Past research has typically explored differences between non-contact and contact child sexual offenders, but there is less comparing internet offenders to non-offending controls.

The present study assessed measures hypothesised to be relevant to individuals who have committed online offences. The selected measures of impulsivity, hypersexuality, and offence-related sexual interests were chosen as most existing data was gathered from American college or clinical samples, and so may not be generalizable to British men.

The proposed study will test whether differences exist in the aforementioned measures between internet offenders and non-sexual offending controls. Increasing our understanding of constructs such as hypersexuality and impulsivity in the general population may increase our understanding around why some men offend online (Elliott & Babchishin, 2012). This knowledge will help inform the development of more targeted assessment and treatment of the internet offender population, and help further general understanding about specific risk factors that may account for offending online. This study is partly exploratory in nature and so will help inform avenues for future research.

A summary of research findings is expected to be available in Summer 2017. If you would be interested to read this, please email Rebekah Dervley (msxrd4@nottingham.ac.uk) to request a summary of the findings.

If you feel this study raises any concerns about your own behaviour or feelings, you may find helpful information, advice and support from the following organisations:

- The Stop it Now! Helpline. Free to phone from a landline on 0808 1000 900. Open 9am-5pm Monday-Thursday & 9am-5pm Friday. Website: http://stopitnow.org.uk/. The Stop it Now! Helpline is run by The Lucy Faithfull Foundation and specialises in working with people concerned about their own sexual thoughts or behaviour towards children, including those with concerns about their online behaviour.
- Get Help website: http://get-help.stopitnow.org.uk/. The 'Get Help' section of Stop it Now contains self-help resources for people who have viewed Indecent Images of Children online. The website also contains sections for families and loves ones to access some additional support.
- Circles UK: http://www.circles-uk.org.uk/. A 'Circle of Support and Accountability' is a group of volunteers who support the ongoing risk-management of a sex offender in the community. Community members can indicate interest in being a Circle volunteer, and offenders can self-refer to a local Circle by following the above web address and following the 'local projects' tab.
- Sex Addicts Anonymous(https://saa-recovery.org/) or Sexaholics Anonymous (http://www.sa.org/): Sex Addicts Anonymous (SAA) and Sexaholics Anonymous (SA) provide support to those with sexual addictions.
- Samaritans: http://www.samaritans.org/; Freephone Helpline 116 123, open 24 hours a day, 365 days a year. Samaritans provides emotional support to anyone in distress or struggling to cope; you do not have to be suicidal.
- British Association of Counselling and Psychotherapy (BACP): http://www.bacp.co.uk/. The BACP is a large organisation whereby individuals can source registered counsellors in their local area.

Please contact Rebekah Dervley (msxrd4@nottingham.ac.uk) if you have any further questions or concerns regarding the study.

If this is unhelpful and you wish to make a complaint about this study, please contact the Ethics Committee Secretary, Mrs Louise Sabir, Division of Therapeutics and Molecular Medicine, D Floor, South Block, Queen's Medical Centre, Nottingham, NG7 2UH. Telephone 0115 8231063.

Thank you once again for your participation.

Appendix M. SPSS Outputs – Significant Demographic Differences Part 1

Age:

T-Test

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Age	Internet Offender	102	46.92	13.720	1.359
	Control	104	37.19	13.633	1.337

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Age	Equal variances assumed	.429	.513	5.105	204	.000	9.729	1.906	5.972	13.487
	Equal variances not assumed			5.105	203.863	.000	9.729	1.906	5.971	13.487

Sexual Orientation:

Crosstabs

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Group * sex_orientation_simplified	205	99.5%	1	0.5%	206	100.0%

Group * sex_orientation_simplified Crosstabulation

			sex_orientation_simplified				
			Kinsey 0	Kinsey 1	Kinsey 2 3 4 5	Kinsey 6	Total
Group	Internet Offender	Count	56	24	12	10	102
		% within Group	54.9%	23.5%	11.8%	9.8%	100.0%
	Control	Count	82	13	3	5	103
		% within Group	79.6%	12.6%	2.9%	4.9%	100.0%
Total		Count	138	37	15	15	205
		% within Group	67.3%	18.0%	7.3%	7.3%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	15.231[a]	3	.002
Likelihood Ratio	15.725	3	.001
Linear-by-Linear Association	11.561	1	.001
N of Valid Cases	205		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.46.

Education:

Crosstabs

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Group * Education_simplified	206	100.0%	0	0.0%	206	100.0%

Group * Education_simplified Crosstabulation

			Education_simplified				
			no quals_gcses	a levels	undergrad	post grad	Total
Group	Internet Offender	Count	24	37	26	15	102
		% within Group	23.5%	36.3%	25.5%	14.7%	100.0%
	Control	Count	5	18	35	46	104
		% within Group	4.8%	17.3%	33.7%	44.2%	100.0%
Total		Count	29	55	61	61	206
		% within Group	14.1%	26.7%	29.6%	29.6%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	36.078[a]	3	.000
Likelihood Ratio	38.068	3	.000
Linear-by-Linear Association	35.618	1	.000
N of Valid Cases	206		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.36.

Appendix N. SPSS Outputs – Non-Significant Demographic Differences Part 1

Crosstabs

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Group * Children_under_18	206	100.0%	0	0.0%	206	100.0%

Group * Children_under_18 Crosstabulation

			Children_under_18		
			Yes	No	Total
Group	Internet Offender	Count	26	76	102
		% within Group	25.5%	74.5%	100.0%
		% within Children_under_18	51.0%	49.0%	49.5%
		% of Total	12.6%	36.9%	49.5%
	Control	Count	25	79	104
		% within Group	24.0%	76.0%	100.0%
		% within Children_under_18	49.0%	51.0%	50.5%
		% of Total	12.1%	38.3%	50.5%
Total		Count	51	155	206
		% within Group	24.8%	75.2%	100.0%
		% within Children_under_18	100.0%	100.0%	100.0%
		% of Total	24.8%	75.2%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.058[a]	1	.809		
Continuity Correction[b]	.006	1	.936		
Likelihood Ratio	.058	1	.809		
Fisher's Exact Test				.872	.468
Linear-by-Linear Association	.058	1	.810		
N of Valid Cases	206				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 25.25.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.017	.809
	Cramer's V	.017	.809
N of Valid Cases		206	

Appendix O. SPSS Outputs - Non-Significant Demographic Differences Part 2

Crosstabs

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Group * Children_over_18	206	100.0%	0	0.0%	206	100.0%

Group * Children_over_18 Crosstabulation

			Children_over_18			
			Yes	No	Prefer not to say	Total
Group	Internet Offender	Count	31	70	1	102
		% within Group	30.4%	68.6%	1.0%	100.0%
		% within Children_over_18	62.0%	45.2%	100.0%	49.5%
		% of Total	15.0%	34.0%	0.5%	49.5%
	Control	Count	19	85	0	104
		% within Group	18.3%	81.7%	0.0%	100.0%
		% within Children_over_18	38.0%	54.8%	0.0%	50.5%
		% of Total	9.2%	41.3%	0.0%	50.5%
Total		Count	50	155	1	206
		% within Group	24.3%	75.2%	0.5%	100.0%
		% within Children_over_18	100.0%	100.0%	100.0%	100.0%
		% of Total	24.3%	75.2%	0.5%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.313[a]	2	.070
Likelihood Ratio	5.729	2	.057
Linear-by-Linear Association	3.331	1	.068
N of Valid Cases	206		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .50.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.161	.070
	Cramer's V	.161	.070
N of Valid Cases		206	

Appendix P. SPSS Outputs – Significant Demographic Differences Part 2

T-Test

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Adult_pornography_time	Internet Offender	102	7.09	6.898	.683
	Control	104	2.05	4.273	.419

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Adult_pornography_time	Equal variances assumed	35.984	.000	6.326	204	.000	5.046	.798	3.474	6.619
	Equal variances not assumed			6.298	167.994	.000	5.046	.801	3.465	6.628

Appendix Q. Correlations between UPPS-P, HBI-19, and MPI Subscales

Correlations

		IPPS_Negative_Urgency	UPPS_Lack_of_Premeditation	UPPS_Lack_of_Perseverance	UPPS_Sensation_Seeking	UPPS_Positive_Urgency	HBI_coping_before	HBI_consequences_before	HBI_control_before	MPI_Sexual_Preference_Children	MPI_Obsessed_with_Sex	MPI_Preferring_Violence_Humiliation	MPI_Other_Offence_Related_Interests
UPPS_Negative_Urgency	Pearson Correlation	1	.409**	.356**	.133	.676**	.520**	.601**	.568**	.385**	.489**	.223**	.272**
	Sig. (2-tailed)		.000	.000	.057	.000	.000	.000	.000	.000	.000	.001	.000
	N	206	206	206	206	206	206	206	206	206	206	206	206
UPPS_Lack_of_Premeditation	Pearson Correlation	.409**	1	.464**	.207**	.408**	.165*	.216**	.197**	.113	.160*	.050	.054
	Sig. (2-tailed)	.000		.000	.003	.000	.018	.002	.005	.105	.022	.472	.441
	N	206	206	206	206	206	206	206	206	206	206	206	206
UPPS_Lack_of_Perseverance	Pearson Correlation	.356**	.464**	1	-.114	.276**	.254**	.310**	.315**	.194**	.186**	.037	.090
	Sig. (2-tailed)	.000	.000		.102	.000	.000	.000	.000	.005	.007	.596	.199
	N	206	206	206	206	206	206	206	206	206	206	206	206
UPPS_Sensation_Seeking	Pearson Correlation	.133	.207**	-.114	1	.365**	-.067	-.089	-.196**	-.020	.013	.128	.017
	Sig. (2-tailed)	.057	.003	.102		.000	.340	.203	.005	.775	.848	.067	.814
	N	206	206	206	206	206	206	206	206	206	206	206	206
UPPS_Positive_Urgency	Pearson Correlation	.676**	.408**	.276**	.365**	1	.234**	.381**	.305**	.266**	.354**	.282**	.209**
	Sig. (2-tailed)	.000	.000	.000	.000		.001	.000	.000	.000	.000	.000	.003
	N	206	206	206	206	206	206	206	206	206	206	206	206
HBI_coping_before	Pearson Correlation	.520**	.165*	.254**	-.067	.234**	1	.784**	.692**	.306**	.401**	.098	.141*
	Sig. (2-tailed)	.000	.018	.000	.340	.001		.000	.000	.000	.000	.161	.043
	N	206	206	206	206	206	206	206	206	206	206	206	206
HBI_consequences_before	Pearson Correlation	.601**	.216**	.310**	-.089	.381**	.784**	1	.835**	.401**	.491**	.053	.150*
	Sig. (2-tailed)	.000	.002	.000	.203	.000	.000		.000	.000	.000	.447	.031
	N	206	206	206	206	206	206	206	206	206	206	206	206
HBI_control_before	Pearson Correlation	.568**	.197**	.315**	-.196**	.305**	.692**	.835**	1	.503**	.493**	.055	.163*
	Sig. (2-tailed)	.000	.005	.000	.005	.000	.000	.000		.000	.000	.434	.020
	N	206	206	206	206	206	206	206	206	206	206	206	206
MPI_Sexual_Preference_Children	Pearson Correlation	.385**	.113	.194**	-.020	.266**	.306**	.401**	.503**	1	.369**	.264**	.349**
	Sig. (2-tailed)	.000	.105	.005	.775	.000	.000	.000	.000		.000	.000	.000
	N	206	206	206	206	206	206	206	206	206	206	206	206
MPI_Obsessed_with_Sex	Pearson Correlation	.489**	.160*	.186**	.013	.354**	.401**	.491**	.493**	.369**	1	.314**	.309**
	Sig. (2-tailed)	.000	.022	.007	.848	.000	.000	.000	.000	.000		.000	.000
	N	206	206	206	206	206	206	206	206	206	206	206	206
MPI_Preferring_Violence_Humiliation	Pearson Correlation	.223**	.050	.037	.128	.282**	.098	.053	.055	.264**	.314**	1	.550**
	Sig. (2-tailed)	.001	.472	.596	.067	.000	.161	.447	.434	.000	.000		.000
	N	206	206	206	206	206	206	206	206	206	206	206	206
MPI_Other_Offence_Related_Interests	Pearson Correlation	.272**	.054	.090	.017	.209**	.141*	.150*	.163*	.349**	.309**	.550**	1
	Sig. (2-tailed)	.000	.441	.199	.814	.003	.043	.031	.020	.000	.000	.000	

refinements to your favorite apps. Details

Appendix R. Principal Components Analysis

Factor Analysis

Correlation Matrix

		UPPS_Negative_Urgency	UPPS_Lack_of_Premeditation	UPPS_Lack_of_Perseverance	UPPS_Sensation_Seeking	UPPS_Positive_Urgency	HBI_coping_before	HBI_consequences_before	HBI_control_before	MPI_Sexual_Preference_Children	MPI_Obsessed_with_Sex
Correlation	UPPS_Negative_Urgency	1.000	.409	.356	.133	.676	.520	.601	.568	.385	.48
	UPPS_Lack_of_Premeditation	.409	1.000	.464	.207	.408	.165	.216	.197	.113	.16
	UPPS_Lack_of_Perseverance	.356	.464	1.000	-.114	.276	.254	.310	.315	.194	.18
	UPPS_Sensation_Seeking	.133	.207	-.114	1.000	.365	-.067	-.089	-.196	-.020	.01
	UPPS_Positive_Urgency	.676	.408	.276	.365	1.000	.234	.381	.305	.266	.35
	HBI_coping_before	.520	.165	.254	-.067	.234	1.000	.784	.692	.306	.40
	HBI_consequences_before	.601	.216	.310	-.089	.381	.784	1.000	.835	.401	.49
	HBI_control_before	.568	.197	.315	-.196	.305	.692	.835	1.000	.503	.49
	MPI_Sexual_Preference_Children	.385	.113	.194	-.020	.266	.306	.401	.503	1.000	.36
	MPI_Obsessed_with_Sex	.489	.160	.186	.013	.354	.401	.491	.493	.369	1.00
	MPI_Preferring_Violence_Humiliation	.223	.050	.037	.128	.282	.098	.053	.055	.264	.31
	MPI_Other_Offence_Related_Interests	.272	.054	.090	.017	.209	.141	.150	.163	.349	.30

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.797
Bartlett's Test of Sphericity	Approx. Chi-Square	1127.621
	df	66
	Sig.	.000

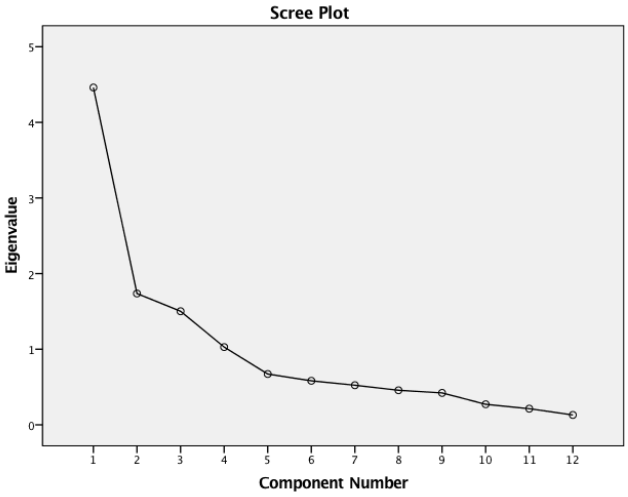
Anti-image Matrices

		UPPS_Negative_Urgency	UPPS_Lack_of_Premeditation	UPPS_Lack_of_Perseverance	UPPS_Sensation_Seeking	UPPS_Positive_Urgency	HBI_coping_before	HBI_consequences_before	HBI_control_before	MPI_Sexual_Preference_Children
Anti-image Covariance	UPPS_Negative_Urgency	.343	-.074	-.024	.007	-.191	-.066	-.010	-.033	-.024
	UPPS_Lack_of_Premeditation	-.074	.654	-.272	-.128	-.055	.010	.012	-.012	.031
	UPPS_Lack_of_Perseverance	-.024	-.272	.686	.162	-.043	-.016	-.009	-.008	-.031
	UPPS_Sensation_Seeking	.007	-.128	.162	.703	-.182	-.047	.003	.094	-.042
	UPPS_Positive_Urgency	-.191	-.055	-.043	-.182	.413	.090	-.053	.011	-.001
	HBI_coping_before	-.066	.010	-.016	-.047	.090	.351	-.135	-.032	.039
	HBI_consequences_before	-.010	.012	-.009	.003	-.053	-.135	.200	-.117	.011
	HBI_control_before	-.033	-.012	-.008	.094	.011	-.032	-.117	.238	-.126
	MPI_Sexual_Preference_Children	-.024	.031	-.031	-.042	-.001	.039	.011	-.126	.647
	MPI_Obsessed_with_Sex	-.064	.011	.012	-.008	-.010	.011	-.039	-.048	-.031
	MPI_Preferring_Violence_Humiliation	.017	.024	.013	-.014	-.090	-.059	.044	.028	-.064
	MPI_Other_Offence_Related_Interests	-.051	.015	-.009	.033	.024	.010	-.005	.017	-.122
Anti-image Correlation	UPPS_Negative_Urgency	.858[a]	-.157	-.049	.014	-.508	-.189	-.038	-.116	-.050
	UPPS_Lack_of_Premeditation	-.157	.755[a]	-.405	-.189	-.106	.021	.033	-.031	.047
	UPPS_Lack_of_Perseverance	-.049	-.405	.769[a]	.233	-.081	-.033	-.024	-.019	-.047
	UPPS_Sensation_Seeking	.014	-.189	.233	.501[a]	-.338	-.094	.007	.230	-.062
	UPPS_Positive_Urgency	-.508	-.106	-.081	-.338	.737[a]	.237	-.183	.037	-.001
	HBI_coping_before	-.189	.021	-.033	-.094	.237	.820[a]	-.508	-.110	.083
	HBI_consequences_before	-.038	.033	-.024	.007	-.183	-.508	.796[a]	-.537	.030
	HBI_control_before	-.116	-.031	-.019	.230	.037	-.110	-.537	.822[a]	-.322
	MPI_Sexual_Preference_Children	-.050	.047	-.047	-.062	-.001	.083	.030	-.322	.866[a]
	MPI_Obsessed_with_Sex	-.139	.017	.019	-.012	-.019	.023	-.110	-.126	-.050
	MPI_Preferring_Violence_Humiliation	.037	.038	.020	-.022	-.180	-.126	.126	.072	-.101
	MPI_Other_Offence_Related_Interests	-.110	.033	-.013	.040	-.040	.033	-.013	.040	-.101

Communalities

	Initial	Extraction
UPPS_Negative_Urgency	1.000	.736
UPPS_Lack_of_Premeditation	1.000	.628
UPPS_Lack_of_Perseverance	1.000	.382
UPPS_Sensation_Seeking	1.000	.534
UPPS_Positive_Urgency	1.000	.710
HBI_coping_before	1.000	.678
HBI_consequences_before	1.000	.835
HBI_control_before	1.000	.843
MPI_Sexual_Preference_Children	1.000	.463
MPI_Obsessed_with_Sex	1.000	.513
MPI_Preferring_Violence_Humiliation	1.000	.712
MPI_Other_Offence_Related_Interests	1.000	.666

Extraction Method: Principal Component Analysis.



Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.461	37.174	37.174	4.461	37.174	37.174	3.574	29.779	29.779
2	1.736	14.470	51.644	1.736	14.470	51.644	2.115	17.627	47.406
3	1.502	12.519	64.163	1.502	12.519	64.163	2.011	16.756	64.163
4	1.028	8.571	72.733						
5	.672	5.598	78.332						
6	.582	4.849	83.181						
7	.524	4.365	87.546						
8	.457	3.807	91.353						
9	.422	3.517	94.870						
10	.272	2.264	97.134						
11	.213	1.778	98.912						
12	.131	1.088	100.000						

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component		
	1	2	3
HBI_consequences_before	.830	-.383	
UPPS_Negative_Urgency	.827	.131	.188
HBI_control_before	.810	-.424	
HBI_coping_before	.728	-.381	
MPI_Obsessed_with_Sex	.675		-.230
UPPS_Positive_Urgency	.633	.450	.327
MPI_Sexual_Preference_Children	.597		-.323
UPPS_Lack_of_Perseverance	.477		.384
UPPS_Sensation_Seeking		.634	.361
MPI_Preferring_Violence_Humiliation	.334	.607	-.481
UPPS_Lack_of_Premeditation	.433	.236	.621
MPI_Other_Offence_Related_Interests	.400	.455	-.547

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Rotated Component Matrix[a]

	Component		
	1	2	3
HBI_control_before	.912		
HBI_consequences_before	.898	.158	
HBI_coping_before	.817		
UPPS_Negative_Urgency	.591	.563	.266
MPI_Obsessed_with_Sex	.533	.158	.451
MPI_Sexual_Preference_Children	.493		.466
UPPS_Lack_of_Premeditation	.173	.766	-.106
UPPS_Positive_Urgency	.240	.748	.303
UPPS_Sensation_Seeking	-.353	.615	.177
UPPS_Lack_of_Perseverance	.406	.447	-.130
MPI_Preferring_Violence_Humiliation		.108	.836
MPI_Other_Offence_Related_Interests	.115		.808

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Component Transformation Matrix

Component	1	2	3
1	.821	.431	.374
2	-.565	.524	.638
3	-.079	.735	-.673

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Appendix S. SPSS Outputs - ANCOVA & ANOVA Analyses

1) UPPS-P Negative Urgency

Univariate Analysis of Variance

Between-Subjects Factors

		Value Label	N
Group	1	Internet Offender	102
	2	Control	104

Descriptive Statistics

Dependent Variable: UPPS_Negative_Urgency

Group	Mean	Std. Deviation	N
Internet Offender	31.2941	8.03530	102
Control	24.5288	7.42726	104
Total	27.8786	8.42759	206

Levene's Test of Equality of Error Variances[a]

Dependent Variable: UPPS_Negative_Urgency

F	df1	df2	Sig.
1.093	1	204	.297

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Age + Adult_pornography_time + Adult_pornography_frequency_simplified_simplified + Education_simplified + sex_orientation_simplified + Group

Tests of Between-Subjects Effects

Dependent Variable: UPPS_Negative_Urgency

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	3773.260[a]	6	628.877	11.602	.000	.259
Intercept	6369.814	1	6369.814	117.514	.000	.371
Age	64.789	1	64.789	1.195	.276	.006
Adult_pornography_time	98.290	1	98.290	1.813	.180	.009
Adult_pornography_frequency_simplified_simplified	179.826	1	179.826	3.318	.070	.016
Education_simplified	52.134	1	52.134	.962	.328	.005
sex_orientation_simplified	549.039	1	549.039	10.129	.002	.048
Group	525.005	1	525.005	9.686	.002	.046
Error	10786.706	199	54.205			
Total	174667.000	206				
Corrected Total	14559.966	205				

a. R Squared = .259 (Adjusted R Squared = .237)

2) UPPS-P Lack of Premeditation

Oneway

Descriptives

UPPS_Lack_of_Premeditation

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Internet Offender	102	23.0000	5.87493	.58171	21.8461	24.1539	11.00	41.00
Control	104	21.2019	4.05156	.39729	20.4140	21.9899	11.00	32.00
Total	206	22.0922	5.10535	.35571	21.3909	22.7935	11.00	41.00

Test of Homogeneity of Variances

UPPS_Lack_of_Premeditation

Levene Statistic	df1	df2	Sig.
11.449	1	204	.001

ANOVA

UPPS_Lack_of_Premeditation

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	166.488	1	166.488	6.561	.011
Within Groups	5176.760	204	25.376		
Total	5343.248	205			

Robust Tests of Equality of Means

UPPS_Lack_of_Premeditation

	Statistic[a]	df1	df2	Sig.
Welch	6.515	1	179.007	.012
Brown-Forsythe	6.515	1	179.007	.012

a. Asymptotically F distributed.

3) UPPS-P Lack of Perseverance

Between-Subjects Factors

		Value Label	N
Group	1	Internet Offender	102
	2	Control	104

Descriptive Statistics

Dependent Variable: SQRT_UPPS_Lack_Perseverance

Group	Mean	Std. Deviation	N
Internet Offender	4.6898	.58531	102
Control	4.3659	.49897	104
Total	4.5263	.56589	206

Levene's Test of Equality of Error Variances[a]

Dependent Variable: SQRT_UPPS_Lack_Perseverance

F	df1	df2	Sig.
.196	1	204	.658

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Age + Adult_pornography_time + Adult_pornography_frequency_simplified_simplified + Education_simplified + sex_orientation_simplified + Group

Tests of Between-Subjects Effects

Dependent Variable: SQRT_UPPS_Lack_Perseverance

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	8.627[a]	6	1.438	5.018	.000	.131
Intercept	152.516	1	152.516	532.281	.000	.728
Age	.021	1	.021	.072	.789	.000
Adult_pornography_time	.042	1	.042	.146	.703	.001
Adult_pornography_frequency_simplified_simplified	.514	1	.514	1.794	.182	.009
Education_simplified	.561	1	.561	1.957	.163	.010
sex_orientation_simplified	1.632	1	1.632	5.695	.018	.028
Group	1.183	1	1.183	4.128	.044	.020
Error	57.020	199	.287			
Total	4286.000	206				
Corrected Total	65.647	205				

a. R Squared = .131 (Adjusted R Squared = .105)

4) UPPS Sensation Seeking

Oneway

Descriptives

UPPS_Sensation_Seeking

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Internet Offender	102	30.1471	7.75669	.76803	28.6235	31.6706	13.00	48.00
Control	104	33.4327	7.05425	.69173	32.0608	34.8046	15.00	48.00
Total	206	31.8058	7.57346	.52767	30.7655	32.8462	13.00	48.00

Test of Homogeneity of Variances

UPPS_Sensation_Seeking

Levene Statistic	df1	df2	Sig.
1.342	1	204	.248

ANOVA

UPPS_Sensation_Seeking

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	555.910	1	555.910	10.123	.002
Within Groups	11202.323	204	54.913		
Total	11758.233	205			

Robust Tests of Equality of Means

UPPS_Sensation_Seeking

	Statistic[a]	df1	df2	Sig.
Welch	10.105	1	201.380	.002
Brown-Forsythe	10.105	1	201.380	.002

a. Asymptotically F distributed.

5) UPPS Positive Urgency

Between-Subjects Factors

		Value Label	N
Group	1	Internet Offender	102
	2	Control	104

Descriptive Statistics

Dependent Variable: UPPS_Positive_Urgency

Group	Mean	Std. Deviation	N
Internet Offender	26.6863	9.77973	102
Control	22.8942	8.88647	104
Total	24.7718	9.50848	206

Levene's Test of Equality of Error Variances[a]

Dependent Variable: UPPS_Positive_Urgency

F	df1	df2	Sig.
2.345	1	204	.127

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Age + Adult_pornography_time + Adult_pornography_frequency_simplified_simplified + Education_simplified + sex_orientation_simplified + Group

Tests of Between-Subjects Effects

Dependent Variable: UPPS_Positive_Urgency

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2276.524[a]	6	379.421	4.644	.000	.123
Intercept	6641.197	1	6641.197	81.290	.000	.290
Age	28.455	1	28.455	.348	.556	.002
Adult_pornography_time	27.283	1	27.283	.334	.564	.002
Adult_pornography_frequency_simplified_simplified	256.372	1	256.372	3.138	.078	.016
Education_simplified	477.112	1	477.112	5.840	.017	.029
sex_orientation_simplified	366.495	1	366.495	4.486	.035	.022
Group	8.723	1	8.723	.107	.744	.001
Error	16257.752	199	81.697			
Total	144945.000	206				
Corrected Total	18534.277	205				

a. R Squared = .123 (Adjusted R Squared = .096)

6) UPPS Total

Between-Subjects Factors

		Value Label	N
Group	1	Internet Offender	102
	2	Control	104

Descriptive Statistics

Dependent Variable: UPPS_Total

Group	Mean	Std. Deviation	N
Internet Offender	133.4608	25.52951	102
Control	121.3654	22.47288	104
Total	127.3544	24.73066	206

Levene's Test of Equality of Error Variances[a]

Dependent Variable: UPPS_Total

F	df1	df2	Sig.
1.854	1	204	.175

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Age + Adult_pornography_time + Adult_pornography_frequency_simplified_simplified + Education_simplified + sex_orientation_simplified + Group

Tests of Between-Subjects Effects

Dependent Variable: UPPS_Total

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	23785.359[a]	6	3964.227	7.765	.000	.190
Intercept	155487.837	1	155487.837	304.567	.000	.605
Age	1178.355	1	1178.355	2.308	.130	.011
Adult_pornography_time	68.929	1	68.929	.135	.714	.001
Adult_pornography_frequency_simplified_simplified	3472.311	1	3472.311	6.801	.010	.033
Education_simplified	2684.578	1	2684.578	5.259	.023	.026
sex_orientation_simplified	4285.518	1	4285.518	8.394	.004	.040
Group	683.345	1	683.345	1.339	.249	.007
Error	101593.772	199	510.521			
Total	3466521.00	206				
Corrected Total	125379.131	205				

a. R Squared = .190 (Adjusted R Squared = .165)

7) HBI-19 Control

Between-Subjects Factors

		Value Label	N
Group	1	Internet Offender	102
	2	Control	104

Descriptive Statistics

Dependent Variable: SQRT_HBI_Control_Before

Group	Mean	Std. Deviation	N
Internet Offender	5.2737	.82146	102
Control	3.5098	.75600	104
Total	4.3832	1.18373	206

Levene's Test of Equality of Error Variances[a]

Dependent Variable: SQRT_HBI_Control_Before

F	df1	df2	Sig.
.208	1	204	.649

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Age + Adult_pornography_time + Adult_pornography_frequency_simplified_simplified + Education_simplified + sex_orientation_simplified + Group

Tests of Between-Subjects Effects

Dependent Variable: SQRT_HBI_Control_Before

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	169.866[a]	6	28.311	47.995	.000	.591
Intercept	124.038	1	124.038	210.280	.000	.514
Age	.008	1	.008	.014	.905	.000
Adult_pornography_time	1.427	1	1.427	2.420	.121	.012
Adult_pornography_frequency_simplified_simplified	2.144	1	2.144	3.635	.058	.018
Education_simplified	.705	1	.705	1.195	.276	.006
sex_orientation_simplified	1.940	1	1.940	3.289	.071	.016
Group	70.879	1	70.879	120.160	.000	.376
Error	117.384	199	.590			
Total	4245.000	206				
Corrected Total	287.250	205				

a. R Squared = .591 (Adjusted R Squared = .579)

8) HBI-19 Coping

Between-Subjects Factors

		Value Label	N
Group	1	Internet Offender	102
	2	Control	104

Descriptive Statistics

Dependent Variable: SQRT_HBI_Coping_Before

Group	Mean	Std. Deviation	N
Internet Offender	4.4975	.96879	102
Control	3.8114	.74525	104
Total	4.1511	.92720	206

Levene's Test of Equality of Error Variances[a]

Dependent Variable: SQRT_HBI_Coping_Before

F	df1	df2	Sig.
2.616	1	204	.107

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Age + Adult_pornography_time + Adult_pornography_frequency_simplified_simplified + Education_simplified + sex_orientation_simplified + Group

Tests of Between-Subjects Effects

Dependent Variable: SQRT_HBI_Coping_Before

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	50.220[a]	6	8.370	13.217	.000	.285
Intercept	102.203	1	102.203	161.392	.000	.448
Age	.587	1	.587	.927	.337	.005
Adult_pornography_time	4.726	1	4.726	7.463	.007	.036
Adult_pornography_frequency_simplified_simplified	6.599	1	6.599	10.421	.001	.050
Education_simplified	2.347	1	2.347	3.706	.056	.018
sex_orientation_simplified	2.596	1	2.596	4.100	.044	.020
Group	3.731	1	3.731	5.891	.016	.029
Error	126.019	199	.633			
Total	3726.000	206				
Corrected Total	176.239	205				

a. R Squared = .285 (Adjusted R Squared = .263)

9) HBI-19 Consequences

Oneway

Descriptives

HBI_consequences_before

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Internet Offender	102	10.8725	4.80237	.47551	9.9293	11.8158	4.00	20.00
Control	104	5.8462	2.38429	.23380	5.3825	6.3098	4.00	15.00
Total	206	8.3350	4.53490	.31596	7.7120	8.9579	4.00	20.00

Test of Homogeneity of Variances

HBI_consequences_before

Levene Statistic	df1	df2	Sig.
75.970	1	204	.000

ANOVA

HBI_consequences_before

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1301.007	1	1301.007	91.052	.000
Within Groups	2914.882	204	14.289		
Total	4215.888	205			

Robust Tests of Equality of Means

HBI_consequences_before

	Statistic[a]	df1	df2	Sig.
Welch	89.984	1	147.296	.000
Brown-Forsythe	89.984	1	147.296	.000

a. Asymptotically F distributed.

10) HBI-19 Total

Between-Subjects Factors

		Value Label	N
Group	1	Internet Offender	102
	2	Control	104

Descriptive Statistics

Dependent Variable: SQRT_HBI_Total_Before

Group	Mean	Std. Deviation	N
Internet Offender	7.6649	1.33279	102
Control	5.7277	1.00536	104
Total	6.6869	1.52502	206

Levene's Test of Equality of Error Variances[a]

Dependent Variable: SQRT_HBI_Total_Before

F	df1	df2	Sig.
3.285	1	204	.071

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Age + Adult_pornography_time + Adult_pornography_frequency_simplified_simplified + Education_simplified + sex_orientation_simplified + Group

Tests of Between-Subjects Effects

Dependent Variable: SQRT_HBI_Total_Before

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	235.742[a]	6	39.290	32.440	.000	.494
Intercept	276.182	1	276.182	228.029	.000	.534
Age	.384	1	.384	.317	.574	.002
Adult_pornography_time	7.995	1	7.995	6.601	.011	.032
Adult_pornography_frequency_simplified_simplified	9.453	1	9.453	7.805	.006	.038
Education_simplified	2.828	1	2.828	2.335	.128	.012
sex_orientation_simplified	6.704	1	6.704	5.535	.020	.027
Group	65.176	1	65.176	53.812	.000	.213
Error	241.023	199	1.211			
Total	9688.000	206				
Corrected Total	476.766	205				

a. R Squared = .494 (Adjusted R Squared = .479)

11) MPI Sexual Preference for Children

Oneway

Descriptives

MPI sexual preferance for children square root transformed

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Internet Offender	102	2.3020	1.37684	.13633	2.0316	2.5725	.00	4.24
Control	104	.6028	1.09814	.10768	.3892	.8164	.00	4.69
Total	206	1.4442	1.50505	.10486	1.2374	1.6509	.00	4.69

Test of Homogeneity of Variances

MPI sexual preferance for children square root transformed

Levene Statistic	df1	df2	Sig.
10.839	1	204	.001

ANOVA

MPI sexual preferance for children square root transformed

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	148.687	1	148.687	96.087	.000
Within Groups	315.674	204	1.547		
Total	464.361	205			

Robust Tests of Equality of Means

MPI sexual preferance for children square root transformed

	Statistic[a]	df1	df2	Sig.
Welch	95.671	1	192.765	.000
Brown-Forsythe	95.671	1	192.765	.000

a. Asymptotically F distributed.

12) MPI Obsessed with Sex

Between-Subjects Factors

		Value Label	N
Group	1	Internet Offender	102
	2	Control	104

Descriptive Statistics

Dependent Variable: MPI obsessed with sex square root transformed

Group	Mean	Std. Deviation	N
Internet Offender	2.8543	1.10355	102
Control	1.8221	1.12647	104
Total	2.3332	1.22686	206

Levene's Test of Equality of Error Variances[a]

Dependent Variable: MPI obsessed with sex square root transformed

F	df1	df2	Sig.
.502	1	204	.480

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Age + Adult_pornography_time + Adult_pornography_frequency_simplified_simplified + Education_simplified + sex_orientation_simplified + Group

Tests of Between-Subjects Effects

Dependent Variable: MPI obsessed with sex square root transformed

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	98.088[a]	6	16.348	15.457	.000	.318
Intercept	62.250	1	62.250	58.857	.000	.228
Age	.020	1	.020	.019	.890	.000
Adult_pornography_time	.215	1	.215	.204	.652	.001
Adult_pornography_frequency_simplified_simplified	24.862	1	24.862	23.506	.000	.106
Education_simplified	.461	1	.461	.436	.510	.002
sex_orientation_simplified	3.488	1	3.488	3.298	.071	.016
Group	12.046	1	12.046	11.389	.001	.054
Error	210.474	199	1.058			
Total	1430.000	206				
Corrected Total	308.562	205				

a. R Squared = .318 (Adjusted R Squared = .297)

13) MPI Preferring Sex to Include Violence or Humiliation

Between-Subjects Factors

		Value Label	N
Group	1	Internet Offender	102
	2	Control	104

Descriptive Statistics

Dependent Variable: MPI preferring violence humiliation square root transformed

Group	Mean	Std. Deviation	N
Internet Offender	.6314	.96133	102
Control	.6592	1.06492	104
Total	.6454	1.01257	206

Levene's Test of Equality of Error Variances[a]

Dependent Variable: MPI preferring violence humiliation square root transformed

F	df1	df2	Sig.
.157	1	204	.692

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Age + Adult_pornography_time + Adult_pornography_frequency_simplified_simplified + Education_simplified + sex_orientation_simplified + Group

Tests of Between-Subjects Effects

Dependent Variable: MPI preferring violence humiliation square root transformed

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	18.932[a]	6	3.155	3.283	.004	.090
Intercept	14.403	1	14.403	14.986	.000	.070
Age	.406	1	.406	.422	.517	.002
Adult_pornography_time	.284	1	.284	.296	.587	.001
Adult_pornography_frequency_simplified_simplified	10.334	1	10.334	10.752	.001	.051
Education_simplified	.456	1	.456	.475	.492	.002
sex_orientation_simplified	2.277	1	2.277	2.369	.125	.012
Group	2.032	1	2.032	2.115	.147	.011
Error	191.255	199	.961			
Total	296.000	206				
Corrected Total	210.187	205				

a. R Squared = .090 (Adjusted R Squared = .063)

14) MPI Other Offence Related Interests

Oneway

Descriptives

MPI other offence related interests square root transformed

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Internet Offender	102	.7378	.71985	.07128	.5964	.8792	.00	2.00
Control	104	.5284	.68238	.06691	.3957	.6612	.00	2.11
Total	206	.6321	.70730	.04928	.5350	.7293	.00	2.11

Test of Homogeneity of Variances

MPI other offence related interests square root transformed

Levene Statistic	df1	df2	Sig.
2.861	1	204	.092

ANOVA

MPI other offence related interests square root transformed

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.257	1	2.257	4.592	.033
Within Groups	100.297	204	.492		
Total	102.555	205			

Robust Tests of Equality of Means

MPI other offence related interests square root transformed

	Statistic[a]	df1	df2	Sig.
Welch	4.587	1	202.922	.033
Brown-Forsythe	4.587	1	202.922	.033

a. Asymptotically F distributed.

15) MPI Total

Between-Subjects Factors

		Value Label	N
Group	1	Internet Offender	102
	2	Control	104

Descriptive Statistics

Dependent Variable: MPI total square root transformed

Group	Mean	Std. Deviation	N
Internet Offender	4.2576	1.45221	102
Control	2.5805	1.61742	104
Total	3.4109	1.74928	206

Levene's Test of Equality of Error Variances[a]

Dependent Variable: MPI total square root transformed

F	df1	df2	Sig.
.012	1	204	.911

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Age + Adult_pornography_time + Adult_pornography_frequency_simplified_simplified + Education_simplified + sex_orientation_simplified + Group

Tests of Between-Subjects Effects

Dependent Variable: MPI total square root transformed

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	234.729[a]	6	39.122	19.832	.000	.374
Intercept	137.463	1	137.463	69.683	.000	.259
Age	6.546	1	6.546	3.318	.070	.016
Adult_pornography_time	.348	1	.348	.177	.675	.001
Adult_pornography_frequency_simplified_simplified	29.383	1	29.383	14.895	.000	.070
Education_simplified	.186	1	.186	.094	.759	.000
sex_orientation_simplified	18.512	1	18.512	9.384	.002	.045
Group	46.785	1	46.785	23.716	.000	.106
Error	392.565	199	1.973			
Total	3024.000	206				
Corrected Total	627.294	205				

a. R Squared = .374 (Adjusted R Squared = .355)

Appendix T. Hierarchical Binary Logistic Regression

Logistic Regression

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	198	100.0
	Missing Cases	0	.0
	Total	198	100.0
Unselected Cases		0	.0
Total		198	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
Control	0
Internet Offender	1

Block 0: Beginning Block

Classification Table[a,b]

			Predicted		
			Group_recoded		
	Observed		Control	Internet Offender	Percentage Correct
Step 0	Group_recoded	Control	0	99	.0
		Internet Offender	0	99	100.0
	Overall Percentage				50.0

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.000	.142	.000	1	1.000	1.000

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	UPPS_Negative_Urgency	37.595	1	.000
		UPPS_Lack_of_Premeditation	5.541	1	.019
		UPPS_Lack_of_Perseverance	19.986	1	.000
		UPPS_Sensation_Seeking	10.253	1	.001
		UPPS_Positive_Urgency	9.456	1	.002
	Overall Statistics		57.652	5	.000

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	67.061	5	.000
	Block	67.061	5	.000
	Model	67.061	5	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	207.426[a]	.287	.383

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	6.110	8	.635

Contingency Table for Hosmer and Lemeshow Test

		Group_recoded = Control		Group_recoded = Internet Offender		
		Observed	Expected	Observed	Expected	Total
Step 1	1	18	18.107	2	1.893	20
	2	14	16.568	6	3.432	20
	3	17	14.777	3	5.223	20
	4	12	12.851	8	7.149	20
	5	12	10.951	8	9.049	20
	6	11	9.267	9	10.733	20
	7	8	7.470	12	12.530	20
	8	4	5.188	16	14.812	20
	9	3	2.805	17	17.195	20
	10	0	1.015	18	16.985	18

Classification Table[a]

			Predicted		
			Group_recoded		
	Observed		Control	Internet Offender	Percentage Correct
Step 1	Group_recoded	Control	72	27	72.7
		Internet Offender	26	73	73.7
	Overall Percentage				73.2

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Step 1[a]	UPPS_Negative_Urgency	.150	.034	19.768	1	.000	1.162	1.087	1.241
	UPPS_Lack_of_Premeditation	-.015	.040	.146	1	.702	.985	.910	1.066
	UPPS_Lack_of_Perseverance	.078	.042	3.487	1	.062	1.081	.996	1.174
	UPPS_Sensation_Seeking	-.096	.027	12.569	1	.000	.909	.862	.958
	UPPS_Positive_Urgency	-.011	.028	.160	1	.690	.989	.936	1.045
	Constant	-2.062	1.124	3.366	1	.067	.127		

a. Variable(s) entered on step 1: UPPS_Negative_Urgency, UPPS_Lack_of_Premeditation, UPPS_Lack_of_Perseverance, UPPS_Sensation_Seeking, UPPS_Positive_Urgency.

Block 2: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	137.625	3	.000
	Block	137.625	3	.000
	Model	204.686	8	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	69.800[a]	.644	.859

a. Estimation terminated at iteration number 8 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	1.497	8	.993

Contingency Table for Hosmer and Lemeshow Test

		Group_recoded = Control		Group_recoded = Internet Offender		
		Observed	Expected	Observed	Expected	Total
Step 1	1	20	19.966	0	.034	20
	2	20	19.865	0	.135	20
	3	20	19.670	0	.330	20
	4	18	18.523	2	1.477	20
	5	14	14.622	6	5.378	20
	6	5	4.988	15	15.012	20
	7	2	1.214	18	18.786	20
	8	0	.125	20	19.875	20
	9	0	.024	20	19.976	20
	10	0	.002	18	17.998	18

Classification Table[a]

			Predicted		
			Group_recoded		
	Observed		Control	Internet Offender	Percentage Correct
Step 1	Group_recoded	Control	92	7	92.9
		Internet Offender	8	91	91.9
	Overall Percentage				92.4

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Step 1[a]	UPPS_Negative_Urgency	.119	.068	3.086	1	.079	1.126	.986	1.286
	UPPS_Lack_of_Premeditation	-.173	.081	4.590	1	.032	.841	.717	.985
	UPPS_Lack_of_Perseverance	.174	.086	4.087	1	.043	1.190	1.005	1.408
	UPPS_Sensation_Seeking	-.050	.055	.805	1	.370	.952	.854	1.061
	UPPS_Positive_Urgency	-.029	.059	.246	1	.620	.971	.865	1.090
	HBI_coping_before	-.324	.101	10.307	1	.001	.723	.593	.881
	HBI_consequences_before	-.031	.191	.026	1	.872	.970	.667	1.410
	HBI_control_before	.580	.100	33.442	1	.000	1.785	1.467	2.173
	Constant	-6.002	2.542	5.575	1	.018	.002		

a. Variable(s) entered on step 1: HBI_coping_before, HBI_consequences_before, HBI_control_before.

Block 3: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	21.534	4	.000
	Block	21.534	4	.000
	Model	226.220	12	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	48.266[a]	.681	.908

a. Estimation terminated at iteration number 9 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	2.195	8	.974

Contingency Table for Hosmer and Lemeshow Test

		Group_recoded = Control		Group_recoded = Internet Offender		
		Observed	Expected	Observed	Expected	Total
Step 1	1	20	19.998	0	.002	20
	2	20	19.987	0	.013	20
	3	20	19.963	0	.037	20
	4	20	19.746	0	.254	20
	5	15	14.164	5	5.836	20
	6	3	4.712	17	15.288	20
	7	1	.407	19	19.593	20
	8	0	.022	20	19.978	20
	9	0	.001	20	19.999	20
	10	0	.000	18	18.000	18

Classification Table[a]

			Predicted		
			Group_recoded		
	Observed		Control	Internet Offender	Percentage Correct
Step 1	Group_recoded	Control	94	5	94.9
		Internet Offender	5	94	94.9
	Overall Percentage				94.9

a. The cut value is .500

Variables in the Equation

								95% C.I.for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	UPPS_Negative_Urgency	.103	.072	2.078	1	.149	1.109	.963	1.277
	UPPS_Lack_of_Premeditation	-.132	.110	1.455	1	.228	.876	.706	1.086
	UPPS_Lack_of_Perseverance	.164	.101	2.632	1	.105	1.178	.966	1.436
	UPPS_Sensation_Seeking	-.013	.060	.046	1	.831	.987	.877	1.111
	UPPS_Positive_Urgency	-.064	.081	.610	1	.435	.938	.800	1.101
	HBI_coping_before	-.468	.166	7.942	1	.005	.626	.452	.867
	HBI_consequences_before	-.054	.275	.038	1	.846	.948	.553	1.625
	HBI_control_before	.753	.185	16.567	1	.000	2.124	1.478	3.052
	MPI_Sexual_Preference_Children	.242	.081	8.918	1	.003	1.273	1.087	1.492
	MPI_Obsessed_with_Sex	.233	.103	5.149	1	.023	1.263	1.032	1.545
	MPI_Preferring_Violence_Humiliation	-.414	.168	6.089	1	.014	.661	.476	.918
	MPI_Other_Offence_Related_Interests	.183	.202	.818	1	.366	1.201	.808	1.785
	Constant	-9.664	3.741	6.674	1	.010	.000		

a. Variable(s) entered on step 1: MPI_Sexual_Preference_Children, MPI_Obsessed_with_Sex, MPI_Preferring_Violence_Humiliation, MPI_Other_Offence_Related_Interests.

Casewise List[b]

	Selected Status[a]	Observed		Predicted Group	Temporary Variable	
Case		Group_recoded	Predicted		Resid	ZResid
85	S	C**	.929	I	-.929	-3.623
121	S	C**	.984	I	-.984	-7.966
131	S	C**	.928	I	-.928	-3.589

a. S = Selected, U = Unselected cases, and ** = Misclassified cases.

b. Cases with studentized residuals greater than 2.000 are listed.

Appendix U. ROC Analysis – AUC Values

ROC Curve

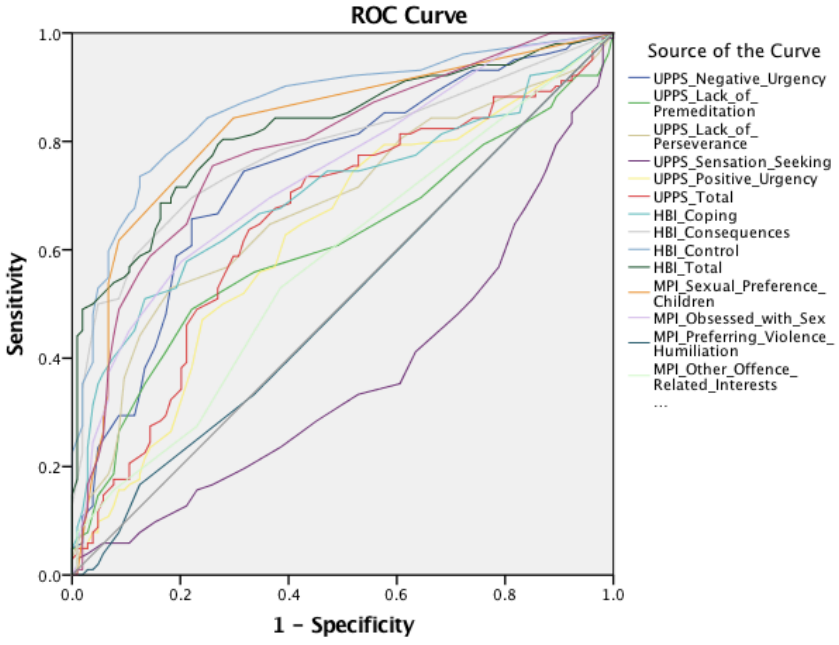
Case Processing Summary

Group[a]	Valid N (listwise)
Positive[b]	102
Negative	104

Larger values of the test result variable(s) indicate stronger evidence for a positive actual state.

a. The test result variable(s): MPI_Sexual_Preference_Children has at least one tie between the positive actual state group and the negative actual state group.

b. The positive actual state is Internet Offender.



Diagonal segments are produced by ties.

Area Under the Curve

Test Result Variable(s)	Area	Std. Error[a]	Asymptotic Sig.[b]	Asymptotic 95% Confidence Interval	
				Lower Bound	Upper Bound
UPPS_Negative_Urgency	.739	.035	.000	.671	.808
UPPS_Lack_of_Premeditation	.608	.040	.007	.530	.687
UPPS_Lack_of_Perseverance	.679	.038	.000	.605	.753
UPPS_Sensation_Seeking	.367	.039	.001	.291	.443
UPPS_Positive_Urgency	.624	.039	.002	.547	.701
UPPS_Total	.652	.039	.000	.576	.728
HBI_Coping	.702	.037	.000	.630	.775
HBI_Consequences	.783	.033	.000	.719	.848
HBI_Control	.865	.026	.000	.814	.916
HBI_Total	.823	.030	.000	.765	.880
MPI_Sexual_Preference_Children	.823	.031	.000	.763	.883
MPI_Obsessed_with_Sex	.737	.034	.000	.670	.805
MPI_Preferring_Violence_Humiliation	.502	.040	.957	.423	.581
MPI_Other_Offence_Related_Interests	.573	.040	.069	.495	.652
MPI_Total	.787	.032	.000	.724	.850

The test result variable(s): UPPS_Negative_Urgency, UPPS_Lack_of_Premeditation, UPPS_Lack_of_Perseverance, UPPS_Sensation_Seeking, UPPS_Positive_Urgency, UPPS_Total, HBI_Coping, HBI_Consequences, HBI_Control, HBI_Total, MPI_Sexual_Preference_Children, MPI_Obsessed_with_Sex, MPI_Preferring_Violence_Humiliation, MPI_Other_Offence_Related_Interests, MPI_Total has at least one tie between the positive actual state group and the negative actual state group. Statistics may be biased.

a. Under the nonparametric assumption

b. Null hypothesis: true area = 0.5

Appendix V. Case Study Consent Form

Consent to Participate in Case Study

If you are happy to volunteer to take part in the case study then please read and tick the boxes below, and sign and date the form. In signing the form it means you understand that you have voluntarily agreed to take part in the research.

- □ I have read and understood the information sheet and been given the opportunity to ask questions.
- □ I understand that my participation in this case study is voluntary.
- □ I understand that I may withdraw from the case study at any time.
- □ I understand that all data will be anonymous and my identity will be kept confidential, with the exception of disclosed criminal offences that are not know about and the disclosure of potential risk to another person or to myself.
- □ I understand that the case study may be published in an academic journal but that no information will be published that could identify me as an individual. Data will be kept for 7 years after the case study has been published.
- □ I understand that relevant data collected in the case study may be looked at by authorised individuals from the University of Nottingham and the researcher's supervisor.
- □ I understand that the interview may be recorded and that anonymous direct quotes from the interview may be used in the write-up of the case study.

Participant

I wish to take part in this case study

Name (printed)……

Signed …….. Date ……

Researcher

Name (printed) ……..

Signed …… Date ……..

Appendix W. Sentencing Council Sexual Offences Definitive Guideline

	Possession	Distribution*	Production**
Category A	Possession of images involving penetrative sexual activity Possession of images involving sexual activity with an animal or sadism	Sharing images involving penetrative sexual activity Sharing images involving sexual activity with an animal or sadism	Creating images involving penetrative sexual activity Creating images involving sexual activity with an animal or sadism
Category B	Possession of images involving non-penetrative sexual activity	Sharing of images involving non-penetrative sexual activity	Creating images involving non-penetrative sexual activity
Category C	Possession of other indecent images not falling within categories A or B	Sharing of other indecent images not falling within categories A or B	Creating other indecent images not falling within categories A or B

* Distribution includes possession with a view to distributing or sharing images.
** Production includes the taking or making of any image at source, for instance the original image.

Making an image by simple downloading should be treated as possession for the purposes of sentencing.

Appendix X. Completed 'Footsteps to Offending' Personal Work					
Key footsteps	**Situation**	**Actions**	**Thoughts**	**Feelings**	**Behaviour**
Step 1 Age 9	Finding porn mags in bushes on a number of occasions.	Laughing & giggling with friends at the time. Chucked back in bush.	Thought it was cool to find it and that it was "grown up" stuff	Intrigued and a bit naughty for not telling an adult.	Searching bushes for more when near the area.
Step 2 Age 11	Going over to a friend's house and him showing me his dad's stash in the loft.	There was a lot of it. We went through as much as we could.	Thought my mate was cool for sharing but also taken aback by the quantity.	Sexually aroused. Curious & naughty for going through his dad's stuff. Excited.	Consuming as much of it as possible. We would be up there for a couple of hours.
Step 3 Age 13-18	Normal occasional masturbation & discovery. Porn at Cadets; mags & videos.	Masturbation using imagination of simple scenarios. Started having sex with G.F at 18.	Excited about having "real" sex with G.F. Thought I was well informed and good at it.	Nothing out of the ordinary.	Quite a lot of experimentation with G.F. Nothing extreme.
Step 4 Age 19	Moved away from home & G.F. Moved in with ex-Navy chap. He issued me with porn.	Working long hours. Would use porn from time to time. Had 2-3 G.Fs in quick succession.	Thought I was starting out on a successful career.	A bit homesick from time to time.	Acting older than my years.
Step 5 Age 19-22	Peer pressure to have sex with more & more women. Older peer group. Lots of cash.	Lots of going out to bars, clubs & lap-dancing. Regular one night stands.	Thought I was living the life. Work hard, play hard.	Enjoyed myself. Felt respect from peers.	Constantly trying to impress peers. Living up to reputation.
Step 6 Age 22	Saw the internet for the 1st time in the office with colleagues looking at porn.	Group messing about trying to find the best/worst things we could.	Thought it was wrong to be doing it at work.	A little uncomfortable as porn had always been a private thing.	Laughter & joking with peers.

Step 7 Age23-25	Went travelling to Asia & Australia. Met a girl, settled down in the UK.	Good relationship stabilised me.	Thoughts of her being great but I could do better.	Happy.	Always had one eye open for an opportunity everywhere. Cheated once.
Step 8 Age 26	Got internet at home for 1st time.	Occasional viewing of porn when home alone.	Thought what my G.F didn't know wouldn't hurt her.	Intrigued by seemingly endless variety.	Viewed for short periods & masturbation.
Step 9 Age 26	Split with G.F. Moved up North.	Lots of casual sex. Numerous partners. Occasional internet use.	Thought I had to move on from this phase.	Lonely & lost.	Used girls & sex to make me feel better.
Step 10 Age 26	Got lent 3 seriously hard-core videos.	Started watching but had to switch off as quite repulsed.	Thoughts of concern about the person that lent them to me.	Shocked that people would enjoy that sort of thing.	Returned the videos.
Step 11 Age 26 (travelling again)	Went out on my own in Sydney. Got drunk. Took 2 hookers back to my hotel room.	Drinking & sex as a threesome.	Thinking about how much the night had cost me.	Felt a major box had been ticked in life.	Sex & drinking.
Step 12 Age 27-29	Lived on my own. Cash problems due to tax bill/poor job.	Porn use increased.	Thought that this was just a phase that would get better.	Sad & lonely.	Using porn to make me feel better.
Step 13 Age 30-35	Met [Partner]. Enjoyed success.	Normal life, very occasional porn use.	Good thoughts generally.	Pretty happy. Felt I was achieving things in life.	Occasional porn use as considered normal.
Step 14 Age 37-38	Separated from [Partner], business failures, etc.	Heavy drinking and considerable porn use.	Doubt of self-worth, lost and frustrated, very angry.	Very sad, depressed. Somewhat at my wits end.	Massive increase in porn use.
Step 15 Age 38	Discovering 'Shareza' app.	Multiple screens and exploration of many genres.	I thought that I was out of control.	Mixed. Highs & lows on a massive scale.	Compulsive use of porn.

Step 16 Age 38	Travelling down the corridor.	Drunk & spent hours viewing every type of porn.	Wasn't really thinking, more occupying my mind.	Scared, excited, disgusted, tired, shaky, anxious & depressed.	Switching off my brain and filling it with images.