PSYCHOLOGICAL CHARACTERISTICS OF USERS OF CHILD
PORNOGRAPHY ON THE INTERNET

By

IAN ALEXANDER ELLIOTT

A thesis submitted to the
University of Birmingham
for the degree of
DOCTOR OF PHILOSOPHY

School of Psychology
College of Life and Environmental Sciences
The University of Birmingham
October 2011

UNIVERSITYOF
BIRMINGHAM

University of Birmingham Research Archive

e-theses repository

Abstract

This thesis uses the Integrated Theory of Sexual Offending (Ward & Beech, 2006) as a framework by which to investigate the psychological characteristics of individuals who access sexually explicit material involving children on the Internet. Chapter one reviews the applicability of sex offender theory to internet offender behaviour. Chapter two compares internet and contact sex offenders on a battery of self-report assessments, finding that internet offenders demonstrated greater victim empathy, fewer offence-supportive attitudes, and greater identification with fictional characters. Chapter three compared internet, contact and mixed internet/contact offenders on the same assessments, finding that mixed offenders were more similar to internet than contact offenders, with unique problems with self-management. Chapter four examined internet-specific offence-supportive attitudes in internet offenders, finding that endorsement levels were generally low, that items related to sexual compulsivity were most frequently endorsed, and that high-frequency online sex users endorsed more sexual compulsivity items and individuals without long-term relationships endorsed more online identity items. Chapter five examined the effects of exposure to sexually-salient material on decision-making, finding that previously-reported significant effects could not be replicated and that internet offenders did not differ from non-offender controls. The results are discussed in terms of theoretical and practical implications, further research, and methodological limitations.

Dedicated to Baroness Lucy Faithfull

(26/12/1910-13/03/1996)

and the Lucy Faithfull Foundation

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

Recent estimates suggest that there are almost 2.1 billion internet users worldwide (Internet World Stats, 2011). Internet technology itself is morally neutral. While it can be assumed that a lot of online behavior is generally positive, or at least does not victimize others, online technologies facilitate a whole host of criminal activities (see Jewkes & Yar, 2010), and hence are becoming a modern source of a range of societal problems. The level of sophistication with which the Internet can be utilized is rapidly increasing. The Internet is evolving from fixed personal computer-based access to third-generation (3G) mobile phone technology, offering high-speed Internet access, video conferencing and digital audio-visual recording technology, in the form of mobile, hand-held devices (O'Connell, 2004). As online technology quickly develops to become more and more interactive, dynamic, and user-constructed – known as 'Web 2.0' – the potential for online harm may be likely to increase (Atkinson & Newton, 2010).

The number of sexual offenders utilizing the internet in their crimes appears to have increased in the past five years (Motivans & Kyckelhahn, 2007; Wolak, Finkelhor, & Mitchell, 2009) and in the U.K. it is thought that around one-third of male sex offences are now internet related (Middleton, 2009). Although this group of sexual offenders remain a small proportion of all identified sex offenders, there is increasing concern about how to assess, manage, and treat such online offenders. The internet can facilitate a sexual interest in children through: (1) the access and dissemination of sexually explicit material involving

children (SEM-c[1]); (2) the location of children for offline sexual contact; (3) engagement in inappropriate sexual contact with children; and (4) providing a supportive environment to validate child-sex beliefs (Durkin, 1997; Lanning, 2001). It is worth noting that the Internet might also serve as a method for covertly breaking probation restrictions regarding access to children for those individuals who already have convictions for child molestation (Durkin, 1997; Hernandez, 2000).

In the U.K. the principal legislation outlawing abusive images of children can be found in the Protection of Children Act 1978 and the Sexual Offenses Act 2003. Section 1 of the Protection of Children Act (as amended) makes it an offense to make, take, distribute, show, or be in possession with the intention to distribute or show, an indecent image of a child (Gillespie, 2005b). In the Criminal Justice Act 1988 the offense of possessing indecent images of a child and later pseudo-photographs, where prohibited by Section 84 of the Criminal Justice and Public Order Act 1994, has been added. Sections 48 - 50 of the Sexual Offences Act are built on the Protection of Children Act, where there are three new offences relating to abusive images of children: (1) causing or inciting a child to become involved in pornography; (2) controlling a child involved in pornography; (3) arranging or facilitating child pornography. These three offences are punishable by up to 14 years imprisonment. The Sexual Offences Act

---

[1] There is considerable debate between academics about what terminology should be used to describe the material viewed by individuals with a sexual interest in children. Some argue 'child pornography' is too trivial and lends credence and legitimacy to offender's use of the value-laden term 'pornography' (Tate, 1992; Edwards, 2000). Others note the international legal scope of the term (Taylor & Quayle, 2003). 'Abuse images' or 'abusive images of children' accounts for the depiction of rape and sexual assault in many images, but fails to describe the many images involving children that do not depict sexually abusive activities that may still be used for sexual gratification. After considerable discussion after Chapter 2, we opted to combine the acronym SEM, a combination of Malamuth, Addison, & Koss (2000: 'Sexually explicit media') and Glasgow (2010; 'sexually explicit material'), adding the suffix '-c' to denote the specific depiction of children, for use throughout the rest of the thesis.

also further strengthens the laws regarding showing pornography to a minor, making it a criminal offence to show any obscene image (not only in photographic form) to a child (Gillespie, 2005a).

Though it is well-established that SEM-c pre-existed the recent boom in global telecommunications technologies, it has been noted that dissemination and access of SEM-c has been vastly facilitated by the online revolution (e.g., Taylor & Quayle, 2003). SEM-c can also manifest in the form of non-real or pseudo-images, including lifelike virtual abusive images without the use of actual children at all (Healy, 1997) and/or those that mix different aspects and/or combinations of separate pictures to suit the user's preferences (Taylor, 1999; Taylor & Quayle, 2003). In the U.K., the Coroners and Justice Act 2009 (C&JA) criminalises non-photographic pornographic images of children (NPPIC), essentially "fantasy visual representations of child pornography in the form of, for example, computer-generated images, cartoons or drawings" (Ost, 2010: p. 231). Though criminalised however, the U.K. Home Office consultation document that preceded the legislation itself noted that there was no evidence thus far provided that links such pseudo-images with the commission of sexual offences, and was based on the risk that use of NPPIC would fuel child-related sexual fantasy (Ost, 2010). Ost argued that NPPIC legislation would be stronger in terms of a primary *harm* issue, had it concentrated on the depiction of actual children, for example through computer-generated manipulation of images of real children, rather than fantasy images.

The extent of the demand for SEM-c is indicated by recent analyses of online search engine requests suggest that enquiries regarding sexually explicit material involving children terms accounts for between one in 200 and one in

500 queries (Steel, 2009) on the Internet. Interpol's Child Abuse Image Database (ICAID), a global database for the forensic analysis of digital images of child abuse, now contains over 500,000 images submitted from 36 member countries (Interpol, 2008). The U.K. Internet Watch Foundation (IWF) has recently identified 1,316 worldwide Internet domains (8,844 unique URLs) containing images of child sexual abuse (IWF, 2010). The IWF also noted that when one website was hosted briefly on a U.K. network the site received requests from over 25,000 unique IP addresses worldwide within a few days. The perceived anonymity, speed, and global character of the Internet and the ability to create virtual social groups all create an environment that challenges conventional notions of social organization and control (Taylor & Quayle, 2006) and creates a substantial potential for criminal behavior.

As Glasgow (2010) notes, the increase in the amount of SEM-c available online has coincided with an apparent decline in the sexual victimization of children in countries like the United States (Finkelhor & Jones, 2006) and the United Kingdom (Radford et al., 2011). This trend potentially contradicts concerns that an increase in online SEM-c viewers lead to increased cross-over from online to offline offences (Glasgow, 2010). It should be noted however, that the relationship between increased SEM-c use and a reduction in child sexual abuse could be accounted for by a wide variety of factors. Nevertheless, the production of SEM-c necessarily involves the sexual abuse of children and, hence, methods to both reduce availability and production of SEM-c and increase our knowledge-base on its users is imperative.

There is around three decades-worth of high-quality theoretical work that seeks to explain the psychological characteristics and behaviors of sex offenders.

This recently culminated in the Integrated Theory of Sexual Offending (ITSO: Ward & Beech, 2006). The ITSO represents an attempt to subsume and unify this wealth of knowledge of genetic, biological, neuropsychological, and environmental factors as they relate to sexually deviant behaviour. This would appear to be an appropriate and timely starting point for improving our understanding of internet offenders.

Therefore the overall aim of the thesis is to investigate whether or not the psychological constructs outlined in the Integrated Theory of Sex Offending (Beech & Ward, 2006) can be used to explain the behaviour of individuals who access child pornography using the internet.

Specifically, the thesis will:

- Explore the differences between individuals whose offences are related only to child pornography offences and those who only commit contact offences;

- Examine the differences between these 'pure' offenders and those who have a mixture of offences, i.e., those who have been sentenced with both internet and contact offences simultaneously, and internet offenders with a previous record of contact offences;

- To look at those factors that distinguish internet offenders from contact offenders in order to better understand how and why they engage in offending behaviour;

- To investigate whether or not there are processes specific to internet offending that can account for internet offender behaviour.

Structure of the Thesis

This thesis follows a series of investigations that seek to explore the psychological characteristics of internet offenders in order to identify some psychological processes that might explain their behaviour. Part I (Chapter 1) reviews the current literature into internet offender behaviour and examines the applicability of the Integrated Theory of Sexual Offending to this population. Part II (Chapters 2 and 3) compares internet, contact and mixed internet contact offenders on a series of psychological measures. Part III (Chapter 4) expands on findings from Part II and examines pro-offending attitudes in internet offenders. Part IV (Chapter 5) introduces concepts from behavioural economics that might explain the escalation hypothesis. Part V provides a general discussion of the findings.

Part I (Chapter 1) reviews the current literature on internet sex offenders and examines the applicability of contemporary theories of sexual offender behaviour to internet offender behaviour. Current aetiological and offence-process theories of child sexual abuse are explained and applied to internet offender behaviour. The Integrated Theory of Sexual Offending (ITSO: Ward & Beech, 2006) and Self-regulation Model (S-R Model: Ward & Hudson, 1998) are evaluated in detail for their applicability with the internet offender population. The implications of successfully applying these theories for the assessment of risk and the potential for cross-over between online and offline offences are discussed along with implications for sex offender treatment.

Part II (Chapters 2 and 3) compares community-based internet offenders, contact child molesters and mixed contact/internet offenders on a battery of self-report psychological assessments held on a database by the U.K. National Probation Service. These assessments are designed to measure three of the four clinical constructs related to sex offender behaviour that were hypothesised in Part I to be also relevant to internet offenders: interpersonal functioning; offence-supportive beliefs; and problems in self-regulation. Chapter 2 compares a large sample of internet and contact offenders and assesses the ability of those measures to predict internet or contact group membership. Chapter 3 compares a sample of contact and online-only offenders with a mixed internet/contact offender group that combines a novel sample of individuals with a mixed internet/contact index offence and individuals from the internet offender sample in Chapter 2 who had previous contact offences.

Part III (Chapter 4) follows on from Part II and examines internet-offence supportive attitudes and beliefs in internet offenders. Responses to the Internet Behaviours and Attitudes Questionnaire (IBAQ: O'Brien & Webster, 2006) were examined in a community sample of pre-treatment internet offenders. These data were examined for simple agreement, before a series of factor analyses were used to uncover underlying factors in the data. Finally, the sample was split into groups based on levels of internet use for sexual purposes, parenthood and relationship status. These groups were compared on the factors generated by factor analysis.

Part IV (Chapter 5) follows on from Part III and examines the role of sexual arousal (the fourth clinical construct hypothesised to be relevant to internet offenders in Part I) in internet-offender behaviour. Chapter 5 looks at the effect of sexual arousal on decision-making behaviour and seeks to replicate findings in economics that adult males appear to make more impulsive decisions after viewing sexually-salient cues. A sample of adult heterosexual male internet and non-offender controls are compared two tests of delay discounting (offering hypothetical rewards of either money or pornography) under two conditions (arousal and non-arousal).

Part V (Chapter 6), the concluding chapter, provides an overview of the results, draws together the overall conclusions, discusses methodological limitations, and suggests avenues for future research.

Ethical Approval

The British Psychological Society guidelines for ethical practice were adhered to in the design of the various projects that form this thesis. Ethical approval was obtained from the School of Psychology and College of Life Sciences Ethics Committees at the University of Birmingham. Approval for research proposals was also obtained from the U.K. National Probation Service and The Lucy Faithfull Foundation.

STATEMENT OF AUTHORSHIP

Chapters 1 to 4 contain material that has been published or have been submitted for publication in academic journals. As a consequence, each chapter has an introduction and discussion. Repetition of material has been avoided where possible, but there may be some overlap between chapters. The authorship on each chapter (published, submitted or unpublished) indicates collaborative working. To clarify, I am the senior author, my supervisor Anthony Beech is also named as an author, and both Rebecca Mandeville-Norden and Elizabeth Hayes of the U.K. National Probation Service are named as authors due to their role in maintaining the databases from which the data in Chapters 2 and 3 are sampled.

PART I:

INTRODUCTION

CHAPTER 1:

UNDERSTANDING ONLINE CHILD PORNOGRAPHY USE: APPLYING SEXUAL OFFENSE THEORY TO INTERNET OFFENDERS.

The aim of this chapter is to identify and critically review the extant research on internet offender behaviour. Ward and Hudson (1996) describe three categories of sex offender theory: Level I – comprehensive/multifactorial; Level II –single factor (e.g., cognitive distortion); Level III – temporal/offence-process. First, Level 1 aetiological theories of sexual offending against children are examined, culminating in an appraisal of the application of Ward and Beech's (2006) Integrated Theory of Sexual Offending (ITSO) – described as a Level IV integrated – to the internet offender population. Secondly, Level III offence-process theories are examined, culminating in an appraisal of the application of Ward and Hudson's (2007) Self-regulation (S-R) model to the internet offender population. Finally, the implications of these applications to the assessment of risk and the provision of treatment for this population are discussed.

The following chapter was accepted for publication in Aggression and Violent Behavior, Volume 14, in May/June 2009. This journal requires manuscripts to be submitted with U.S. word spelling.

Understanding online child pornography use: Applying sexual offense theory to internet offenders

Ian A. Elliott [a,b,*], Anthony R. Beech [c,*]

[a] *University of Birmingham, UK*
[b] *Lucy Faithfull Foundation, UK*
[c] *University of Birmingham, UK*

ABSTRACT

This review outlines the links between contemporary etiological and offense-process theories of child sexual abuse and our current knowledge of individuals who commit offenses related to online child pornography. First, we integrate previous behavioral typologies into a four-category internet offender typology. Second, we summarize development of etiological theory and evaluate the strengths and weaknesses of these theories in explaining the child pornography offender. Third, we outline the potential situational and ecological factors relating to the online environment that may also be a cause for the development and maintenance of prurient online behavior. Fourth, we review theories of the offense process and apply these to research into the modus operandi of child pornography offenders. Finally, we examine the usefulness of this approach in the assessment of risk and the treatment of online offenders.

© 2009 Elsevier Ltd. All rights reserved.

Contents

* Corresponding authors. School of Psychology, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK. Tel.: +44 121 4143 319; fax: +44 121 414 8248.
E-mail addresses: iae830@bham.ac.uk (I.A. Elliott), a.r.beech@bham.ac.uk (A.R. Beech).

PART II:

COMPARISONS WITH CHILD MOLESTERS

CHAPTER 2:

PSYCHOLOGICAL PROFILES OF INTERNET SEXUAL OFFENDERS COMPARISONS

WITH CONTACT SEXUAL OFFENDERS

The aim of this chapter is to examine the similarities and differences between internet offenders and contact child molesters. As it is noted in Chapter 1, there is an underlying assumption in the field of sex offender research and treatment that due to the frequent depiction of sexual abuse of children in the images obtained from internet offender's machines, internet offenders will share the same clinical symptoms as child molesters. This study compares internet offenders to contact child molesters using data from the U.K. National Probation Service (NPS) database of pre-treatment assessments. These data are taken from a battery of psychological assessments designed to measure interpersonal functioning, offence-supportive attitudes and beliefs, and self-management problems. Scores on a measure of socially-desirable responding are used to account for deception in the data. Group comparisons are made and the ability of the measures to predict group membership is assessed.

The following chapter was accepted for publication in Sexual Abuse: A Journal of Research and Treatment, Volume 21, in March 2009. This journal requires manuscripts to be submitted with U.S. word spelling.

Full text not available in the digital version of this thesis

Psychological Profiles of Internet Sexual Offenders

Comparisons With Contact Sexual Offenders

Ian Alexander Elliott
University of Birmingham and Lucy Faithfull Foundation, Birmingham, UK

Anthony R. Beech
University of Birmingham, UK

Rebecca Mandeville-Norden
University of Birmingham, UK and Devon and Cornwall Probation Service, Exeter, UK

Elizabeth Hayes
Ministry of Justice, London, UK

A sample of 505 Internet sex offenders and 526 contact sex offenders were compared on a range of psychological measures relating to offense-supportive beliefs, empathic concern, interpersonal functioning, and emotional management. Internet offenders could be successfully discriminated from contact offenders on 7 out of 15 measures. Contact offenders were found to have significantly more victim empathy distortions and cognitive distortions than Internet offenders. Internet offenders were found to have significantly higher identification with fictional characters than contact offenders. Further analysis indicated that an increase in scores on scales of fantasy, underassertiveness, and motor impulsivity were predictive of an Internet offense type. An increase in scores of scales of locus of control, perspective taking, empathic concern, overassertiveness, victim empathy distortions, cognitive distortions, and cognitive impulsivity were found to be predictive of a contact offense type. These findings are discussed in the context of the etiology of sexual offending.

Keywords: *Internet; child pornography; psychological profiles; etiology; etiological pathways*

Introduction

The use of the Internet to view sexually abusive images of children is a politically and emotionally salient problem in modern society. The number of abusive images

76

CHAPTER 3:

THE PSYCHOLOGICAL PROFILES OF INTERNET, CONTACT AND MIXED

INTERNET/CONTACT SEX OFFENDERS

The aim of this chapter is to compare the two groups in Chapter 2 with a mixed offence group. The internet offender sample in Chapter 2 included a number of individuals with previous sexual offences in order to allow us to compare their rates of previous offences with contact offenders. However, it can be argued that internet offenders with previous contact offences, along with individuals who have been charged with internet and contact offences simultaneously, may not display the same characteristics as individuals who have committed internet offences alone. It may also be argued that having a contact offence as well as an internet offence might not necessarily mean those individuals share characteristics with contact-only offenders either. In this study a group of mixed offenders were created using individuals in the NPS database with mixed internet/contact index offences (who were excluded from the sample in Chapter 2) and those individuals from the internet sample in Chapter 2 who had a known history of one or more contact sexual offences. The internet offender group consisted of those remaining in the sample of internet offenders from Chapter 2 after those with contact offences were removed. The contact offender group consisted of the same sample from Chapter 2. In this study a multivariate general linear model was used to compare the results of the three groups on the same NPS battery of psychological assessments as in Chapter 2 and a discriminant function analysis was carried out to examine the linear functions between the groups.

The following chapter has been accepted for publication in Sexual Abuse: A Journal of Research and Treatment and is authored by Ian A. Elliott, Anthony R. Beech and Rebecca Mandeville-Norden. This journal requires manuscripts to be submitted with U.S. word spelling. The format of the manuscript has been altered in places to achieve consistency throughout this thesis. This chapter also received the 2011 Graduate Student Award from the Association for the Treatment of Sexual Abusers (ATSA).

Chapter 3: The Psychological Profiles of Internet, Contact and Mixed

Internet/Contact Sex Offenders

Although they remain a relatively small proportion of all identified sex offenders,

there is increasing concern about the behaviors and management of individuals

with offenses relating to sexually-explicit material involving children (SEM-c) on

the internet. Over the past two decades there has been a concerted effort to

establish the psychological characteristics of these 'internet offenders',

understand how their online offenses manifest, and establish whether or not

they can be distinguished from those who commit contact offenses against

children. By identifying these characteristics and offense processes we will be

better able to develop evidence-based assessment and treatment to those who

are detected, create more effective preventative strategies for online offending,

and gain a better understanding of the relationship between online and offline

sexually offensive behavior.

A number of studies have compared the characteristics of internet

offenders (those who access SEM-c online) and contact sex offenders (those who

physically commit sexual abuses against child victims). These studies have

focused on a number of key variables, such as self-report psychological variables

(see Babchishin, Hanson, & Hermann, 2011), assessments of sexual arousal (e.g.,

Penile Plethysmograph (PPG): Seto, Cantor, & Blanchard, 2006), and both official

and self-reported offense histories (Bourke & Hernandez, 2009; Eke, Seto, &

Williams, 2010; Seto, Hanson, & Babchishin, 2011) Overall, Babchishin et al.

(2011) report in their meta-analysis that internet offenders appear to be

distinguishable from contact offenders by a lower level of victim empathy

deficits, fewer distorted beliefs and attitudes (cognitive distortions) about the appropriateness of sexual contact between adults and children, and by a greater level of sexual deviance.

Since the growth in criminal justice cases relating to SEM-c there has been public and professional concern about the level of overlap between the use of SEM-c and the commission of contact child sex offenses. There is considerable debate within the criminal justice field about the size and proportion of offenders in the internet offender populations who may also have contact offenses and vice versa. In the context of online offending, these dual online/offline offenders are typically referred to as either 'cross-over' or 'mixed' offenders. Based on those individuals known to the criminal justice system, there are three offending routes by which a sex offender could be categorized as a mixed offender. Firstly, an individual with prior contact offenses may be detected for a subsequent internet offense. Secondly, an individual with a prior internet offense may be detected for a subsequent contact offense. Finally, an individual may be detected for internet and contact offenses simultaneously, regardless of their offending history. However, these criminal justice categorizations are arbitrary in nature, being based only on official outcomes, and may not represent a true representation of the behaviors motivations of the individual.

The link between SEM-c (indeed any pornography) and contact sex offenses remains unclear. It seems that there are a number of sex offenders who express their sexual interest in children exclusively through SEM-c and are unlikely to commit contact offenses (Seto et al., 2011). For these individuals a number of potential motivations for SEM-c use have been hypothesized. These include the use of SEM-c as an aid for sexual arousal and masturbation, as a

means of escape from reality, for the facilitation of social contacts with like-minded individuals, and even as a self-medication strategy to avoid contact sexual offenses (Taylor & Quayle, 2003; Ward & Hudson, 1998). There are very different motivations and goals involved in each of these, including sexual, emotional, self-regulatory and interpersonal goals. McManus, Long, and Alison (2011) note that there is, on one hand, an argument that SEM-c is implicated in the development of contact offending and that on the other hand there is an argument that SEM-c acts as a diversion from contact offending. They subsequently argue that some offenders escalate from SEM-c to contact offending whilst other offenders access SEM-c as part of an established history of contact offenses. There is also evidence, both before and after the proliferation of internet access, for the use of SEM-c in the modus operandi of contact offenders – some of whom will be producers of child pornography themselves (Bernard, 1985; Riegel, 2004). Conversely, Taylor and Quayle (2003) note that for some individuals, their use of SEM-c may fuel a sexual interest in children and consequently may increase the risk of them seeking to act out offline the activities they see.

Only a small number of studies exist that account for these mixed offenders in comparisons between internet and contact offenders. Howitt and Sheldon (2007) compared small groups of internet, contact and mixed offenders (based on known offenses) on a measure of offense-supportive cognitions. They developed a measure based on the application of the *implicit theory* approach to the cognitive distortions of child molesters (Ward & Keenan, 1999), but that does not assume contact offenses on the part of the respondent. The implicit theory approach proposes five deep cognitive schema held by individuals with a

sexual interest in children: (1) that children are sexual objects; (2) that sexual activity is not harmful; (3) that some people are superior to others and deserving of special treatment; (4) that the world is inherently dangerous; and (5) that behavior is uncontrollable and driven by external forces. The authors found few significant differences between the three groups on any of the scales, suggesting that general sexual offense-supportive cognitions are typically endorsed by all three groups equally. Only two significantly differences were noted. Firstly, the internet group appeared to more frequently endorse items relating to the belief that children are sexually sophisticated than the contact group. However, it has been noted that internet offenders may be more likely to objectify victims in images rather than in real life, especially if they are deliberately stylized to make the child look willing and engaging (Elliott & Beech, 2009). Secondly, the contact group appeared to frequently endorse items related to beliefs that the world is a hostile place and that adults cannot be trusted than the mixed group.

A recent study by Neutze, Seto, Schaefer, Mundt, and Beier (2011) compared a self-referred non-criminal justice sample of 137 contact-only, internet-only and mixed offenders, on a wider series of self-report measures. Their entire sample had received a specific diagnosis of pedophilic or hebephilic sexual interest. They categorized their sample based on self-reported offences over the offender's lifetime. They used principle components analysis to identify four superordinate domains that were being assessed by the various scales on the measures: emotional deficits, offense-supportive cognitions, sexual self-regulation problems, and non-conformity. They found no significant differences between the three groups for any scales on the measures. The authors suggest that the lack of differences may be a function of their sample composition, being

that their sample was taken from self-referred individuals rather than those who have been convicted. Those seeking treatment may be more motivated to change than those whose treatment has been prescribed and therefore they may be more likely to have challenged and reflected on their own offending.

Seto, Wood, Babchishin and Flynn (in press) compared contact offenders with two groups of online offender – those with SEM-c related offenses and those with online solicitation offenses. Like, Neutze et al (2011), they noted that similarities between the groups were more evident than differences. Those differences that were found were on dynamic risk variables. The two online groups demonstrated lower capacity for relationship stability than the contact group. Consistent with the findings of Babchishin et al. (2011) they also found that their SEM-c group reported greater deviant sexual arousal than the contact offenders on the Static-2007 measure. They note though that this may be due to the SEM-c use in this group being used as evidence for deviant sexual arousal in the Static-2007. Nonetheless, the SEM-c group was more likely to self-report pedophilic sexual interests than the solicitation and contact offender groups and more hebephilic interests than the contact group. In turn, the solicitation group was more likely to admit SEM-c use than the contact group and was more likely to self-report hebephilic sexual interests.

As such, there is growing evidence that individuals with a variety of combinations of contact, internet, and online solicitation offenses may differ on a number of psychological and dynamic risk variables. The aim of this investigation is to assess the extent to which a criminal justice-defined mixed offender group shares characteristics with contact and internet groups. Given previous comparisons between the two groups on the same battery of self-report

measures it is expected that the internet and contact groups will be likely to differ most prominently on variables related to victim empathy and cognitive distortions. What remains to be understood is the extent to which mixed offenders share characteristics with contact offenders (e.g., greater victim empathy distortions, more frequent cognitive distortions) or internet offenders (e.g., greater relatedness to fictional characters), or have a combination of both. Alternatively, they may demonstrate a unique profile unrelated to either contact or internet offenders.

To explore this, three analyses will be conducted. Firstly, the contact, internet, and mixed offender groups will be compared on a measure of socially-desirable responding, the results of which will be used to correct the self-report scores for potential response bias. Secondly, contact, internet, and mixed offenders are compared on a range of psychological variables, based on clinically–observable deficits typically noted in sex offenders (Hanson & Harris, 2000; Thornton, 2002; Ward & Beech, 2006; Ward & Siegert, 2002). Thirdly, those variables that are found to significantly differ were used to determine the linear combination that best classifies cases into the three groups.

Method

Sample

A sample consisting of 526 contact offenders, 459 internet offenders and 143 mixed offenders was compared. The contact offender group consisted of individuals with an index contact offense against a child (e.g., rape, indecent assault, gross indecency, perpetrated against a person under the age of 16) and no known index or prior convictions for internet offenses. Of these offenders

where the information was available (n = 520) 124 (23.8%) also had previous known convictions for sexual offenses. The internet offender group consisted of individuals with an index internet-related sexual offense (e.g., the possession, distribution, and/or making[1] of indecent images of a person under the age of 18) and no known index of prior convictions for contact offenses. The mixed offender group consisted of 97 offenders who had a combination of contact and internet index offenses and 46 offenders who had only an index internet offense but also had known previous convictions for contact offenses against children. Our inclusion criteria for this group also included individuals with an index contact offense and previous internet offenses, though no such offenders existed in the data set. Offenders with index offenses related to online "grooming" or the procurement of children online were also excluded from the sample. It was decided that we could not include them in the internet group as their behavior represents direct victimization of a child, nor could we include them in the contact group as the offense is based on the act of arranging to meet a child after online grooming and we would not know whether or not they have committed a contact sexual offense. We note that these groups are based on broad legal definitions and it should be stressed that there is likely to be a degree of heterogeneity within the groups in regard to the extent of their offending behaviors.

Demographic information was obtained from each offender's pre-sentence report. Demographic details were not available for all offenders in the sample due to missing data in some files, and therefore the total numbers in

---

[1] This should be distinguished from the 'taking' of an image (which could be considered a form of contact offending) and refers to the deliberate creation of an electronic copy of an indecent image of a child (see Gillespie, 2005).

Table 1 correspond to those offenders for whom the data were recorded. A univariate GLM revealed a significant effect of age, $F = 4.03$, df = 1097, $p < .05$, however the magnitude of this difference was small[2] ($r = .06$). Post-hoc analysis showed that the contact offender group was significantly older than the internet offender group ($p <. 05$). There was a significant difference in relationship status between the groups, χ^2 (4), 34.08, p<.001, which was likely to be a reflection of the higher proportion of internet offenders that were recorded as 'single' and the lower proportion that are divorced, separated, or widowed. There was a significant difference in parenthood, χ^2 (4), 37.63, p<.001, which was likely to be a reflection of the increase in the relative proportions of fathers from the internet (lowest), through the mixed, to the contact group (highest). There was also a significant difference in victim gender, χ^2 (4), 183.61, p<.001), which was likely to be a reflection of the higher proportion of internet offenders with a combination of male and female victims. This is potentially a result of the often indiscriminate nature of downloading (e.g., through peer-to-peer software) and the vast quantities of images that some internet offenders collect, rather than a systematic difference in sexual preference.

Table 1. Socio-Demographic and Offense-Related Characteristics of Contact, Mixed and Internet Offenders.

	Contact	Mixed	Internet
Age	($n = 518$)	(n = 139)	(n = 444)

---

[2] Cohen (1988) defined the threshold of a small effect size as d = .20 ($r = .10$), a medium effect size as d = .50 ($r = .24$), and a large effect size as d = .80 ($r = .37$).

	42.2 (14.3)	42.0 (11.9)	39.9 (11.3)[a]
Relationship status (%)	(n = 526)	(n = 140)	(n = 443)
Single	45.6	48.6	58.1
Married/Co-habiting	20.4	18.6	24.0
Separated/Divorced/Widowed	34.1	32.9	17.9[c]
Parent (%)	(n = 522)	(n = 131)	(n = 438)
Yes	60.7	51.1	40.9
No	39.3	48.9	59.1[c]
Victim gender	(n = 524)	(n = 125)	(n = 374)
Male	17.6	20.0	9.1
Female	79.6	60.8	53.7
Combination	2.9	19.2	37.2[c]

Measures

The U.K. Probation Service determine suitability for a sex offender treatment program using Beech's (1998) deviancy algorithm, a pre-treatment screening system that uses a battery of psychological self-report measures. Data for this study represented archival raw scores from these pre-treatment assessments. The measures assess three[3] of the four sets of clinical phenomena often displayed by sex offenders (Hanson & Harris, 2000; Thornton, 2002; Ward & Beech, 2006; Ward & Siegert, 2002): offense-supportive beliefs, interpersonal deficits, and emotional dysregulation. This study utilized these pre-treatment scores to compare self-report characteristics between the three groups.

---

[3] Deviant sexual arousal is difficult to assess using self-report measures and is more typically measured using clinical assessment, the penile plethysmograph (PPG), or polygraph testing (Beech, Fisher, & Thornton, 2003).

The following scales were used in the analysis. Scales 1-3 measure offense-related beliefs and attitudes, scales 4-10 measure levels of social adequacy and interpersonal functioning, scales 11-15 measure ability to effectively manage emotions and behaviors, and scale 16 was used to correct for socially-desirable responding: (1) Victim Empathy Distortion Scale (Beckett & Fisher, 1994); (2 & 3) Children and Sex Cognitions Questionnaire (Beckett, unpublished); (4) Short Self-esteem Scale (Thornton, unpublished; Webster, Mann, Thornton & Wakeling, 2006); (5) University of California Los Angeles (UCLA) Loneliness Scale (Russell, Peplau & Cutrona, 1980); (6 & 7) Kingston Sexual Behavior Clinic: Social Response Inventory (Keltner, Marshall & Marshall, 1981); (8, 9, 10, & 11) Interpersonal Reactivity Index (IRI) (Davis, 1980); (12) Nowicki-Strickland Locus of Control Scale (Nowicki & Duke, 1974); (13, 14, & 15) Barratt Impulsivity Scale 11 (BIS-11) (Barratt, 1994) ; (16) Paulhus Deception Scales (PDS) (Paulhus, 1998). Full descriptions of these measures, including statistics related to internal reliability and test-retest reliability, can be found in Elliott, Beech, Mandeville-Norden, and Hayes (2009).

Results

Three analyses were carried out. First, an analysis of socially-desirable responding was conducted to assess its impact on these self-report measures. A mathematical correction was then applied to the raw scores to correct for socially desirable responding. Subsequently, two main analyses were carried out: (1) a multivariate general linear model with post-hoc comparisons to ascertain significant group differences; and (2) a discriminant function analysis

to understand how the measures related to each other in order to determine group membership. These are described in turn below.

Socially-desirable responding

A multivariate general linear model (GLM[4]) analysis revealed a significant multivariate difference between the groups on the PDS measure of socially-desirable responding, $F = 18.60$, df = 1125, $p<.001$. As seen in Table 2, main effects were also found for each of the PDS subscales: IM ($p <.05$, $r = .06$) and SDE ($p <.001$, $r = .18$). Post-hoc comparisons indicated a significant difference between the contact and internet groups on the PDS Impression Management scale ($p <.01$). Significant differences were also found on the Self-deceptive Enhancement scale between the contact group and both the mixed group ($p <.001$) and the internet group ($p <.001$). Though this suggests that contact offenders are somewhat more likely than mixed and internet offenders to show an unconscious bias toward favorable self-description, it is important to note that the multivariate effect size (.18) is low in magnitude.

To correct for socially-desirable response bias, the self-report scores were adjusted using a statistical technique devised by Saunders (1991). The regression coefficient for predicting the unadjusted score for each measure from the offender's score on the response validity measure is derived for each comparison group using the regression formula: Y = (a) (x) + b, where Y is the unadjusted score, (a) is the regression coefficient, and (x) is the score on the accountability measure. This regression coefficient provide a coefficient by

---

[4] As we use this acronym from this point, it is worth noting that it should not be confused with the Good Lives Model (GLM) approach to sex offender treatment.

which scores on a measure increase or decrease, within each group, for every 1 unit increase in PDS total score (i.e., the effect of increasing levels of socially-desirable responding on a group's scores on a particular measure). The adjusted score (Y^1) is the calculated by multiplying the accountability score by the regression coefficient and subtracting this from the unadjusted score: $Y^1 = Y - (a)(x)$.

Comparisons of samples

A multivariate GLM analysis[5] revealed a significant multivariate difference between the groups on a range of psychological measures, $F = 10.69$, df = 1124, $p < .001$; Wilks' Lambda = .764. Univariate F tests indicated that there were significant differences between the groups on 9 out of the 15 measures. These can be seen in Table 2, along with means, standard deviations and Pearson's r correlational effect size. The values for the scales below the first two rows (the PDS scales) have been adjusted using the Saunders correction for socially-desirable responding.

Table 2. Multivariate General Linear Model Analysis Between the Contact, Mixed and Internet Groups on a Range of Psychometric Measures After Adjustment For Socially-Desirable Responding

	Contact (n = 526)	Mixed (n = 142)	Internet (n = 459)	F	Correlational effect size (r)	Post-hoc findings
Impression	8.7 (4.0)	8.2 (4.1)	7.9 (3.6)	4.621[a]	.06	C>I[a],

---

[5] An initial GLM accounting for the significant differences in age, parenthood, and victim gender resulted in group differences for all variables being highly (and improbably) significant. Given the small effect sizes for these differences and the issues relating to sampling (especially in victim gender) the GLM presented here does not include these demographic factors as covariates.

management						
Self-deceptive enhancement	4.2 (3.5)	3.0 (2.9)	2.5 (2.5)	37.833[b]	.18	C>M[b], C>I[b]
Victim empathy distortions	36.0 (25.9)	29.1 (20.2)	21.5 (18.8)	50.12[b]	.21	C>M[b], C>I[c], M>I[c]
Children and Sex: Cognitive Distortion	15.6 (10.1)	12.4 (10.3)	11.0 (7.9)	31.01[b]	.16	C>M [b], C>I[c]
Children and Sex: Emotional Congruence	14.6 (10.3)	13.6 (9.5)	12.4 (8.6)	6.55[a]	.08	C>I[c]
Thornton Self-esteem	3.2 (2.3)	3.3. (2.5)	3.2 (2.3)	.17	.01	-
Emotional loneliness	47.1 (10.6)	46.9 (10.5)	46.5 (11.1)	.37	.02	-
Under-assertiveness	11.5 (6.6)	11.7 (7.0)	12.4 (6.0)	2.05	.04	-
Over-assertiveness	1.8 (2.6)	0.8 (1.9)	1.3 (1.6)	14.30[b]	.11	C>M[c], C>I[c], I>M[a]
IRI Perspective taking	15.2 (5.1)	16.1 (4.6)	15.0 (4.5)	2.69	.05	M>I[a]
IRI Empathic concern	19.0 (4.3)	20.8 (4.0)	18.5 (4.4)	14.39[b]	.11	M>C[c], M>I[c]
IRI Fantasy	12.6 (4.8)	15.0 (5.2)	14.5 (4.8)	24.53[b]	.15	C<M[c], C<I[c]
IRI Personal distress	12.6 (5.4)	13.8 (5.5)	12.2 (4.9)	4.56[a]	.06	M>I[a]
Locus of control	15.0 (5.5)	12.2 (5.8)	13.4 (5.0)	20.38[b]	.13	C>M[c], C>I[c]
Barratt Impulsivity Scale-11: Motor	21.8 (4.3)	21.5 (3.7)	22.2 (4.0)	2.40	.05	-
Barratt Impulsivity Scale-11: Cognitive	25.7 (3.8)	24.6 (3.5)	24.5 (3.5)	13.21[b]	.11	C>M[b],C>I[c]
Barratt Impulsivity Scale-11: Non-planning	26.6 (4.9)	26.8 (4.3)	25.9 (4.3)	3.28	.05	-

[a] Significant to p<.05,
[b] Significant to p<.01,
[c] Significant to p<.001

Post-hoc analyses[6] were carried out to assess differences between the three groups. Six of the 15 measures appeared to significantly distinguish the contact group from both the mixed and internet groups: a greater frequency of victim empathy distortions, a greater frequency of cognitive distortions, lower fantasy scores, a more external locus of control, over-assertiveness, and higher levels of cognitive impulsivity. On these 6 measures, mixed offenders could also be distinguished from internet offenders as having a greater frequency of victim empathy distortions and lower scores for over-assertiveness. On three measures the mixed offenders could be significantly distinguished from the other two groups. The mixed group demonstrated significantly higher levels of empathic concern than the contact group, and significantly higher levels of personal distress and increased perspective-taking than the internet group. Finally, the contact group could be distinguished from the internet group on one measure, demonstrating significantly higher levels of emotional congruence with children.

Discriminant function analysis

A discriminant function analysis (DFA) was conducted to determine the linear combination of measures that best classifies cases into the three groups. The seven measures on which the groups significantly differed (and where $r > .10$) in the multivariate GLM were included in a stepwise DFA analysis: victim empathy, cognitive distortion over-assertiveness empathic concern, fantasy, locus of control, and cognitive impulsivity. Two significant functions were derived from

___

[6] Games-Howell tests were used, as this test takes into account unequal sample sizes and does not require population variances to be equivalent (Field, 2009).

the DFA. The eigenvalues, relative variance, canonical correlations, and significance are shown in Table 3.

Table 3. Statistical Significance for the Derived Discriminant Functions.

Function	Eigenvalue	% variance	Canonical correlations	Wilks lambda	χ2	df	Sig.
1	.173	80.9	.384	.819	224.27	12	<.001
2	.041	19.1	.198	.961	44.90	5	<.001

As shown in Table 4, the classification of cases on the basis of these discriminant functions is substantially better than chance (39.9%[7]), with 57% of the observed cases being correctly classified. The overall accuracy of classification is likely to be reduced by the incorrect classification of the vast majority of the mixed offender group. The percentage of correct classifications for cases in both the contact and internet groups was 65.8% and for the mixed group the percentage was 0.7%. Using the discriminant functions, 44.8% of the mixed offenders were classified as contact offenders and 54.5% were classified as internet offenders.

As we created our mixed offender group from two sources (those with mixed index offenses and those with historical contact offenses) it was important to rule the source out as a potential cause of the misclassification of mixed offenders - that all those misclassified as internet offenders, for example, are not disproportionately from one source or the other. Using the casewise statistics it was found that of those individuals with a both index contact and internet offenses 54 were classified as internet offenders and 43 were classified as contact offenders. Of those individuals with index internet offenses and historical

_____

[7] Calculated by dividing the sum of the weighted probabilities of correct classification for each group by the total *N* (Tabachnick & Fidell, 2007): ((526*.47)+(459*.41)+(143*.13))/1128 = 450.2 (39.9%) cases correctly classified by chance alone.

contact offenses 24 were classified as internet offenders and 21 were classified as internet offenders. This demonstrates that there was a relatively even spread of offenders from each source that were misclassified and hence source does not appear to account for the misclassification of mixed offenders.

Table 4. Percentages of Group Classification (*n*)

		Predicted group membership			Total
		Contact	Mixed	Internet	
Original	Contact	65.8 (346)	34.0 (179)	0.2 (1)	526
group	Internet	34.2 (157)	65.8 (302)	0.0 (0)	459
membership	Mixed	44.8 (64)	54.5 (78)	0.7 (1)	143

57% of original grouped cases correctly classified.

Function one was related to offense-supportive attitudes and fantasy (cognitive distortion, victim empathy, and fantasy) and discriminated contact offenders from internet offenders and mixed offenders, and to a lesser extent mixed offenders from internet offenders. Function 1 contributes the most to discriminatory power, representing 80.2% of the variance in the data. Function two was related to empathic concern and self-management (empathic concern, locus of control, over assertiveness, cognitive impulsivity) and discriminated mixed offenders from contact and internet offenders.

Discussion

This study found that mixed offenders present a self-reported psychological profile that shares more common characteristics with internet offenders than contact offenders, whilst occupying an approximate median position between contact and internet offenders on others. Overall, the findings appear to suggest that mixed offenders present with clinical symptoms more similar to internet

offenders rather than to contact offenders. In addition, mixed offenders present with more self-management deficits than internet offenders. A DFA demonstrated that the key linear difference based on the significant variables significant from the GLM was a function relating to the frequency of offense-supportive attitudes and identification with fictional characters. Contact offenders demonstrated a greater frequency of cognitive distortions and victim empathy distortions, whereas internet and mixed offenders had a greater ability to relate to fictional characters.

Mixed offenders and offense-supportive beliefs

The findings suggest that offenders with index offenses relating to SEM-c are less likely than those with contact-only offenses to endorse beliefs such as "the victim enjoyed what happened" or "the victim was not harmed by what happened". There is an extensive literature on pro-offending attitudes held by child molesters and how they relate to offense-related behavior (e.g., Abel, Becker, & Cunningham-Rathner, 1984, Maruna & Mann, 2006; Marziano, Ward, Beech, & Pattison, 2006; Ward & Keenan, 1999). However, it has been noted that internet offenders do appear to be aware of the harm caused by sexual contact between children and adults, but may cognitively distance themselves from the abusive nature of the images to justify their use of images through a belief that they are not responsible for any harm caused by the activities depicted (Howitt & Sheldon, 2007; Quayle & Taylor, 2002). They also appear to view other sex offenders (child molesters and rapists) as more dangerous, harmful and deviant as themselves (Malesky & Ennis, 2004; Winder & Gough, 2010).

It appears contradictory to find that mixed offenders do not hold offense-supportive beliefs about sexual activity between adults and children given that they have current or historical contact sex offenses against children. This raises the question as to how mixed offenders that have presumably been exposed to the harmful realities of the sexual offense process, appear to have greater victim empathy and less cognitive distortions than contact-only offenders. This appears to be counter-intuitive to the 'escalation hypothesis' proposed by Taylor and Quayle (2003). This hypothesis suggests that ongoing exposure to SEM-c creates maladaptive schema about the appropriateness of child sex relations that increase the appeal of contact offending as an acceptable response to negative emotions or life stressors. It might have expected that the mixed group would demonstrate these cognitive distortions to justify their contact offending behavior.

Evidence for the effect of pornography on attitudes appears to be conflicting and inconsistent. Paul and Linz (2008), for example, found that although there is evidence that viewing 'virtual child pornography' (so-called 'barely legal' material, where the performer is over 18 but appears younger) may create cognitive associations between youth and sexuality, there was no evidence that this led to attitudes and beliefs that child-sex imagery is socially-acceptable. Conversely, a meta-analysis by Hald, Malamuth and Yuen (2009) found that attitudes supporting violence towards women were significantly correlated with the use of pornography, especially violent pornography. As A number of studies have noted that noted, however, that the role of pornography on violent and sexually abusive outcomes appears to be principally related to be men who demonstrate a variety of risk for sexual aggression and use

pornography frequently (e.g., Kingston, Malamuth, Fedoroff, & Marshall, 2009; Langevin & Curnoe, 2004; Seto, Maric, & Barbaree, 2001)

Mixed offenders and fantasy

The finding that the mixed group shares with the internet group a greater ability to relate to fictional characters is perhaps not surprising, given the use of SEM-c in both groups. A previous study using these measures with groups of child-related sex offenders (Elliott et al., 2009) noted that users of SEM-c were more likely to endorse items associated with emotional engagement in a story or empathizing with characters in fictional work. These elevated scores for fantasy demonstrated by internet and mixed offenders also appear consistent with the nature of SEM-c itself. To the user, the children depicted in SEM-c material may represent characters performing a role for an audience, be it a harmful role. SEM-c is often deliberately stylized to meet audience demands for smiling children in order for that audience to be able to engage in fantasies of compliant, willing children without being exposed to a reality of exploitation and abuse (Taylor & Quayle, 2003). This link between fantasy and SEM-c may also be linked to the evidence that SEM-c offenders have higher levels of sexual deviance and preoccupation than contact and solicitation offenders (e.g., Babchishin et al., 2011; Seto et al, in press).

Although neither deviant sexual interest nor sexual preoccupations were directly assessed by the scales in this study, this ability to engage with fictional material could be a function of sexual preoccupation and deviant interest for SEM-c users. Further research is needed to investigate whether heightened levels of fantasy predict the use of pornography. In particular, to examine whether

individuals who feel they relate to fictional characters are potentially drawn to material depicting sexual activity as a sexual outlet or whether the stylization of pornographic imagery creates a sense of engagement with fictional characters and scenarios.

Mixed offenders and self-management

One possible explanation for the contact offending by a population of mixed offenders who may not share the cognitive distortions of contact-only offenders is their self-management skills. The second (though less influential) factor in the DFA was the higher levels of empathic concern and poor self-management that distinguished the mixed offenders from the internet offenders. Sex offenders have often been noted to use sex as a coping strategy to deal with difficult and stressful situations (Cortoni & Marshall, 2001; Stinson, Becker, & Sales, 2008). This lack of self-management may explain how a group of individuals who do not appear to have such deficits in victim empathy or hold pro-offending attitudes supporting adult-child sexual relationships commit contact offenses. Babchishin et al. (2011) suggest that it may plausible that those internet offenders who demonstrate higher levels of sexual deviance but do not commit contact offenses, might have greater self-control. Hence, those who do commit contact offenses may do so due to a lack of self-management skills. Ward & Hudson (1998) suggested that the use of SEM-c by individuals with a sexual interest in children actually represents a maladaptive strategy to avoid contact offending. These maladaptive self-management strategies may actually have the opposite effect and increase the risk of contact offending. It should be noted, however, that their

work predates the availability of online SEM-c in a era and when SEM-c use may have only been detected after contact offenses.

Limitations

It is important to note that the effect sizes for all of these differences were small in magnitude, with only the difference in victim empathy being considered a medium-sized effect. Similarly, the DFA findings should be treated with some caution as the self-management factor accounts for only a small amount of the variance and around one-third of the sample were miscategorized by the two factors. Hence, it is likely that these represent only subtle rather than extreme differences between the groups. A potential methodological limitation is the self-report approach to assessment. The scores presented here are pre-treatment scores obtained after arrest and during the early stages of probation supervision as a sex offender. Therefore, it could be argued that the participants may not be responding in the same way under supervision that they might have responded during the period in which they were offending.

Additionally, these psychological measures were chosen to assess treatment need and effectiveness in contact sexual offenders before the emergence of the internet sexual offenses. Howitt and Sheldon (2007) noted that the disparity between clinical and self-report measure approaches to eliciting and measuring cognitive distortions in internet offenders somewhat undermines the self-report approach for that population. Hence, the scales used here may be measuring constructs that are perhaps either unrelated to internet offenders or are not capturing offense-related concepts relevant to online offenses. There was also no measure of socio-economic status and we were unable to test any

assumptions that access to the technology could be a systematic variable in an analysis of this type. The self-report measures used in this analysis also do not assess sexual interest. As such there was not an opportunity to explore the extent to which our mixed offender sample integrates into the findings of Babchishin et al. (2011) that deviant sexual interest is a key difference between online and offline offenders.

Though the sample was, in criminal justice terms, reasonably large, they are taken from a community-based population and therefore may not represent their respective populations as a whole as there is no comparison to either incarcerated or non-criminal justice offenders. It can be assumed that offenders who have been sentenced to a community sentence will have committed offenses that were not considered serious enough, or did not have a long enough criminal history, to warrant incarceration. Internet offenses are often very difficult to detect, and hence there may be subsets of these offenders that we do not see or have access to (Neutze et al., 2010; Ray, Kimonis, & Donoghue, 2010). Similarly, it is not known whether or not individuals in both our internet and contact samples have undetected offenses of the other type. This may be particularly important in light of evidence that internet offenders have been found to self-report further contact offenses or risky sexual behavior during treatment (Bourke & Hernandez, 2009) and during polygraph examination (Buschman et al, 2010). The lack of self-reported data for previous contact and internet offenses may have led to some offenders being incorrectly labeled from the outset, as some of the single-offense groups may have been more appropriately placed in the mixed group had these data been available.

Data were also not available regarding the ages of the victims and as such we may be making comparisons between very different groups. For example, if a large number of the internet group were accessing images of victims aged 16-18 this may not be comparable with the contact group. This is because the contact group does not contain individuals with victims in this age group due to the U.K. age of consent, where contact offenses perpetrated against 16-18 year olds would be considered an adult sex offense.

Conclusions

This investigation has uncovered some potential leads in our understanding of those offenders who have a combination of both contact and internet sex offenses. They appear to present a more similar profile on self-report psychometrics to internet offenders rather than contact offenders but appear to have somewhat poorer emotional self-management than the other two groups. These findings may generate more questions than they provide answers, and we would strongly encourage further research into the internet offense process in terms of how individuals on the three mixed offense pathways differ in terms of how their cognitive processes are affected by the immediate effects of internet use and how this might affect self-control and subsequently potentially harmful online behaviors.

In terms of clinical practice with mixed offenders, this suggests that clinicians that encounter mixed offenders may need to first assess what *type* of mixed offender they are presented with, and understand that even though a mixed offender has committed a contact offense their treatment needs may look somewhat different from those who commit contact offenses alone. Indeed, if

more thorough policing techniques mean that mixed offenders become more prevalent, assessment and treatment for all contact offenders may need to incorporate some internet-specific elements to account for this potentially hidden population.

PART III:

COGNITIVE DISTORTION

CHAPTER 4:

AN EXAMINATION OF OFFENCE-SUPPORTIVE ATTITUDES AND BELIEFS IN A

SAMPLE OF U.K. INTERNET SEX OFFENDERS

The key finding in Part II of this thesis is that the main difference found between individuals with contact offences and those with internet offences – seemingly regardless of whether they have a history of contact sexual offences and accounting for socially desirable responding – appears to be that internet offenders score significantly lower than contact offenders on measures of cognitive distortions and victim empathy deficits. There are two potential reasons for this: (1) they do not hold pro-offending beliefs; (2) their pro-offending beliefs are not being measured by the instruments used. The measures used in Part II were designed and developed for use with adult male child molesters and as such measure pro-contact-offending attitudes and beliefs. These include beliefs that sexual contact between adults and children is appropriate, that children can initiate and enjoy sexual contact, that children are more trustworthy than adults, etc. It has been argued that therefore they may not be appropriate for use with internet offenders and are unlikely to measure those utterances that are commonly heard by clinical staff working with that population (e.g., Howitt & Sheldon, 2007; O'Brien and Webster, 2006). For these reasons, attempts have been made to develop internet offence-specific self-report assessments including the CS&A (Howitt & Sheldon, 2007) and the IBAQ (O'Brien & Webster, 2006). The aim of this chapter is to assess the extent to which internet offenders endorse internet-specific offence-supportive attitudes using the IBAQ. The data is taken from the responses of pre-sentence, pre-

treatment internet offenders attending The Lucy Faithfull Foundation's Inform+ psycho-educational programme.

The following chapter has been submitted to Criminal Justice and Behavior for review and is authored by Ian A. Elliott and Anthony R. Beech. This journal requires manuscripts to be submitted with U.S. word spelling. The format of the manuscript has been altered in places to achieve consistency throughout this thesis.

Chapter 4: An Examination of Offense-supportive Attitudes and Beliefs in a Sample of U.K. Internet Sex Offenders

The number of individuals being convicted of sexual offenses relating to the use of the internet to view sexually explicit material involving children (SEM-c) is ever increasing (Motivans & Kyckelhahn, 2007; Wolak, Finkelhor, & Mitchell, 2011). Due to the frequent depiction of sexual victimization in many images recovered from the computers of these individuals there remains an enduring assumption that these individuals share psychological and offense characteristics with child molesters who commit offenses against children directly (Elliott & Beech, 2009). This is partly due to the concern that internet offenders' engagement with SEM-c might increase their risk of committing future contact offenses against children. Some internet offenders do indeed have previously committed, or go on to commit, contact offenses, although it appears that only around 13% of internet offenders are subsequently charged with a new sexual offense (Eke, Seto, & Williams, 2010). However, recent estimates suggest that around 55% of internet offenders have committed a prior undetected contact offense (Seto, Hanson, & Babchishin, 2011). There still appears to remain a significant minority of internet offenders who offend on the internet alone, and hence there seems to be reason to challenge an assumption that internet offenders and contact offenders will necessarily be similar in their psychological characteristics.

A recent meta-analysis into the psychological differences between internet and contact sexual offenders found that two key characteristics distinguish internet offenders from child molesters: (2) higher levels of sexual

arousal to images of children; and (2) higher levels of victim empathy for victims of sexual abuse and fewer beliefs and attitudes that promote or justify sexual contact between adults and children (Babchishin, Hanson, & Hermann, 2011). Hence, although internet offenders are motivated to access SEM-c, it appears that they do not demonstrate those attitudes and beliefs supportive of sexual contact between adults and children commonly found in contact sex offenders. Gannon and Polaschek (2006) refer to the presence of these attitudes and beliefs in sex offenders as the *cognitive distortion hypothesis*, which states that at the point of contact for clinical work or research, sex offenders "hold relatively well-established and generalized offense-related beliefs that facilitate sexual offenses against children" (p. 1001).

Recently, Ward and colleagues (Ward, Gannon, & Keown 2006; Ward, Keown, & Gannon 2007) have sought to integrate the structural, temporal and pathological issues in previous theories of cognitive distortions into one theoretical framework – the judgment model of cognitive distortions (JMCD). According to the JMCD cognitive distortions fall into three categories based on three processes by which humans evaluate social information, and make judgments about the world: (1) *belief*-based judgments, (2) *value*-based judgments, and (3) *action*-based judgments. *Belief*-based judgments refer to those evaluations of the world generated by underlying schema, or *implicit theories* (IT: Ward, 2000; Ward & Keenan, 1999). These IT guide the processing of information, so that novel or ambiguous information is interpreted in a schema-congruent manner (Ward, 2000). *Value*-based judgments, refers to positive or negative evaluations of the world. Value-based cognitive distortions represent those judgments offenders make in order to achieve primary human

goods (Ward & Gannon, 2006; Ward & Stewart, 2003), such as nurturing

relationships, autonomy, or the mastery of skills, in maladaptive ways. For

example, believing children to be more trustworthy than adults represents a

value judgment to justify attainment of nurturing relationships through

inappropriate contact with children. *Action*-based judgments refer to judgments

based on actions, implications, and consequences, for example, post-hoc

rationalizations of behaviours acted out, and denial and minimalization. These

three types of judgment interact with and influence each other when called upon

to resolve interpersonal and circumstantial problems.

Taylor and Quayle (2003) outlined an internet offense-specific

description of cognitive distortions, suggesting four categories of cognitive

distortion: (1) those justifying SEM-c as 'only pictures' – essentially post-hoc

action-based judgments; (2) those normalizing SEM-c behaviour because others

are engaged in it - essentially value-based judgments; (3) those that objectify the

images – essentially value-based judgments about the distinction between

children in online images and offline reality; and (4) those that justify other

forms of engagement with SEM-c (such as trading, or even production of images)

through collusion with like-minded individuals in online networks. Burke,

Sowerbutts, Blundell and Sherry (2002) note that these value-based judgments

may play an important role in permitting an offender to maintain a distinction

between themselves and those who commit contact sex offenses. Similarly,

Winder and Gough (2010) focus on the phenomenon of self-distancing. They

found that a central element of internet offender accounts is a need to establish a

clear moral separation between their behaviours and those of other sex

offenders, such as child molesters or rapists, and a rejection of the label of 'sex

offender'. This self-distancing phenomenon may be seen as a mix of action-based judgments that the consequences for internet offences are less harmful than contact offenders, and value-based judgments that internet offenders are not as dangerous as child molesters or rapists.

There is also evidence to suggest that some internet offenders do demonstrate belief-based distortions similar to contact sex offenders. Ward and Keenan (1999) argued that child molesters often demonstrate self-statements indicative of five IT relating to the sexual abuse of children: (1) *Children as sexual beings* – that children are capable of desiring and enjoying sex; (2) *Nature of harm* –that sexual abuse is beneficial and is not likely to cause harm; (3) *Entitlement* – that some people have a right to assert their needs above others; (4) *Dangerous world* – that adults are untrustworthy and/or will take advantage of others; and (5) *Uncontrollable* – that the world is uncontrollable and that behaviour is pre-determined and inevitable. Empirical support for ITs in child molesters appears to be mixed, depending on the methods used to elicit them. Studies using qualitative methods often provide support for an IT approach (e.g., Marziano, Ward, Beech, & Pattison, 2006). Where more implicit cognitive approaches are utilized support is limited (Gannon & Polaschek, 2006; Ó Ciardha, 2011).

Some early evidence has been found for the existence of child molester-type ITs in internet offender samples. Henry, Mandeville-Norden, Hayes and Egan (2010) found that their sample of internet offenders (n =633) could be classified into 'normal', 'inadequate' and 'deviant' groups[8]. Although their normal

---

[8] It should be noted that the sample included those who had 'taken' images and those with previous contact sexual offenses

and inadequate groups had lower levels of cognitive distortions and victim

empathy deficits, their deviant group demonstrated high levels of cognitive

distortions and particularly high victim empathy deficits. Howitt and Sheldon

(2007) examined the differences between contact, internet and mixed

contact/internet offenders (25 contact-only, 16 internet-only, and 10 mixed)

using a 39-item self-report measure of cognitive distortions (Children and Sexual

Activities Inventory). This measure was based on Ward and Keenan's (1999)

taxonomy. They reported that their data supported two implicit theories in

internet offenders: a 'children are sexual objects' schema (e.g., "Some children

are willing and eager to be involved in sexual activities that are with, and for,

adults") and a 'justifications for offending' schema ("Just looking at a naked child

is not as bad as touching and will not effect the child as much"). Endorsement of

items was generally low, however, with only five of their items being endorsed

by more than 50% of the sample. The authors suggest that this demonstrates

that these cannot simply be self-serving post-hoc justifications, because they did

not immediately appear conducive to the internet offending process, and are

more related to contact offending.

It could be argued that this would depend on whether the offender is

responding based on a child in real life or a child in an image. SEM-c can be

highly stylized in order to present children as consenting and participating in the

activities depicted, for example, through encouraging children to smile (Taylor &

Quayle, 2003). So when an internet offender responds to statements such as

those noted in Howitt and Sheldon (2007), they may be responding in the

context of a child in an image. Consequently, it could be hypothesized that

internet offenders may endorse beliefs that the *child in the image* was willing and

eager to engage in sexual activities with adults, whilst simultaneously believing that the *child in reality* was not. Elliott, Beech, Mandeville-Norden, and Hayes (2009) noted that internet offenders typically score higher on measures denoting a greater ability to relate to fictional characters than contact offenders and hence may view the children in the images as fictional characters in a scene for which they represent a passive audience.

The previous research then appears to suggest that the cognitive distortions of internet offenders are a mixture of *value*-based judgments related to the objectification of the children in the images, *value*-based judgments that they and their behavior are not as harmful as other types of sex offending, and *action*-based judgments related to a sense that their use of the images is not related to the harm they depict. In terms of assessing these factors, however, research into the cognitive structures and processes for internet offenders has, thus far, produced few measures of surface cognitions specifically for use with internet offenders. The only notable measures are O'Brien and Webster's (2006) Internet Behaviours and Attitudes Questionnaire (IBAQ) and Howitt and Sheldon's (2007) Children and Sexual Activities questionnaire (C&SA), and only the former has been developed with the aim of providing a standardized clinical assessment measure. Other existing measures, such as the MOLEST Scale (Bumby et al., 1996), the Children and Sex Questionnaire (Beckett, 1987), and the Victim Empathy Distortion Scale (Beckett & Fisher, 1994), have been used to assess self-reported distortions in internet offenders, but were developed for adult male child molesters.

The aim of this study is to use the Attitudes section of the IBAQ to explore the extent to which pre-sentence internet offenders endorse a series of

statements related to their use of the internet and the use of online SEM-c. In addition, the factor structure of the IBAQ itself will be evaluated by testing the robustness of the two-factor model in this sample and exploring potentially more parsimonious models for the LFF data. Finally, the ability of the IBAQ to differentiate between subsets of offenders will be examined, using the most parsimonious factor structure for the data, be that the original two-factor model or a factor structure that accounts for a greater amount of the data.

The differences on the attitudinal scales between those who use the internet more frequently for sexual purposes and those who do so less frequently will be examined using a similar comparison to that one presented in the original development of the IBAQ (O'Brien and Webster, 2006). As previous work has also noted differences on some attitudinal measures between parents and non-parents, these groups will also be examined on the IBAQ scales. Beech, Fisher and Beckett (1999) noted that fathers and non-fathers score differently on the *Emotional identification* scale of the Children and Sex Questionnaire as it measures attitudes related to a sense of identification with the thoughts, feelings and concerns of children, essentially a sensitivity to children's needs. Given that in the vast majority of cases internet offenses involve stranger victims it will be of interest to see whether the fathers' relationship with a child of their own in any way reduces their offence-supportive beliefs in relation to their stranger victims. Finally, a number of items in the IBAQ relate to social isolation, a preference for impersonal sex, and dissatisfaction with offline relationships. There may, therefore, be lower endorsement of these items by individuals who are in, or have previously been in, long-term relationships, compared to those who have not. Consequently, groups of individuals who define themselves as

either single, currently in a relationship (e.g., married, co-habiting), or having had a prior long-term relationship (e.g., divorced, widower) will be compared.

<div align="center">Method</div>

Sample

The sample comprised 177 adult males charged, but in the majority of cases not yet sentenced, with offences related to accessing, making, and/or distributing SEM-c. The average age of the sample was 44.1 years (SD = 11.3) and the average number of hours per week spent online for sexual purposes was 11.6 (SD = 9.2). The sample was taken from the Lucy Faithfull Foundation's (LFF) 'Inform+' psycho-educational program, where internet offenders are provided with information and advice relating to their offending behaviour by trained forensic psychologists and therapeutic practitioners. Many of these offenders will have been referred to the program from the Stop It Now! U.K. Helpline, a telephone and internet-based helpline that offers a confidential service for people seeking advice and support if they have concerns about their own thoughts or behaviour towards children or the behaviour of someone they know. As such, it should be noted that those individuals will have engaged with trained staff regarding their attitudes to children, victimization, and internet use prior to completing the Inform+ course. Similarly, some of the sample may have previous offenses and as such may have attended sex offender treatment programs. No prior offense data is held by the Lucy Faithfull Foundation on data protection grounds. Demographic data for the LFF sample is presented in Table 1.

Table 1. Demographic data for the LFF sample.

	Frequency (%)
Relationship status (n = 169)	
Single	49 (29%)
Married	69 (41%)
Divorced	14 (8%)
Separated	20 (12%)
Cohabiting	17 (10%)
Parenthood (n = 177)	
Yes	94 (53%)
No	83 (47%)
Estimated number of images accessed (n = 129)	
0-499	34 (26%)
500-999	14 (11%)
1000-4999	48 (37%)
5000+	33 (26%)
Victim gender (n = 133)	
Mostly male	9 (7%)
Mostly female	105 (79%)
Both	19 (14%)
Victim age group (n = 160)	
0-6	2 (1%)
7-12	8 (5%)
13+	33 (21%)
0-12	10 (6%)
7-13	64 (40%)
All ages	43 (27%)
Amount of time per week spent accessing sexual material (n = 176)	
Daily	69 (39%)
2/3 times per week	67 (38%)
Weekly	26 (15%)
Fortnightly	6 (3%)
Monthly+	8 (5%)
Viewed adult pornography (n = 177)	
Yes	173 (98%)
No	4 (2%)
Viewed adult pornography prior to SEM-c (n = 177)	
Yes	169 (96.5%)
No	8 (4.5%)
Type of adult pornography content (n = 173)	
Heterosexual only	106 (61%)
Homosexual only	10 (6%)
Both hetero- and homosexual	8 (5%)
Heterosexual + other*	36 (21%)
Homosexual + other*	2 (1%)
Both hetero- and homosexual + other*	11 (6%)

Felt in control of their online behaviour
(n = 177)

	Yes	45 (25%)
	No	106 (60%)
	Don't know	26 (15%)

Would still be accessing SEM-c if they had not
been detected (n = 175)

	Yes	127 (73%)
	No	38 (22.5%)
	Don't know	10 (6.5%)

*Other material includes niche material (bondage, domination, and sado-masachism) and extreme material (rape, bestiality, and necrophilia). This categorization is simply to distinguish typical adult pornography from more unorthodox material, and does not make any moral or legal judgments regarding BDSM material.

Procedure

Inform+ group members are routinely asked to complete a questionnaire collecting demographic and behavioural data about the offender and their offense[9] and the attitudes questionnaire of the Internet Behaviours and Attitudes Questionnaire (IBAQ: O'Brien & Webster, 2007) at the start of the program. This sample relates to data collected over around three years of the Inform Plus program. Consent was requested from each group member for the results to be used in research related to the improvement of Inform+ and the data of those who agree are anonymized and retained on file. The following analyses are based on the LFF archives for the behavioural questionnaire section and the IBAQ attitude section. Ethical approval was provided by the University of Birmingham.

Measures

The Internet Behaviours and Attitudes Questionnaire (IBAQ) was used to measure offense-supportive cognitions in the sample. The IBAQ (O'Brien &

---

[9] The IBAQ behavioural section is not used by the LFF, due to time constraints during Inform+ sessions. Instead, an abridged version of the IBAQ behavioural section is used. The questions on this abridged version relate to the offence-related data in Table 1 (e.g., number of images, victim type, intensity of use).

Webster, 2007) was the first standardized self-report assessment questionnaire specifically designed to examine offence-supportive attitudes and beliefs in adult males who commit sexual offences that involve SEM-c online. O'Brien and Webster report that the IBAQ has a high level of internal consistency (Cronbach's alpha = .93), demonstrates a positive correlation with reconviction, and does not appear to be susceptible to socially desirable responding. The IBAQ has two sections. Section A is a 42-item behavioural questionnaire that identifies the existence (yes/no) of a variety of online behaviours, such as engaging in online communities, using the Internet to contact children directly, and cataloguing downloaded material. Section B is a 34-item attitude questionnaire that uses a 5-point likert scale (strongly agree/agree/neither agree nor disagree/disagree/strongly disagree) to assess the individuals endorsement of each statement (see Appendix A for items). This section is divided into two scales: (1) a 16-item *distorted thinking* scale, including items such as "I feel I have committed a victimless crime given that I have not created any contact victims in these internet offences"; and (2) an 18-item *self-management* scale, including items such as "I feel panicky and anxious if I have not been able to view sexual pictures". The IBAQ is also able to distinguish between high and low behavior groups, with high behavior users (those who endorse more than nine behavioral items in the behavioral section) scoring higher on both attitudinal scales. No measures were administered to account for socially-desirable responding in this investigation. Some IBAQ attitudinal items are reverse-scored[10]. Internal

---

[10] The instructions in the original paper to reverse-score Q1 and not to reverse-score Q2 appeared to be a typographical error. In this dataset the questions are scored with Q1 scored in a standard manner and Q2 reverse-scored.

constancy for the IBAQ with the LFF dataset was calculated (Cronbach's alpha), indicting a good level of internal consistency (.87) (Nunnaly, 1978).

Results

General endorsement

Self-report measures of cognitive distortions seek to examine the extent to which offender groups endorse pro-offending beliefs and self-statements. This analysis sought to examine the extent to which the LFF sample endorsed IBAQ items, rather than being measured on likert scale responses. The 5-point likert items were dichotomized into binary responses. Responses of 'strongly agree' and 'agree' were coded as endorsement. Responses of 'neither agree nor disagree', 'disagree', and 'strongly disagree' were coded as non-endorsement. The endorsement rates are presented in Table 2.

Table 2. Binary response rates for the LFF sample on each of the IBAQ items in order of endorsement level.

IBAQ item	Frequency of endorsement (%)	Rank
Q6	84 (48%)	1=
Q23	84 (48%)	1=
Q12R	69 (39%)	3
Q1	52 (29.4%)	4
Q2	51 (28.8%)	5
Q4	44 (25%)	6=
Q20	44 (25%)	6=
Q15	41 (23%)	6=
Q10	38 (22%)	9
Q18	37 (21%)	10
Q5	28 (16%)	11=
Q9	28 (16%)	11=
Q30	28 (16%)	11=
Q8	25 (14%)	14=
Q31	25 (14%)	14=

Q22	21 (12%)	16
Q14	19 (11%)	17=
Q3	19 (11%)	17=
Q11	17 (10%)	19
Q33	14 (8%)	20
Q17	12 (7%)	21
Q13R	9 (5%)	22
Q7R	6 (3%)	23=
Q28	6 (3%)	23=
Q24	6 (3%)	23=
Q25	5 (2.8%)	26
Q16	4 (2%)	27=
Q26	4 (2%)	27=
Q27	4 (2%)	27=
Q34	4 (2%)	27=
Q19	3 (1.7%)	31=
Q21R	3 (1.7%)	31=
Q29	1 (0.6%)	33=
Q32	1 (0.6%)	33=

Note: IBAQ items can be found in Appendix A.

As Table 2 shows, on all items non-endorsement was more common than endorsement. Only three items elicited endorsement levels greater than one-third of the sample. The three most endorsed items were (1) Q6: "I have found myself aroused at the illegality of the child pornography"; (2) Q23: "I feel that my use of Internet child pornography encourages me to act in ways that I would not normally act"; (3) Q12: "I do not use the Internet to escape from my problems" (reverse-scored). These are all items from the self-management scale.

The three least endorsed items were: (1) Q32: "I believe that a child doesn't mind an adult doing sexual things to them"; (2) Q29: "Child pornography is no different from adult porn"; (3) Q21; and "Children pictured in sexual positions on the Internet experience bad effects afterwards" (reverse-scored). These are all items from the distorted thinking scale. The highest item on the distorted thinking scale was Q4. "The child was often smiling in the child

pornography of I have looked at, and so I believe that the child is not being harmed" (6th most endorsed).

Confirmatory factor analysis

A confirmatory factor analysis (CFA) was conducted (IBM AMOS software) to assess the fit of O'Brien and Webster's (2007) original two-factor solution (self-management and distorted thinking) to the LFF 5-point likert scale data. Maximum likelihood estimation was employed to estimate all models. The chi-square value was highly significant (df = 526, χ2 = 955.03, p<.001) suggesting that the data was a poor fit for the model. A number of researchers (e.g., Dickey, 1996; Fan, Wang, & Thompson, 1999; Stevens, 1996) have stressed the need to consider other statistical determinates of model fit, such as the comparative fix index (CFI) and the root mean square residual (RMSEA). The CFI compares the hypothesized model to a "null" or worst-fit model and values >0.9 indicate a good fit. The RMSEA reflects how close the model approximates a reasonably-fitted model, and values <0.05 indicate a good fit. These figures for the sample data (CFI = .753; RMSEA = .068) indicate that the two-factor model is poor fit to these data.

Exploratory factor analysis

In order to explore potentially more parsimonious model fits for our data a principal components analysis (PCA) was carried out on the LFF data. MacCallum, Widaman, Zhang and Hong (1999) note that typical rules of thumb for sample sizes in a PCA are not always appropriate and that sample size should be based on the level of communality for the variables. Communality that is

consistently high (e.g., all greater than .60) greatly reduces the impact of sample size. Communality in this sample ranges from .50 to .82 with 25 of the 34 items scoring over .60. This suggests that any solution produced by a PCA on this data is unlikely to be affected by the fact that the sample size is in the range of 100 to 200 (MacCallum et al., 1999).

To determine the number of components to be retained a parallel analysis (Horn, 1965; O'Connor, 2000) was conducted using IBM SPSS statistical software (Version 18). Parallel analysis is considered to be one of the most accurate methods for determining the number of factors to retain (Hayton, Allen, & Scarpello, 2004). It involves generation of a random dataset with the same number of observations and variables, and then extraction of the eigenvalues of that random dataset, and comparison of these to the actual eigenvalues generated by the experimental dataset. Those factors whose eigenvalues are greater than the eigenvalues from the random data are retained. As Velicer, Eaton and Fava (2000) note any procedures for determining the number of components should be used as a guide rather than a single final solution, and the interpretability of the final solution is paramount. The result of the parallel analysis was therefore complimented by a scree test (Cattell, 1966) to ensure that an interpretable set of factors accounting for the most variance in the data was chosen.

The parallel analysis recommended a three-factor solution, accounting for 30.4% of the total variance. The scree test however, indicated two additional and theoretically-plausible factors, creating a total of five factors that account for 41.9% of the variance (see Table 3 for factor loadings). These five factors could be labelled *Nature of harm* (NH: 14 items), *Compulsivity* (C: 5 items), *Online*

identity (OI: 7 items), *Indiscriminate arousal* (IA: 5 items), and *Fantasy* (F: 3 items). Seven items could not be distinguished for factor membership via their factor loading (i.e., >.40). Factor membership for these items was subsequently decided based on the highest factor loading and item purpose.

Table 3. Rotated component loadings for the second varimax PCA.

IBAQ item	F1: Nature of harm	F2: Compulsivity	F3: Online identity	F4: Indiscriminate arousal	F5: Fantasy
Q5	**.844**	.048	.043	.039	.066
Q9	**.838**	.185	.090	-.019	-.017
Q25	**.671**	-.043	.060	.342	.126
Q17	**.669**	.071	.001	.093	.071
Q27	**.577**	.072	.239	-.111	.130
Q29	**.552**	-.019	.017	.197	.237
Q19	**.528**	.057	.127	.060	-.102
Q7R	**.507**	.083	-.143	.214	.163
Q24	**.506**	.038	-.045	.108	-.018
Q13R	**.499**	-.020	.074	.084	.364
Q21R	**.434**	-.058	.160	-.055	.338
Q8	.121	**.818**	.087	.097	.063
Q10	-.003	**.704**	.018	.147	.090
Q11	.121	**.671**	.229	-.032	.013
Q2R	-.171	**.445**	.204	-.163	.427
Q1	.142	.053	**.770**	.134	.001
Q15	-.034	.060	**.708**	-.035	.082
Q31	.208	.030	**.658**	.322	.076
Q3	-.058	.225	**.635**	.208	.021
Q12R	.071	.384	**.458**	-.207	.028
Q28	.183	.007	.109	**.722**	.182
Q14	.120	.276	.168	**.561**	-.196
Q16	.112	.219	.221	**.480**	.251
Q26	.056	.171	.335	**.456**	.168
Q22	.215	.293	.080	.242	**.651**
Q20	.125	.442	.078	.084	**.597**
Q30	.317	-.163	-.021	.129	**.565**
Q32	**.304**	.003	-.023	.045	.089
Q34	**.440**	-.037	.058	.026	.091
Q33	.076	**.385**	.236	.320	-.058

Q18	-.012	.167	**.205**	.030	.112
Q4	**.211**	-.008	.002	.080	.030
Q23	-.146	.082	**.129**	.112	.065
Q6	.013	.046	.031	**.148**	.100

The *Nature of harm* (NH) factor (14 items) contains statements that the children

in the images were not being harmed, that viewing images was not intrinsically

harmful and a victimless crime, and that child pornography is comparative to

adult pornography or art. The *Compulsivity* (C) factor (5 items) contains

statements related to a perceived addiction to sexual material online, a

preoccupation with sex, and negative emotional states when not accessing sexual

material. The *Online identity* (OI) factor (7 items) contains statements related to

social isolation and feelings of importance, confidence, and happiness online,

beliefs that the internet has an influence on behaviour. The *Indiscriminate*

arousal (IA) factor (5 items) contains statements related to arousal to illegal

behaviour, impersonal sex and sex with children, and feelings of power linked to

accessing material. The *Fantasy* (F) factor (3 items) contains statements related

to the use of SEM-c during masturbation and linked positive emotions and the

belief that SEM-c is an appropriate outlet for sexual fantasy.

Discriminatory ability of the five-factor model

In order to explore the ability of the five-factor model to discriminate between

different types of internet offender, the LFF dataset was split separately into

three sub-groups. These subgroups were based on the behavioural and

demographic data that may affect self-report response patterns. It should be

noted that these subgroups are based on self-report information from the group

members. Hence, they may not be perfectly representative of the group label in

some cases (e.g., an individual might describe themselves as single at the time of their referral to the LFF, but may have been in a long-term relationship prior to their arrest).

Exploration of the scale data found that all of the scales violated assumptions of parametric statistical tests (non-normal distribution, heterogeneity of variance). Consequently, Kruskal-Wallis tests were conducted to compare the groups on each of the scales. A Bonferroni correction was applied for pairwise tests and so all effects are reported at a .01 level of significance. Table 4 provides the means, standard deviations, and Kruskal-Wallis significance levels for each of the groups on each of the scales.

Comparing 'higher' and 'lower' behaviour groups

The first comparison was a differentiation between 'higher' and 'lower' behaviour groups. In their development of the IBAQ, O'Brien and Webster (2006) separated their sample into 'high' and 'low' behaviour groups, dependent on their level of engagement with a series of behavioural cues, such as contacting children online, explicit planning strategies, etc. Although these data were not available in this sample, the behavioural questionnaire used by the LFF included a number of items related to the level of engagement with sexual material online. The labels for these groups were chosen based on their relationship to each other, as there appears to be no evidence in the behavioural data to suggest that these arbitrary groups can be considered 'high' or 'low' in absolute terms. 'Higher' behaviour (HB) users were identified as those who reported the frequency of their pornography use online as 'daily' or those who stated that their time spent online for sexually-motivated reasons was greater than 20 hours

per week (n = 89; 50.3%). Those who did not meet these two criteria were considered to be 'lower' behavior (LB) users (n = 88; 49.7%). The hypothesis tested was:

H1. There will be significant differences between the scores between HB users and LB users on the five scales.

The HB group was found to score significantly higher than the LB group on both the Compulsivity scale, H (1) = 13.01, p < .001, and the Online identity scale, H (1) = 8.92, p <.01. No significant differences were found between the HB and LB group on the NH, IA, or F scales.

Comparing parents and non-parents

The second sub-group was based on parenthood - whether or not the individual was a father. It may be found that there is an effect of fatherhood on an individual's attitudes and beliefs, particularly their ability to empathize with a child. Prior research suggests that internet offenders appear to objectify the children in the images and divorce them from children in reality. As such, it was of interest to see whether being a father, and thus having experience of relating to a child and their needs, in any way reduces of their offence-supportive beliefs in relation to their stranger victims (as the majority of victims in SEM-c use will be). The sample was subsequently split between fathers (n = 94; 53%) and non-fathers (n = 83; 47%). The hypothesis tested was:

H2. There will be significant differences between parents and non-parents on the

five scales.

No significant differences were found between the father and non-father groups on any of the five scales.

Comparing relationship status

The final subgroup would be those categorized by self-reported relationship status. There are items in the IBAQ related to experiences of relationships, social isolation, beliefs about impersonal sex, and preferences for online interaction. As such, there may be differences in responses between individuals depending on their own offline relationship experiences. The sample was categorized into three groups: (1) in a relationship - those who describe themselves as married or cohabiting (n = 86; 51%); (2) not in a relationship – individuals who describe themselves as single (n = 49; 29%); and (3) previous relationship - those who describe themselves as separated, divorced, or widowed (n = 34; 20%). The hypothesis tested was:

H3: There will be significant differences between individuals who were in a

relationship, not in a relationship, or who have had a previous long-term

relationship on any of the five scales.

A significant difference between the three relationship groups was found on the Online identity scale, H (2) = 14.70, p =.001. No significant differences were found between the relationships group on the NH, C, IA or F scales. Mann-

Whitney tests provided post-hoc analyses. A Bonferroni correction was applied for pairwise comparisons and so all effects are reported at a .0167 level of significance. It appeared that scores were significantly higher for individuals who were not in a relationship than both those in a relationship ($U = 1561$, $r = -.27$) and those who had a previous long-term relationship ($U = 425.5$, $r = -.42$).

Table 4. Kruskal-Wallis test results comparing the demographic and behavioural subgroups on the five LFF scales (standard deviations in parenthesis).

Higher and lower behaviour users

	HB (n = 89)	LB (n = 88)	Sig.
NH	25.9 (6.8)	26.0 (7.6)	ns
SC	12.2 (3.4)	10.5 (3.2)	<.001
OI	19.1 (4.8)	17.0 (4.3)	<.01
IA	9.7 (2.7)	9.5 (2.6)	ns
F	7.6 (2.4)	7.0 (3.2)	ns

Parenthood

	Fathers (n = 94)	Non-fathers (n = 83)	Sig.
NH	25.1 (7.4)	27.0 (6.9)	ns
SC	11.2 (3.2)	11.6 (3.6)	ns
OI	17.4 (4.1)	18.8 (5.1)	ns
IA	9.3 (2.5)	10.0 (2.7)	ns
F	7.0 (2.3)	7.6 (2.4)	ns

Relationship status

	Single (n = 49)	In relationship (n = 86)	Prev. relationship (n = 34)	Sig.
NH	27.5 (6.5)	25.7 (7.8)	25.0 (6.8)	ns
SC	11.9 (3.6)	11.1 (3.3)	11.0 (3.2)	ns
OI	19.9 (4.9)	17.7 (4.7)	16.3 (3.2)	p = .001. S > IR; S > PR
IA	10.4 (3.1)	9.3 (2.6)	9.1 (2.0)	ns
F	7.7 (2.4)	7.1 (2.4)	7.1 (2.3)	ns

Discussion

This study aimed to examine the extent to which a unique sample of internet offenders endorsed items on the IBAQ, the factor structure of the measure and whether the scales of the IBAQ could distinguish between different groups based on use level, parenthood and relationship status. General rates of endorsement were low, but it was found that the most endorsed items were typically related to sexual compulsivity and the least endorsed were typically related to the nature of harm caused by internet offenses. Confirmatory factor analysis found that the two-factor model of the IBAQ was not a good fit for the data, and an exploratory factor analysis provided a five-factor solution. This model essentially retained a large 'distorted thinking' factor, similar to the one reported in the original two-factor IBAQ model, now labelled as *Nature of harm*. The four other factors were comprised primarily of items in the original 'self-management' factor in the original IBAQ solution, and were labelled *Compulsivity*, *Online identity*, *Indiscriminate arousal*, and *Fantasy*. Individuals who use the internet more frequently for sexual purposes were found to have higher scores on the C and OI scales. Individuals who categorized themselves as single had higher scores on the OI and IA scales than individuals in relationships or who had been in a previous long-term relationship.

Previous meta-analysis has shown that internet offenders have lower levels of cognitive distortions related to the appropriateness of adult-child sexual contact (Babchishin et al., 2011) and these results support that notion. Those IBAQ items related to the nature of harm of sexual contact between adults and children are among the least endorsed. For example, only one respondent (0.6%) endorsed the item "I believe that a child doesn't mind an adult doing sexual things to them", only three (1.7%) endorsed the reverse-scored item "Children

pictured in sexual positions on the Internet experience bad effects afterwards",

and only five (2.3%) endorsed the item "I believe that the children in the pictures

I view enjoyed the experience". These findings are further evidence that internet

offenders do not typically hold beliefs or attitudes that children are sexually

sophisticated and that sexual contact between adults and children is not harmful

to the child. In fact, these results appear to be lower than some similar beliefs

held in the non-offender population. For example, Lam, Mitchell, and Seto (2010)

found that 6.7% of a sample of non-offenders in Canada endorsed the statement

"Would you agree or disagree with the statement that *viewing computer-

generated children in sexual material is okay [i.e. acceptable]*?" This study found

that only 3.4% of this internet offender sample endorsed a similar (reverse-

scored) question "I believe that looking at sexual pictures of children on the

Internet should be classified as a criminal sexual offence".

These results also suggest that internet offenders also rarely endorse

items relating to the nature of harm to a child thought to be specifically related to

online SEM-c offending. Those items related to beliefs that the images are 'just

pictures' (e.g., "I feel I have committed a victimless crime given that I have not

created any contact victims in these Internet offences"; "The sexual pictures of

children on the Internet were there anyway, so I was not harming anyone by

looking at them") were also rarely endorsed. The EFA demonstrates that

endorsement of these types of types of items is correlated, but overall it would

appear that endorsement is low.

Three potential explanations may account for the lack of endorsement in

the sample. One explanation might be that internet offenders simply do not hold

offense-supportive beliefs and there are different etiological and process factors

related to online offending. This would contradict both the cognitive distortion hypothesis and to some extent the assumptions of the JMCD (Ward et al, 2007), in that pro-offense surface cognitions may not be demonstrative of cognitive processes and schema in this group. As Howitt and Sheldon (2007) note, the types of beliefs most commonly demonstrated lack the extremity from public opinion that is perhaps imagined when one hears the term 'cognitive distortion' and these less extreme beliefs may even found some commonality with opinions expressed by professionals in earlier decades (Howitt, 1992). The frequent expression of these less extreme beliefs, along with the evidence that such behaviour is often tolerated in non-offender samples (e.g., Lam et al, 2010) may be important in understanding the volume of SEM-c available on the internet given the seemingly small proportion of the population who are known to the criminal justice system for accessing and distributing the material.

A second explanation might be that there is some process of deception or image management involved. Certainly, the self-report nature of measurement has been noted to be a limitation in previous research into the cognitive distortions of internet offenders. For example, Howitt and Sheldon (2007) noted that the disparity between clinical and self-report measure approaches to eliciting and measuring cognitive distortions in internet offenders somewhat undermines the self-report approach for this population. A third explanation may be that internet offenders do in fact demonstrate offense-supportive attitudes and beliefs, but these are not being measured adequately by the IBAQ. For example, it could be argued that the IBAQ lacks items relating to the individual's perception of fantasy and reality, including processes of dehumanization and objectification of the child in the image and determining the

extent to which the viewer perceives the activities in the images as being acted out for their benefit.

The research literature also perhaps highlights a need for items related to beliefs that the internet can be responsible for tangible changes in behaviour. That it was difficult to establish factor membership for the item "I feel that my use of Internet child pornography encourages me to act in ways that I would not normally act" in this analysis, suggests that this may form part of an unidentified set of cognitive products. Related to this, there may be reason to include items about the lack of awareness that sexual arousal may have a tangible effect on behaviour. For example, it has been found that individuals who are mindful of the fact that they will face self-control issues, due to some personal vulnerability, in a future situation are more likely to put better strategies in place that reduce the impact of that vulnerability and make-better decisions (Ariely & Wertenbroch, 2002; O'Donoghue & Rabin, 2003). Internet offenders have been noted to distance themselves and their behaviours from other sex offenders such as contact child molesters or rapists (e.g., Winder & Gough, 2010). For these offenders, the feeling that they are not sex offenders, despite viewing SEM-c, would demonstrate a lack of awareness when not in a sexually aroused state that could potentially limit their ability to implement adequate internal and external strategies in place to avoid offending situations when they are in a sexually aroused state. Hence, a belief that they are somehow immunized from the effects of sexual arousal on their subsequent behaviour compared to others could also be considered a value-based cognitive distortion.

The finding that these five scales can be used to discriminate between different subsets of internet offenders based on demographic and behavioural

information also suggests that the scales have both some explanatory power and clinical value. This has practical implications in clinical settings where these characteristics can be measures at both an individual and group level to tailor the content of an intervention to the needs of group members. Firstly, the finding that higher-behaviour users are more likely to score higher on both items relating to feelings of addiction and withdrawal and a preoccupation with sex (Compulsivity) as well as feelings of social isolation and feelings of confidence and happiness online (Online identity) seem, at a surface level, to be self-explanatory. It would be expected that a person who believes they are addicted to the internet and experiences negative emotional states when not accessing sexual material online would spend a larger amount of time online for sexual purposes and vice versa. In turn, one would expect that someone who demonstrates both beliefs and behaviours relating to a compulsion to go online to access sexual material would also feel socially isolated, presumably from the effect the time spent online would have on their offline activities, and happier and more confident online given that they experience negative emotions when offline.

Although there are suggestions that internet addiction is a psychological disorder and that its antecedents do include social isolation, loneliness, low-self-confidence and low self-esteem (Douglas, Mills, Niang, Stepchenkova, Byun, Ruffini, et al., 2008), it is important in the context of online offending to ensure that we do not make value-based judgments in our own terminology. The items in the Compulsivity factor can be conceptualized more as evidence of a compulsion rather than an addiction. Believing one is addicted to the internet or to SEM-c can be seen as diffusing responsibility for offending behaviour to a

physiological cause and almost generates a sense that the abusive behaviour was uncontrollable and inevitable rather than the result of the conscious decision-making of the individual. Again, the finding that the second-most endorsed item was "I feel that my use of Internet child pornography encourages me to act in ways that I would not normally act" suggests that internet offenders are also willing to diffuse responsibility to the material itself. Hence, this and the items in the compulsivity factor may be demonstrative of an over-arching *action*-based belief that accessing SEM-c is not a consequence of their actions, but the fault of some external force or medical condition.

Secondly, the finding that individuals who self-report having not been in a long-term relationship (e.g., a current/previous marriage or co-habitation) are more likely to endorse items relating to a preference for their life online, as opposed to their life offline, can perhaps be reasonably linked to a higher level of social isolation. Prior research suggests that internet offenders are often overly self-conscious, lack assertiveness, lack empathy in relationships, and demonstrate low levels of self-efficacy, are emotionally lonely, inadequate, have low self-esteem, and display a passive victim stance (Laulik, Allam, & Sheridan, 2007; Middleton, Elliott, Beech, & Mandeville-Norden, 2006). Hence, the development of an online persona may be a consequence of an inability to initiate and maintain intimate relationship and a fear of rejection. Middleton et al. (2006) suggest that for some SEM-c users (and perhaps contact offenders) children represent less of a threat than initiating and maintaining age appropriate relationships. Putnam (2000) notes that online sexual behaviours can be particularly significant for individuals who have trouble obtaining face-to-face sexual contact, and hence it would appear consistent that this may lead to

the use of the internet, where contact is virtual, to develop new, more assertive and powerful personas. There is also likely to be a cyclical effect, such that the more time the individual spends online at the expense of time spent offline the more these beliefs about being happier, more confident and more important online become further established.

Limitations and future research

This study does inevitably have limitations. There was no information available about the previous contact offense history of the sample. Similarly, there was no information from which to ascertain the frequency and extent to which the sample had previously engaged in therapeutic processes that may have targeted the distortions measured by the IBAQ. As noted above, socially-desirable responding was not accounted for in the sample. This, however, should be balanced with the context in which the measures were completed. The LFF Inform+ course is a voluntary and self-funded, pre-sentence course with no specific treatment goals and as such it tends to attract motivated group members. Consequently there would be little to gain from responding in a socially-desirable manner, although we cannot rule it out as a possibility. Finally, the method by which behavioural and demographic items were used to create groups was arbitrary and exploratory in nature and based on self-report. For example, an offender who has separated from his partner as a result of his arrest could either declare himself as 'single' or 'separated'. Hence, although we endeavoured to make these groups as representative as possible, those groups may not be fully representative of their label.

The results of this study suggest a number of avenues for further research into the offense-supportive cognitions of internet offenders. Firstly, it would be interesting to further explore the factors uncovered in this study. The use of more indirect methods of cognitive assessment (e.g., Implicit Relational Assessment Procedure (Dawson, Barnes-Holmes, Gresswell, Hart, & Gore, 2009), Implicit Association Test (Nunes, Firestone, & Balwin, 2007)) may provide a greater understanding of the cognitive structure of the attitudes and beliefs held by internet offenders. Secondly, there is a greater need to understand the extent to which some of the items considered deviant for internet offenders are present within the non-offending population. More specifically, it would be interesting to explore the extent to which users of legal adult pornography would endorse similar views based on their own use of pornography. Specifically, it would be beneficial to further explore the five factors in this study, both with SEM-c users and users of adult pornography and to make comparisons between those groups. For example, it might be expected that a similar proportion of both groups would endorse items on the Compulsivity and Online identity scales. However, they might also endorse other items where they are do not assume SEM-c use itself, such as items related to whether accessing SEM-c should be considered a criminal offense or items relating to the internet being a safe outlet for deviant fantasy. Understanding attitudes and beliefs of non-offending pornography users regarding the use of SEM-c might provide some explanation as to how some offenders escalate from adult pornography to SEM-c, whereas others do not.

Conclusions

Although there remains a subset of internet offenders who do not appear to hold a great number of surface cognitions as measured by traditional sex offender assessments, there is evidence of some initial internet offender cognitive distortions. It is clear that further investigation is required to understand the aetiology and offence processes of the internet offender, especially those who appear not to differ from the general adult male population. This further research should focus on new approaches to the measurement of cognitive distortions in this population and also the study of novel concepts, perhaps related to internet or computer processes that may account for this form of offending behaviour.

PART IV:

DELAY DISCOUNTING

CHAPTER 5:

THE EFFECTS OF SEXUAL CUES ON THE DISCOUNTING OF FUTURE REWARDS

IN INTERNET SEX OFFENDERS

Part III of this thesis found that although internet offenders do demonstrate offence-supportive beliefs these do not appear to be frequently endorsed and a sizeable minority appear to demonstrate no distorted attitudes regarding their behaviour, their victims, or the internet. The most commonly endorsed beliefs were generally around sexual compulsivity –specifically around beliefs that the material had an arousing effect and that arousal had a tangible effect on their subsequent behaviour. Sexual arousal was the one area of clinical symptoms in the ITSO (Ward & Beech, 2006) yet to be explored in this thesis. Babchishin et al (2011) note that one line of empirical inquiry into why internet offenders commit their crimes would be to explore the inhibitors and self-control mechanisms that limit the extent to which they act on their deviant interests.

Recently, evidence has emerged in the field of behavioural economics that may be able to link the effects of the material with the feeling that it has the ability to change behaviour. A number of studies have found that when groups of adult males are exposed to sexually-salient cues (e.g., viewing erotic imagery, touching women's underwear, etc) they are more likely to make more impulsive decisions on tests of delayed rewards than groups who do not – a phenomenon dubbed the 'bikini effect' (Areily & Loewenstein, 1996; McAlvanah, 2009; Van den Bergh, DeWitte & Warlop, 2008; Wilson & Daly, 2004).

This chapter has three aims. The first is to see whether the bikini effect can be replicated within-subjects – does the same person make more impulsive

decisions after being exposed to sexually-salient cues than when they are not. The second aim is to see whether the bikini effect differs between internet offender and non-offender samples. Offender groups are recruited from the Lucy Faithfull Foundation's Inform+ programme and non-offenders from a variety of sources. The third aim is to investigate whether the bikini effect can be observed if the monetary rewards used in the original studies are replaced by amounts of pornography.

Chapter 5: The effects of sexual cues on the discounting of future rewards in internet sex offenders.

Understanding why individuals choose to access sexually explicit material involving children (SEM-c) on the internet is an increasing concern in the field of sex offender behaviour. Babchishin et al. (2011) note that one line of empirical inquiry into why internet offenders commit their crimes would be to explore the inhibitors and self-control mechanisms that limit the extent to which they act on their deviant interests. This study focuses on one specific mechanism of self-control: the phenomenon of delay discounting and the difference between short-term and long-term decision making in samples of internet offenders and non-offending controls.

Delay discounting (a type of inter-temporal choice) refers to the phenomenon by which time-preferences are repeatedly found to be inconsistent. For example, as Ainslie and Haslam (1992) note "a majority of subjects says they would prefer to have a prize of a $100 certified check available immediately over a $200 certified check that could not be cashed before 2 years; the same people do not prefer a $100 certified check that could be cashed in 6 years to a $200 check that could be cashed in 8 years" (p. 69). This form of time inconsistency in decision-making is viewed as an economic model of impulsivity (e.g., Loewenstein, 1996). The delay discounting model of impulsiveness (Ainslie, 1975; Rachlin, 1974) defines an impulsive choice as one of a smaller immediate reward over a larger reward and the "decline of the effectiveness of a reward as the rewards are delayed from the time of choice" (Ainslie, 1975: p. 463). Individuals differ in the rate at which value is reduced as delay increases. The

higher the rate at which a person discounts future rewards, the lower the present values of future rewards and the less impact those rewards will have on current choices (Kirby, Petry, & Bickel, 1999).

Laws (2003) has previously outlined how these economic models of impulsive behaviour may explain the mechanisms by which sexual offending occurs and the escalation from sexual arousal to engaging in sexually deviant behaviour. Laws cites Marlatt, Tucker, Donovan, and Vuchinch's (1997) work on addictive behaviours, who noted that contextual environmental factors have an effect on behaviour that is difficult to incorporate into internal constructs. He applies this to sex offenders suggesting that our understanding and treatment of sex offenders relies heavily on internal constructs (e.g., self-efficacy, cognitive deconstruction, etc), and further states that "behavioral economics offers a new conceptual avenue for understanding the effects of therapeutic and extratherapuetic variables" (p.66). Laws notes that sex offenders tend to discount non-offending alternatives and the delay of reinforcements and a number of phenomena are cited in sex offender theory for why this occurs (e.g., disinhibition, motivational precursors, autoerotic influence, failure of self-regulation, etc).

Laws (2003) suggests that the "delay discounting function is almost certainly the behavioral mechanism by which certain precursors lead to impulsive behaviors" (p. 77). As Ariely and Loewenstein (2006) note, there is good reason to suspect that sexual arousal will affect judgment and choice as the brain's sexual circuitry evolved to both motivate and orchestrate behaviour in appropriate circumstances. They cite Buss and Schmitt (1993), who noted that stimulating internal and external sexual cues, whether by the individual

themselves or by a research team, may increase the odds of gaining access to systems involved in short-term opportunistic copulation as they are designed to increase motivation during times of opportunity.

Loewenstein (1996) suggests that as visceral influences (e.g., sexual arousal, hunger, drug-craving) intensify, the individual's attention and motivational focus on activities and forms of consumption that are associated with that visceral factor increase. As Loewenstein states, "at sufficient levels of intensity, individuals will sacrifice almost any quality of goods not associated with that factor for even a small amount of associated goods" (p. 278). Visceral influences also collapses time-perspective towards that visceral factor and to cause short-sighted trade-offs between immediate and delayed goals (Loewenstein, 1996). Sexual arousal, an example of such a visceral factor, plays a direct motivating role in a considerable number of consumer behaviours, such as pornography and prostitution, and underlies socially-unacceptable outcomes such as sexually-transmitted diseases, unwanted pregnancy and sexual crime (Ariely & Loewenstein, 1996). For example, adult males who are not sexually aroused predicted they would be less likely to engage in sexually aggressive behavior than men who were sexually aroused as a result of viewing images of naked females (Loewenstein, Nagin, & Paternoster, 1997). Loewenstein et al. (1997) primed two groups of male undergraduate students with either nude images of adult women or neutral images. They found that those primed with nude images were more likely to endorse a sexually-forceful response towards a female who had indicated that they might not be interested in sex with them than the groups who viewed neutral images.

Ariely and Loewenstein (2006) found that during states of high, but sub-orgasmic sexual arousal (through masturbation), adult males were more likely to report a willingness to engage in risky sexual activities, more willing to take morally-dubious measures to procure sex ("'date rape' like behaviors": p. 94), and that activities that were not sexually appealing whilst in a 'cold' state of sexual arousal become appealing. For example, the same individuals reported significantly higher agreement to the question "Can you imagine being attracted to a 12-year-old girl?" when aroused than when not. Agreement also increased to 'date rape' questions, such as "Would you keep trying to have sex after your date says 'no'?" and "Would you slip a woman a drug to increase the change that she would have sex with you?", and 'sexually unsafe behaviours', such as "Would you use a condom even if you were afraid that a woman might change her mind while you went to get it?".

A number of studies have demonstrated a specific increase in discounting of future rewards in groups who have been exposed to sexually-salient visual, or even tactile, cues – dubbed the 'bikini effect' (e.g., McAlvanah, 2009; Van den Bergh, Dewitte & Warlop, 2008; Wilson & Daly, 2004). These studies suggest that when adult males are in a sexually aroused state they are more likely to make decisions geared towards immediate gratification, above those that benefit us in the long-term. Wilson and Daly (2004) used a delay discounting task before and after participants completed a picture rating task ('hot' or 'not' opposite-sex faces vs. cars) and found that discounting rates significantly increased in males who rated images of women as 'hot', compared to both men who rated the images they saw as 'not' and women who had rated men as 'hot' or 'not'. McAlvanah (2009), conversely, found that the discounting effect can be

instigated simply by viewing opposite sex images whether they are rated as attractive or not. Initial work also shows evidence that women also (or perhaps are more likely to) discount future rewards whilst in a state of sexual arousal (Kennedy, Lalumiere, & Mishra, 2009).

In a series of experiments Van den Bergh et al. (2008) found that adult males discounted future monetary rewards (as measured by a delay-discounting task) more steeply after being exposed to sexual cues – either sexually appealing non-nude images of women or in another condition physically touching items of lingerie – regardless of mood or cognitive load. They also found that the bikini effect is moderated by sensitivity to reward – increased sensitivity for reward is associated with steeper delay discounting for money, but only when men have been previously exposed to a sexy commercial (i.e., no interaction effect in the control condition). In a third experiment they found that this effect can be generalized to non-monetary cues (candy and fizzy drinks) and that when participants are asked to value their current monetary worth on two scales – one scaled in a way whereby participants typically receive a high score and feel financially satiated ($400 is the high end), and another scaled in way whereby participants typically score low score and feel financially deprived ($400,000 is the high end) – then satiation can 'dampen' the effect of the sexual cues.

In this paper we aim to explore the potential of delay discounting to explain the behaviour of individuals who access SEM-c on the internet. The 'escalation hypothesis' suggests that individuals begin accessing legal adult pornography, and then seek out increasingly deviant material in order to maintain a satisfactory physical and psychological arousal response. This study aims to explore whether the experience of sexual arousal can elicit an increase in

delay discounting that may begin to explain: (a), whether an increase in impulsivity may mean that individuals make more risky decisions and hence diminish their ability to desist from offending when presented with an opportunity to do so; and (b) why long-term outcomes such as punishment or even self-disgust are ignored in favour of short-term illegal behaviour.

To achieve this goal, this study will explore whether the bikini effect can be replicated within the same individual at two separate points in time in both arousing and non-arousing conditions. Also, we will examine the differences between the discounting of pornographic rewards and monetary rewards. Finally, the extent of delay discounting will be compared between users of online SEM-c and non-offender controls. The following hypotheses will be tested:

(H1) all participants will discount future monetary and pornographic rewards more steeply in the arousal condition than in the non-arousal condition.

(H2) there will be no significant differences between the discounting of pornographic rewards compared to monetary rewards.

(H3) convicted users of SEM-c will discount future rewards more steeply than non-offender controls.

Method

Participants

Participants were recruited for two groups: (1) an internet offender group; and (2) a non-offender control group. Participants in the offender group were heterosexual adult males enrolled in the 'Inform+' educational program facilitated by the Lucy Faithfull Foundation (LFF), a child protection charity

specializing in work with sex offenders. Inform+ is a group-based program designed to provide support, advice and information for adult males who have been arrested, cautioned or convicted of offences relating to SEM-c (i.e., accessing, distributing, and/or making[11] an indecent image of a child). None of the offender sample had a current contact index offence against a child (e.g., rape, indecent assault, taking indecent images of a child) or an online grooming offense. One participant in the offender sample had a prior conviction for contact sexual offences against a child. In total 48 internet offenders were invited to take part in the study (6 Inform+ groups of 8 group members) and of these 21 agreed to take part. Four offender group participants withdrew from the study before completing the test[12]. Consequently there were 17 participants in the offender group.

A non-offender adult heterosexual male control group was recruited from four sources: university postgraduate students (n = 5), volunteers from the Circles of Support and Accountability sex-offender support program (n = 3), and three London-based companies (in the accountancy, media, and information technology sectors respectively) who agreed to allow us to approach employees at both junior executive and administrative levels (n = 9). Recruitment took the form of an initial email containing an amended participant information sheet outlining the study and the type of individual that the study required. Respondents were pre-screened in order to provide as matched as possible a sample to the offender samples on demographics such as age, education, previous offences, etc. In total 29 control participants agreed to take part in the

[11] This refers to the deliberate creation of an electronic copy of an indecent image of a child (see Gillespie, 2005b). It should be distinguished from *taking* an illegal image of a child.
[12] All participant withdrawals (in both the offender and control samples) occurred between the first and second sessions.

study. Thirteen control group participants withdrew from the study before completing the test. Consequently there was a total of16 participants in the control group.

Table 1 presents demographic data for the sample, and for each of the groups. Analysis of variance (ANOVA) and chi-squared analyses found no significant differences between the two groups on demographic variables.

Table 1. Demographic data for the sample.

	Internet (n = 17)	Control (n = 16)	Total (n = 33)
Age	40.1 (12.5)	38.8 (13.8)	39.5 (13.0)
Parental status			
Father	8 (47%)	4 (25%)	12 (36%)
Non-father	9 (53%)	12 (75%)	21 (64%)
Ethnicity			
White British	16 (%)	14 (%)	30 (%)
Asian British	1 (%)	1 (%)	2 (%)
Black British	0 (0%)	1 (%)	1 (%)
Educational attainment			
No qualifications	2 (12%)	2 (13%)	4 (12%)
GCSE/O-Level	7 (41%)	3 (19%)	10 (30%)
A-Level	4 (24%)	1 (6%	5 (15%)
Graduate	3 (18%)	8 (50%)	11 (33%)

Postgraduate	0 (0%)	1 (6%)	1 (3%)
Doctoral	1 (6%)	1 (6%)	2 (6%)

Procedure and materials

Each participant was tested at two separate time points that will be referred to from this point forward as Time 1 (T1) and Time 2 (T2). During T1 participants first completed a demographic questionnaire in order to collect information on age, parental status, ethnicity and educational attainment, and whether the participants had any prior sexual offences. Following this, the Self-Assessment Manikin (SAM: Bradley & Lang, 1994) and the Sensitivity to Punishment and Sensitivity to Reward Questionnaire (SPSRQ: Torrubia et al., 2001) were administered. The SAM is a simple non-verbal, pictorial assessment of emotional state measuring pleasure, arousal, and dominance. Each affective concept is judged on a scale of 1 (low) to 9 (high). This scale was used to ensure that the participant's mood did not significantly differ on the two testing sessions. The SRPQ is a 48-item, 2-scale measure designed to assess worry about threats of punishment or failure and the extent to which individuals do things to obtain rewards. The reward scale was used to account for sensitivity to reward in the delay discounting test.

The participants were then asked to complete one of two adapted computer-based delay discounting task referred to by its original developers as the monetary choice questionnaire (MCQ: Kirby, Petry & Bickel, 1999). One version was adapted to prime the participant with sexually arousing cues. A second test was adapted to prime the participant with cues that were not sexually arousing (this is discussed in greater detail in the next section). During

115

T2 the participants completed the SAM for a second time and were then asked to complete the second of the two adapted MCQs.

The monetary choice questionnaire

In this study a computer-based delay discounting task, based on a procedure developed by Kirby and colleagues (Kirby & Marakovic, 1996; Kirby, Petry & Bikel, 1999), was used to estimate the participant's discounting rate. Kirby and colleagues' task was chosen over other delay discounting estimation procedures as this process has previously been used to examine differences in delay discounting in arousal and non-arousal conditions (e.g., Wilson & Daly, 2004; Kennedy, et al., 2008) and has been used to test between vulnerable and control groups (e.g., heroin addicts: Kirby et al., 1999). It is also suitable to be conducted without the presence of an invigilator, the presence of whom could dampen any arousing effect of the experimental stimuli.

The MCQ presents a fixed set of 27 questions each of which offers participants a choice between hypothetical smaller immediate rewards (SIRs: $11-$80) and hypothetical larger delayed rewards (LDRs: $25-$85) where delays range from 1-week to 6-months (Kirby et al., 1999). For example, the first question asks "Would you rather have: Option 1 - £54[13] today; or Option 2 - £55 in 119 days time." Each of the questions can be categorized into one of three groups of 9 questions, based on the size of the rewards offered: small ($25 to $35); medium ($50 to $60); and large ($75 to $85). Kirby et al. (1999) note that delay discounting rates are subject to a magnitude effect, where discount rates

[13] These were presented in US Dollars ($) in Kirby and Marakovic's (1996) procedure. Rather than calculate the GB Pound Sterling equivalent, the amount was simply replicated with the currency sign changed to avoid the need to round up or down. Although these amounts are consequently larger than the original ratios of amounts across trials remain the same.

decrease as the amounts of the rewards increase. The pattern of responses across all 27 questions is used to estimate the participant's delay-discounting rates for each size category.

Adapted money reward questionnaire

An adapted computerized MCQ was produced using E-Prime experimental software and was conducted using a Toshiba Satellite Pro laptop computer running Windows XP. Each question is presented as a single experimental trial. On each trial participants are first presented with fixation point (+) in the centre of the screen for 2000 milliseconds, followed by a priming image displayed for 3000 milliseconds. Priming images were presented in a pseudo-random[14] order. In the arousal condition the priming images depicted adult females in a variety of poses and outfits, but all dressed in a sexually appealing manner (i.e., wearing lingerie or a swimsuit). Images were taken from a commercial women's clothing sales website. In the non-arousal condition the priming images depicted geographic landscapes. Order of condition was counter-balanced, with participants randomly-assigned to either complete the arousal condition in T1 and the non-arousal condition in T2 or vice versa. In total 18 participants completed the arousal condition at T1 and 15 participants completed the non-arousal at T1.

The questions in the adapted MCQ differed from the original Kirby et al. (1999) study in two ways. Firstly, as noted, the questions were presented in pounds sterling rather than dollars. Secondly, each monetary question was followed by a question where the reward was a hypothetical pornography

---

[14] Non-sequential presentation where all 27 images are presented exactly twice each.

reward – amounts of 'credit' for time viewing pornography. For example, in the first pornography trial participants were asked "Would you rather have: Option 1: 67 mins 30s [seconds] of pornography credit today; or Option 2: 68 mins 45s of pornography credit in 119 days." These amounts of pornography credit were directly analogous to the monetary amounts, ensuring that the proportions remained constant, and were calculated by multiplying the monetary reward in the prior question by an arbitrary rate of £0.80 per minute. This rate was chosen because it generated durations that rounded to 30 second intervals (ending in 00s or 30s). Previous studies have been found that erotica rewards (Lawyer, 2008) and sexual activity (Lawyer, Williams, Prihodova, Rollins, & Lester, 2010) are a reliable alternative to monetary rewards in delay discounting tasks, although it should be noted that these studies used different methods to estimate delay discounting rates. Consequently, the adapted MCQ had 54 questions in total. The monetary and pornography trials were run alternately – M1, P1, M2, P2, and so forth.

Prior to commencing the computerized experiment the participant read the following instructions.

"*In the following task you will be asked to make a series of choices between two amounts of either money or pornography. Although the amounts are hypothetical, please respond as you would if you were actually going to receive that amount of money or credit for viewing time of your preferred type of pornography. In each trial you will see a fixation point (+) in the centre of the screen, followed by an image. After this the monetary or pornography choices will appear a will be asked to select your preference.*

Press the '1' key to select Option 1 and the '2' key to select Option 2. Take

time to read the options carefully. The experiment continues after you have

made each selection."

After reading the instructions participants were invited to ask the facilitator to

clarify anything they did not understood, and all questions were addressed

before the participant began the experiment.

Visual priming stimuli

The priming stimuli (images) used in the adapted MCQ were first assessed for

their potential ability to elicit an arousal response. Prior to the test development,

a sample of 23 heterosexual adult male non-offenders[15] were asked to rate 20

randomly-selected[16] images – 10 from the bank of 27 landscape (non-arousal)

images and 10 from the bank of 27 female (arousal) images. The sample was

taken from same three London-based companies as the experimental and control

samples were taken. Each set of ten images were presented on separate A4 sized

pages (2 images per page) with the following instructions:

"*In the following task we ask you to rate the appeal of a series of images. Please*

*look at each image and use the following scale to indicate (a) how **attractive** (i.e.,*

*how pleasant and appealing) you find it and (b) how **arousing** (i.e., how sexually*

provocative) you find it."

---

[15] This was a sample taken separately from the experimental and control groups in the main delay discounting tasks to ensure that the images had not been seen before and as such maintained a novel emotional effect.

[16] All randomization in this study was generated by the online Research Randomizer tool (http://www.randomizer.org/).

The scale is then presented (each choice worded as appropriate): (1) very unattractive/unarousing; (2) somewhat unattractive/unarousing; (3) nether attractive/arousing nor unattractive/unarousing; (4) somewhat attractive/arousing; (5) very attractive/arousing. Space was provided on the sheet in which to fill in each rating.

The average score across the ten was calculated for each respondent for each of the two sets. A mixed design general linear model (GLM) found a significant main effect of both the condition, $F(1,22) = 101.57$, $p<.001$, and question, $F(1,22) = 89.25$, $p<.001$. There was a significant interaction between the category of image and rating type, $F(1,22) = 110.85$, p<.001. As we can see in Figure 1, the condition variable had a dramatic effect on ratings of arousal, suggesting that the female images were found more arousing than the landscape images, but that this was not an effect of the overall aesthetic quality of the image.
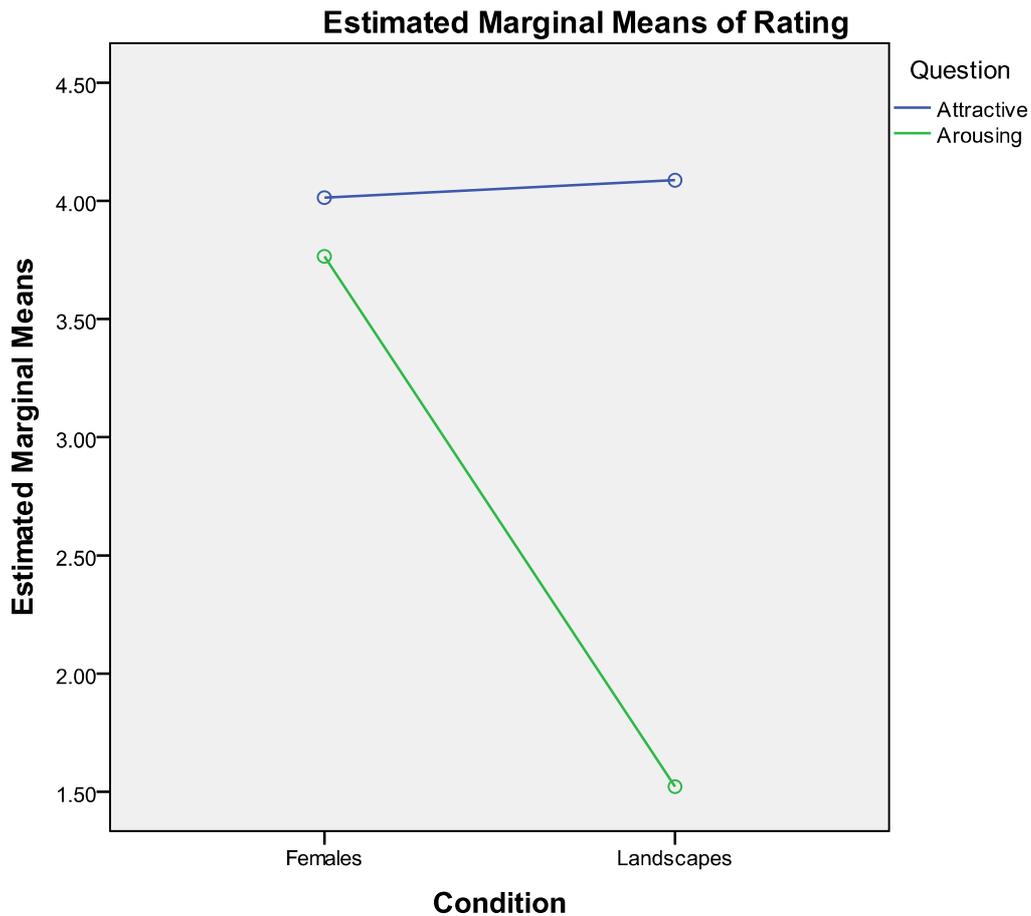
Figure 1. The significant effects of condition and question type.

Discounting rate estimation

Prior research has noted that discount curves are typically hyperbolic in nature (Green & Myerson, 2004; Kirby, 2009; Mazur, 1987). Essentially, this means that humans (and animals) discount the value of a delayed reward by a factor that increases as the duration of the delay increases. Kirby et al. (1996) present a hyperbolic function for delay discounting taken from Mazur (1987) that can be seen in the equation below:

$$V = A / (1 + kD)$$

According to Kirby and Marakovic (1996) "*V* is the present value of the delayed reward *A* at delay *D*, and *k* is a free parameter that determines the discount rate. As *k* increases the person discounts the future more steeply" (p. 97). As increasing *k* increases the individual's preference for smaller rewards it can be thought of as an impulsiveness parameter, where higher values correspond to higher levels of impulsiveness (Herrnstein, 1981; Kirby & Marakovic, 1996). Using Equation 1, each of the 27 questions in the MCQ were constructed by Kirby et al. (1999) to correspond to a single discount rate (*k*) on a hyperbolic curve. For example, question 2 offers participants a choice between "$55 now" and "$75 in 61 days". This question corresponds with a discount rate of *k* = 0.006. So if the participant chooses the immediate reward on this trial it can be inferred that they have a discount rate greater than 0.006. Question 25 offers participants a choice between "$55 now" and "$80 in 30 days", and corresponds to a *k* value of 0.016. If the same individual chooses the delayed reward on this trial it can be inferred that they have a discount rate lower than 0.016. Taken together, this would estimate that participants discount rate of between 0.006 and 0.016 and the midpoint of this interval would be an estimation of this participant's *k* value. As per Kirby et al.'s (1999) methodology, the geometric mean of the two rate parameters is used in order to avoid underweighting the smaller of the two. In this example, the participant would be assigned a bounded geometric mean of 0.00980.

For each of the monetary and pornography rewards there are 3 subsets of 9 questions, 54 questions in total, each of which has a corresponding *k* value. Participants can thus be assigned a separate *k* value for small, medium, and large

delayed rewards. Each set of 9 questions is designed to place the participant on a scale of indifference from k=0.00016 (low impulsivity) to k=0.25 (high impulsivity). As such, the 27 choices represent 10 possible ranges of discount rates (bounded k values), eight of which are bounded above and below two k values and two of which represent endpoints (0.00016 and 0.25) (see Table 2).

Table 2. Bounded geometric means for each range of k-values.

Lower bound	Higher bound	Bounded geometric mean
-	0.00016	0.00016
0.00016	0.0004	0.00025
0.0004	0.001	0.00063
0.001	0.0025	0.00158
0.0025	0.006	0.00387
0.006	0.016	0.0098
0.016	0.041	0.02561
0.041	0.1	0.064
0.1	0.25	0.158
0.25	-	0.25

Based on participants' choices of immediate and delayed rewards across the trials, they were assigned a k value corresponding to one of the eight ranges or one of the two endpoint values. As Kirby et al. (1999) note, because participants' responses are not always perfectly consistent with a single value of k, the estimate could not be made by simply looking for a single switch from the

immediate to the delayed reward. Instead, for each set of 9 questions the proportion of choices that were consistent with each of the bounded geometric means were calculated, and the one chosen was that which yielded the most consistency with the participant's choices. If two k values yield the same frequency of consistency, the geometric mean of the two is taken as the estimate of that participant's k value. In cases where choices are consistent with more than two k values the data is considered invalid and removed from analysis. This situation, however, did not transpire in this study.

<center>Results</center>

SPSRQ/SAM

A one-way ANOVA found no significant differences between the internet and control groups on the sensitivity to reward scale of the SPSRQ. The average time delay between T1 and T2 was 11.1 days (SD = 4.0) and a one-way ANOVA found no significant difference between the offender and control groups on this variable. The three SAM scores (valence, activation, and control) at T1 and T2 respectively were combined to create a single score for mood. The scores for valence and control (where higher scores are desirable) were added to the inverse score for activation (where a low score is desirable). A paired t-test found no significant differences between T1 (mean = 17.0; SD = 2.4) and T2 (mean = 16.8; SD = 3.0) scores for mood, t (32) = .356, p = .724.

Reponses to the delay discounting measure
In general, responses to the delay discounting measure produced a pattern close to the desired range. The expectation of the MCQ is that the majority of

individuals should choose the delayed reward at k rank 9 and very few should choose the delayed reward at k rank 1. In this sample, choices with the highest ranked k values the vast majority of respondents chose the delayed reward. In choices with the lowest ranked k values the vast majority of participants chose the immediate reward. It should be noted that responses in the pornography condition around 20-30% of the respondents in both groups continued to choose the immediate option. This suggests that the pornography questions may need to be further refined to fully reflect the range of k values related to pornography rewards.

Table 3. Choice trials, their associated discount rates (k), and the percentage of participants choosing the delayed reward on each trial in the arousal and non-arousal conditions.

Order	k rank	LDR size	Money						Pornography					
			Arousal			Non-arousal			Arousal			Non-arousal		
			S	M	L	S	M	L	S	M	L	S	M	L
13	1	S	0			0			3			3		
1	1	M		3			0			6			6	
9	1	L			0			0			6			6
20	2	S	0			0			0			3		
6	2	M		0			3			3			6	
17	2	L			0			0			0			0
26	3	S	3			0			0			9		
24	3	M		0			3			3			12	
12	3	L			6			6			9			3
22	4	S	3			9			3			6		
16	4	M		15			18			12			15	
15	4	L			27			23			12			21
3	5	S	27			24			15			9		
10	5	M		24			30			6			18	
2	5	L			64			61			24			27
18	6	S	45			39			30			33		
21	6	M		67			58			39			42	

25	6	L		73		73	61	45
5	7	S	76		64		52	58
14	7	M		88		76	64	45
23	7	L		94		85	58	58
7	8	S	94		91		76	67
8	8	M		97		97	76	73
19	8	L		100		94	55	67
11	9	S	100		100		82	76
27	9	M		100		100	82	82
4	9	L		100		100	79	70

Consistency between individual responses and the k-values assigned to each participant in each set of 9 responses was high. In the control group 97.6% of responses were consistent with the *k* value assigned to their assigned discount rate. When broken down into the two stimuli conditions, 97.3% of responses in the arousal condition and 97.8% of responses in the non-arousal condition were consistent with the assigned *k* value. In the internet group 97.3% of responses were consistent with the *k* value assigned to their assigned discount rate. When broken down into the two stimuli conditions, 97.5% of responses in the arousal condition and 97.1% of responses in the non-arousal condition were consistent with the assigned *k* value.

Response time

A mixed-design general linear model (GLM) was conducted to examine the average response times across the trials. Two within-subjects variables were entered into the GML: *arousal* (arousal vs. non-arousal) and *reward* (money vs. pornography). The between-subjects variable was *group* (internet vs. control). The data met the statistical assumptions of ANOVA. See Table 4 for the means and standard deviations for each condition in each group.

Table 4. Overall mean response times (milliseconds) per condition and reward type.

Condition	Reward size	Internet	Control	Total (SD)
Arousal	Money	4271.6	3321.6	3811.0
		(1275.2)	(1159.0)	(1294.3)
Non-arousal	Money	4136.2	3465.4	3811.0
		(1309.3)	(1109.4)	(1245.0)
Arousal	Pornography	5649.7	4019.4	4859.3
		(2103.3)	(1918.4)	(2149.8)
Non-arousal	Pornography	5163.3	4179.8	4686.5
		(2227.3)	(1818.4)	(2068.7)

The GLM reported a significant main effect of group, $F(1,31) = 5.45$, $p < .05$, $r = .48$. Figure 2 shows that response times for the internet group were greater than for the control group.

Estimated Marginal Means of Response Time
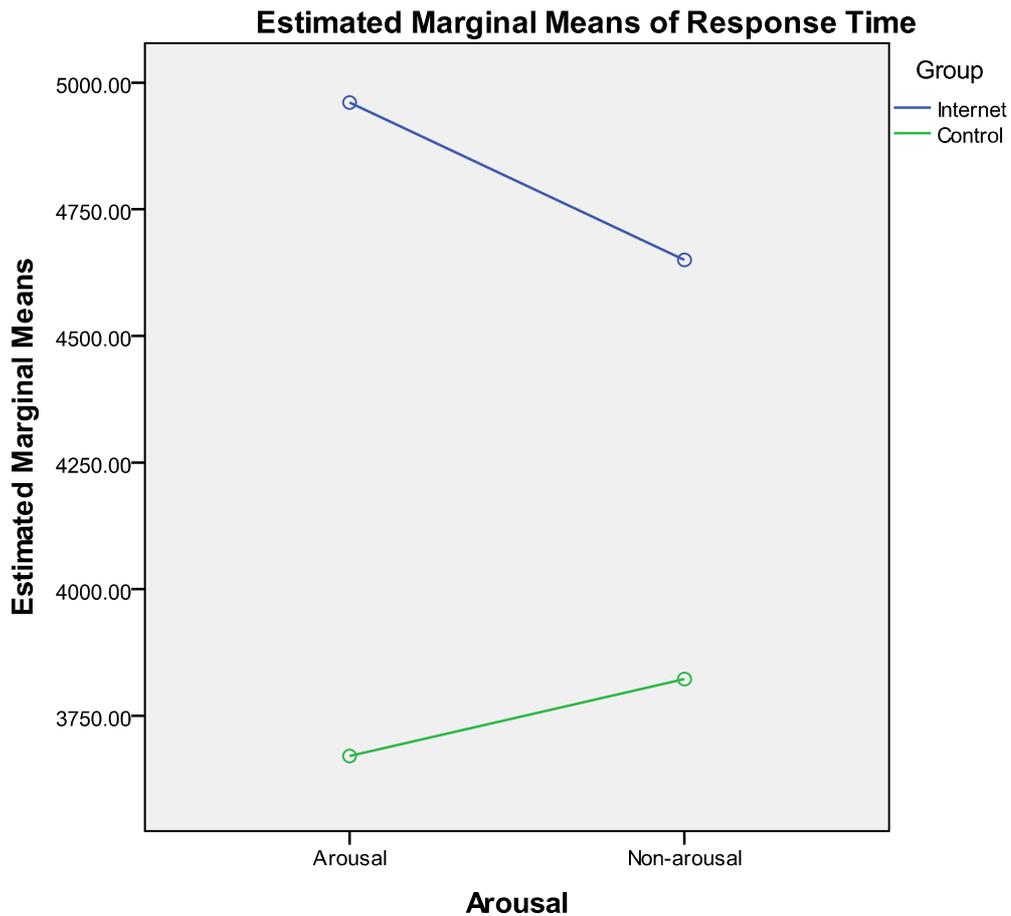
Figure 2. Means of response time for each group in the arousal and non-arousal conditions.

There was also a significant main effect of reward, F (1,31) = 27.24, p <.001, r = .78. As Figure 3 shows, response times in the pornography condition were greater than in the monetary condition. This is likely to be a result of the pornography questions being somewhat more complex, given that they provide choices between times rather than money and those times are broken down into 30 second intervals. There were no significant interaction effects.
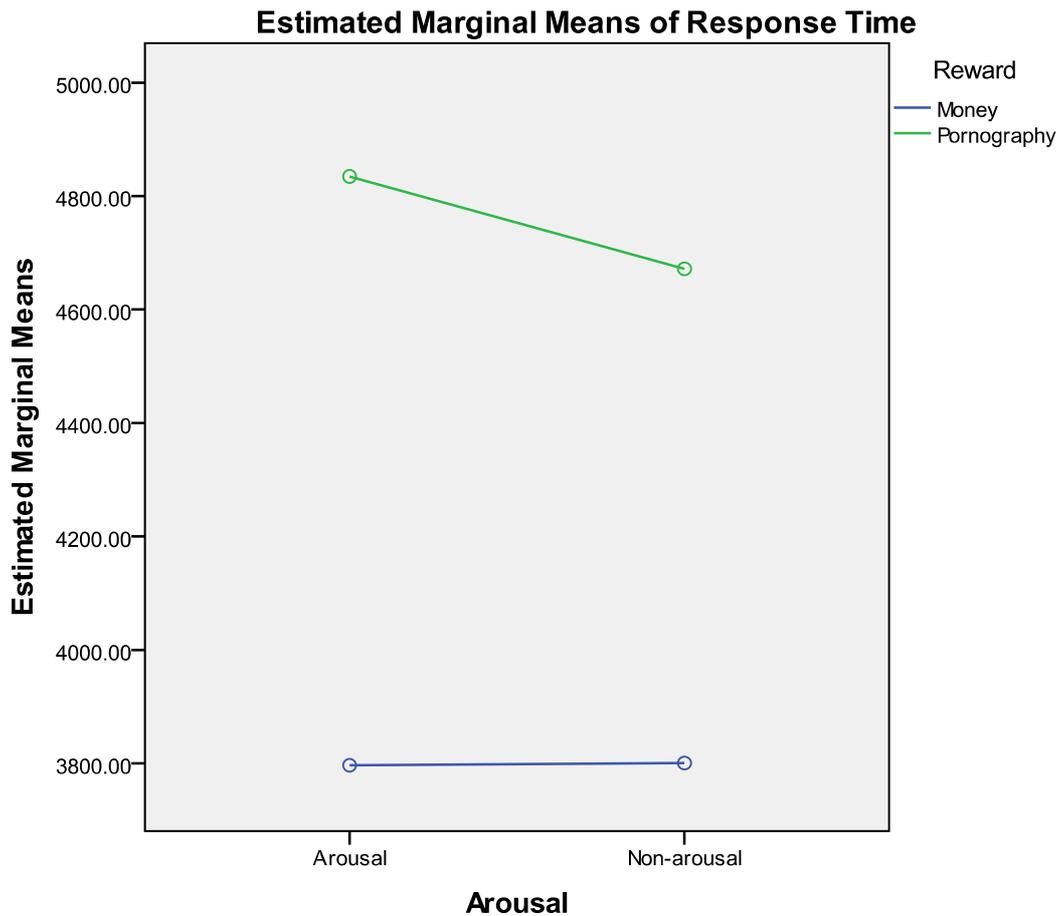
Figure 3. Means of response time for each reward type in the arousal and non-arousal conditions.

Arousal, reward, size, and group differences

A mixed design GLM was conducted to examine the delay discounting data. Three within-subjects variables were entered into the GLM: *arousal* (arousal vs. non-arousal), *reward* (money vs. pornography), and *reward size* (small vs. medium vs. large). The between-subjects variable was *group* (internet vs. control). See Table 5 for the means and standard deviations for each condition in each group. Both examination of histograms for each of the variables and a series of Levene's tests found that the data violated the test assumptions of ANOVA due to non-normal

distribution of scores (positive skew and outliers). To account for this, scores were transformed using a square root transformation. The transformed scores were inputted into the GLM.

Table 5. Mean *k* values (standard deviations in parenthesis) for each group categorized by experiment parameters.

Experiment parameters			Group	
Reward type	Condition	Reward size	Internet	Control
Money	Arousal	Small	0.033 (.04)	0.029 (.04)
		Medium	0.027 (.04)	0.014 (.02)
		Large	0.016 (.02)	0.008 (.01)
	Non-arousal	Small	0.046 (.05)	0.031 (.04)
		Medium	0.029 (.04)	0.033 (.06)
		Large	0.018 (.02)	0.023 (.06)
Pornography	Arousal	Small	0.077 (.09)	0.076 (.08)
		Medium	0.056 (.08)	0.069 (.08)
		Large	0.067 (.09)	0.074 (.09)
	Non-arousal	Small	0.073 (.09)	0.096 (.10)
		Medium	0.057 (.07)	0.092 (.10)
		Large	0.069 (.10)	0.086 (.11)

The GLM reported a significant main effect of arousal, $F(1,30) = 4.37$, $p < 05$, $r = .36$ (see Fig. 4). Group means indicate that both the internet and control groups were assigned greater estimated *k* values in the non-arousal condition than in the arousal condition. As a result, Hypothesis 1 can be rejected.

Estimated Marginal Means of k
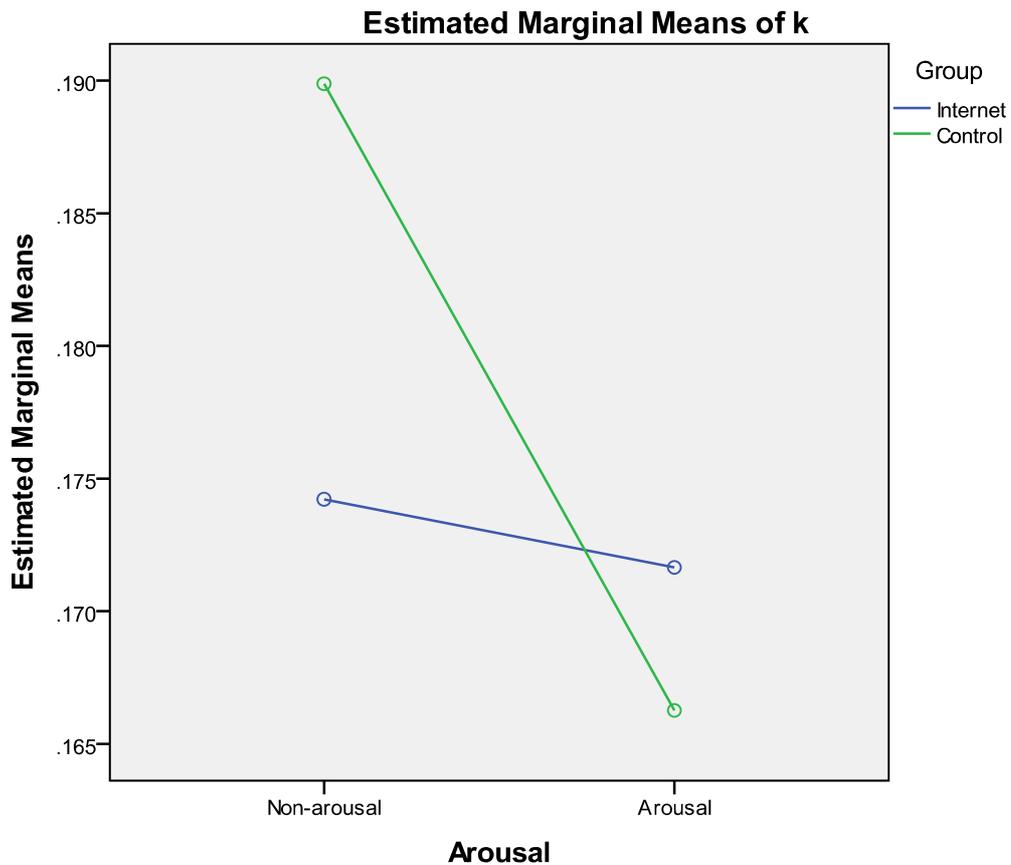
Covariates appearing in the model are evaluated at the following values: SR = 11.8485

Figure 4. Means of *k* values for each group in the arousal and non-arousal conditions.

The GLM also reported a significant main effect of size, $F(1.48, 44.42) = 3.81$, p <.05 (see Fig. 5). Contrasts indicated that small rewards elicited larger estimates of *k* than large rewards, $F(1,30) = 4.93$, p <.05, $r = .38$, and medium rewards elicited larger estimates of *k* than large rewards, $F(1,30) = 4.62$, p <.05, $r = .37$. There was no significant main effect of reward, $F(1,30) = 1.75$, $p = .20$. As a result Hypothesis 2 can be rejected. There was no significant between-subjects main effect of group, $F(1,30) = .024$, $p = .88$, indicating that *k* values from

internet and control participants were in general the same. There were no significant interaction effects.
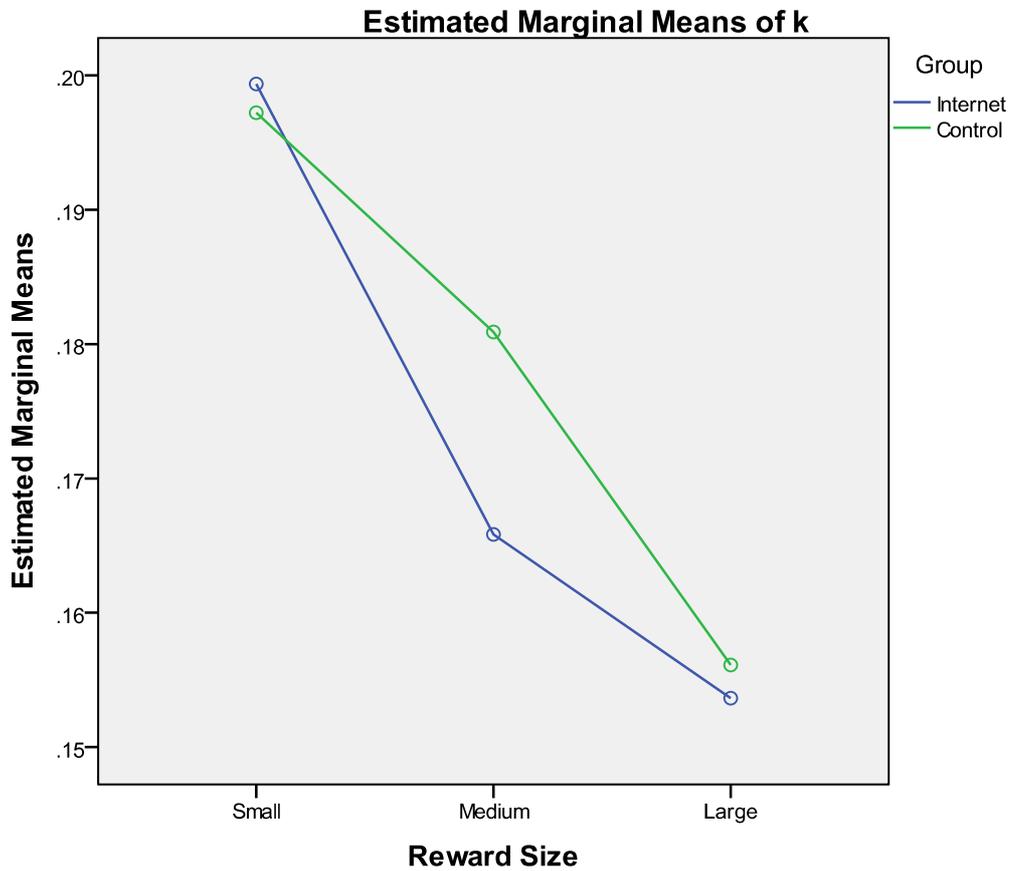
Covariates appearing in the model are evaluated at the following values: SR = 11.8485

Figure 5. Means of *k* values for each group based on the size of the reward.

Discussion

This study found that after accounting for sensitivity to rewards there are no significant differences in response patterns on the Kirby et al. (1999) MCQ between arousal and non-arousal conditions. This is in contrast to prior research suggests that sexual priming cues will either increase the likelihood of choosing immediate rewards (e.g., Loewenstein et al., 1997; McAlvanah, 2009; Van den

Bergh, Dewitte & Warlop, 2008; Wilson & Daly, 2004) or that there will be no effect (e.g., Kennedy et al., 2009). This is in direct opposition to much research in the literature that have found that sexual arousal acts as an amplifier (Ariely & Loewenstein, 1996) in terms of activities and decision-making. This study found that when the same individual (both non-offenders and offenders) completed a delay-discounting task under both sexual arousal and non-sexual arousal conditions they are *more* likely to choose the delayed reward in the sexual arousal condition. This appears to suggest that when aroused the subject becomes less prone to impulsive decision-making. Indeed this suggests that they discount future rewards less when in an aroused state than when in a non-aroused state. Perhaps these results even suggest that they are better at judging the benefits of delayed rewards over smaller immediate rewards. The results also seem to suggest that this is not an effect of the reward itself as there appeared to be no difference when choosing either monetary or pornographic rewards.

Perhaps this result is not surprising. As Loewenstein (1996) suggests that that as visceral influences intensify, the individual's attention and motivational focus on activities and forms of consumption associated with that visceral factor increase. During the arousal condition perhaps the increase in motivational focus is not for immediate gratification, but in fact focuses the mind on achieving the maximum reward possible – even if it is a delayed reward. As such, when in a sexually aroused state perhaps the individual seeks to maximize the amount of sexual material possible – and as such choose the delayed rewards. Similarly, the visceral state was sexual arousal and perhaps it would not then be surprising that this did not lead to an increase in propensity to make impulsive decisions

133

regarding monetary rewards, as this is not necessarily a form on consumption associated with sexual arousal.

This explanation, however, would not lead us to the finding that under conditions of sexual arousal there was not an increased propensity towards immediate pornography rewards. A possible explanation for this however, may be the experimental paradigm used in this study, as opposed to a more realistic, perhaps more externally-valid procedure. If the participants were, in fact, in a sexually-aroused state and the rewards had been real, rather than hypothetical, and had it been possible to utilize that material to heighten their sexual experience (e.g., been able to masturbate to it) then perhaps we may have seen a greater frequency of choices for the immediate pornographic reward than the later reward. For example, in the study by Ariely and Lowenstein (2006), their subjects self-induced sexual arousal through masturbation, before engaging in a risky-decision-making task. Had we been able to use a similar approach to the sexual arousal state we may have found a different result.

There would, however, be certain ethical arguments against inducing sexual arousal to this extent in a sample of convicted sex offenders, in terms of both the potential cognitive processes for the offender. They may be in the process of dealing with or working with a professional to deal with deviant sexual arousal (i.e., to SEM-c) and the inducement of sexual arousal, if not done in an emotionally protective environment (and certainly if done whilst simultaneously using a computer) has the potential to activate automatic sexual scripts that may relate to their offending behaviour. It may indeed be frightening for someone whose sexual behaviour has had such deleterious consequences. Similarly, an argument could be made against the process of inducing sexual

arousal directly prior to a therapeutic session. A final ethical argument would relate to inducing sexual arousal in any participant (though particularly the sex offender sample) and then sending them on their way afterwards, without a full and extensive debrief and an opportunity to recover from any physiological effects.

Perhaps the most engaging explanation of these contradictory results may be that one's meta-understanding of one's own preferences can, in many situations, be as important as the preferences themselves (Ariely & Loewenstein, 2006). In contrast, O'Donoghue and Rabin (2003) note that the impact of hyperbolic discounting on actual choice behaviour depends on whether one is *naïve* or *sophisticated* about the fact that one will face self-control behaviours in the future. For example, Ariely & Weternbroch (2002) found that students who demonstrate self-awareness of their own tendency to procrastinate got higher course grades than those who did not, with the suggestion that they set voluntary goals for themselves as a self-management strategy. One could even go back to the 8th Century BC and Homer's epic poem the *Odyssey* for examples of the use of self-management strategies to avoid resisting temptation. When Odysseus wished to experience the seductive song of the Sirens he declared to his shipmates that prior to sailing within earshot of the Sirens, he would anoint *their* ears with wax but not his own. His orders followed that they should then lash him to the mast and ignore his pleas or orders to be released, because as much as he might believe otherwise the temptation on hearing the Sirens would be too strong for him to resist[17].

---

[17] It should be noted that this perhaps does not represent *self*-awareness, as the commitment device (i.e., being lashed to the mast) was originally the idea of Circe. See Homer, *The Odyssey*, Book XII: 13.

Hence, in this experiment it may be the case that we are testing sophisticated hyperbolic discounters who are aware in advance of the potential effect that sexual arousal may have on their behaviour, have identified the experiment as a possible experience of sexual arousal, and have consequently controlled their decision-making effectively. This may have had an impact of the results of this study in a two ways. Firstly, all of the participants should have been aware that there would be a condition whereby they would be tested under an arousal condition. This is due to the description of the procedure in the in the participant information sheet and a disclaimer in the same information sheet that they would be exposed to images of women in lingerie. Hence, all of the subjects would have been considered sophisticated about the fact that they may face a condition under which they will face self-control problems in the future. Secondly, this may have had even more impact for the internet offender sample, whose current circumstances as a convicted sex offender could be considered to be evidence of some inability to demonstrate self-control whilst under conditions of sexual arousal. Hence, they may have been better able to control the effects of the arousal condition on their choices on the delay discounting task. This may have been particularly the case if they had completed the non-arousal task first and the arousal condition second, as they may have had an advanced awareness that the second test was more likely to present a challenge to self-control.

It has been noted that internet offenders may have greater self-control than contact sex offenders (Babchishin et al., 2011) and it may be that this is evidence of this – that their self-control in response to potentially sexually arousing cues compared to that of a non-offender sample. Indeed, it appeared in fact to be better in general than the previous research would have suggested. As

Babchishin et al. note, a "plausible hypothesis for the low rates of hands-on sexual offenses despite high rates of sexual deviancy among online offenders is that online-only offenders may have greater self-control and less impulsivity than offline offenders" (p. 107). It may well be the case that not only do they have better self-control, but that convicted internet offenders (though perhaps not undetected internet offenders), due to their experiences of the deleterious consequences of their actions are also mindful, sophisticated hyperbolic discounters. This is perhaps not a new concept. Indeed this is a key element in the relapse prevention aspect of sex offender treatment- identifying, in advance, factors within the lives of offenders that may present a challenge to self-control. A number of treatment approaches include a relapse prevention module (Laws, 1989; Pithers, 1990) designed to help the offender identify and manage risky situations and mental states. These are found to be popular with offenders, some of whom have indicated that they view relapse prevention concepts as having the greatest utility in treatment (Levenson, Prescott, & D'Amora, 2010). As such, it may be argued that the key to both desistance and avoiding recidivism in online offenses is to increase awareness of the effects of sexual arousal on behaviour. To paraphrase Wilkinson (2008: p. 232), self-awareness affords them the knowledge that at some point in the future they will find themselves in a situation where the instantaneous utility of offending will make it attractive (i.e., the discounted benefits will outweigh the discounted costs), and hindsight affords them the knowledge that in the future they will regret offending, *in the future* the discounted costs will outweigh the discounted goals. Hence, they need to prepare for the temptation *a priori*.

This mindfulness of behaviour may in fact provide a better explanation of the problem of the use of SEM-c than the specific issue of delay discounting itself. Consider the naïve hyperbolic discounter who has been convicted of a sex offense related to SEM-c access. They decide to seek out and download pornography on the internet, believing that they will act in the same way during online sexual arousal as they would under offline non-arousing conditions, and only search for legal pornography sites to avoid the deleterious consequences of detection. However, during the 'consumption' period of online sexual arousal they are unable to resist the temptation of accessing and downloading SEM-c. Had this individual been a sophisticated hyperbolic discounter they would have had an awareness of the temptation they would face and the effect of online sexual arousal as a potential disinhibitor. Knowing this, they would have either avoided pornography altogether or utilized a self-control or commitment device, for example computer monitoring software.

This links to the concept of relapse prevention in sex offender treatment and providing offenders with the skills in order to make better decisions under times of stress or temptation. Laws (2003) cites the treatment implications of delay-discounting noted by Bickel, Madden, and Petry (1998) who suggest that an awareness of the effects of external factors on delay discounting could lead to novel treatment approaches for individuals with social deviance, by using procedures related to self-controlled choice, such as precommitment, motivational interviewing , tolerance of delay, and cost-benefit reasoning. Other similarly novel treatment techniques may also be useful in teaching the self-awareness of sexual arousal's effect on behaviour and decision-making. For example, mindfulness techniques, a meditative practice emanating from Eastern

philosophical traditions, are being proposed as a therapeutic alternative to cognitive-behavioural interventions (Howells, 2010; Gillespie, Mitchell, & Beech, submitted). These techniques are described as the self-regulation of attention and the acceptance of intrusive thoughts, the acceptance of which allows the individual to respond in a reflective manner (Bishop et al., 2002).

This paper of course has some limitations. Firstly, it is based on hypothetical and not real behaviour. This study did not observe actual behaviour. This could have serious consequences for our hypothesis that the difference between naïve and sophisticated delay discounters may have been the reason for our results in that the individuals in the sample may not respond in the same way to real monetary or pornography rewards. Therefore, it is important to view the discussion of this as a potential explanation of the results as just that - a *potential* explanation. Further research is needed to see whether it is the case that convicted internet offenders (or any other sex offender) are sophisticated delay discounters outside of a hypothetical context. Another limitation was the limited control available over the experimental setting. The subjects were placed in a room alone with a laptop to conduct the experiment to reduce any experimenter effect and to reduce any inhibitions created by other people viewing their responses. There was therefore no way to ensure that the participants carefully and conscientiously carried out the instructions. However, the response patterns (i.e., that the vast majority chose the immediate reward for the highest k rank and the delayed reward for the lowest *k* rank) suggests that this may not have been an issue.

There may have been some effects of sampling. The sample sizes were not large (n = 33) although recruiting a large sample size is often a difficulty in

criminal justice contexts, especially within specific subgroups of offender such as internet offenders. Although all efforts were made to match the groups there may be some reason why the groups were not representative of their respective offender and non-offender populations. The study was also based only on heterosexual males. As such, it will be difficult to generalize these results to other groups, for example homosexual males, or hetero-/homosexual females, of which there are an emerging number (Elliott & Ashfield, 2011). Due to the fact that sexuality was self-reported (implicitly through the response to an advert requesting heterosexual males) there may be some overlap between the self-reported sexuality of the participants and their actual attraction to males and females. For example, there are a number of clients participating in the LFF Inform+ group work sessions who, despite a wife and family, view images of young boys. Should an individual in this group volunteer, perhaps the stimuli would not elicit the same extent of delay discounting that perhaps a more offense-specific image might.

This study did not account for the possibility of image management ('faking good') or self-deceptive enhancement (a subconscious bias towards favourable self-description) (Paulhus, 1998), and so the possibility remains that some participants may have been consciously or subconsciously presenting with abnormally low discounting scores. It is a possibility that they may have had a specific reason in seeking to demonstrate self-control and a lack of impulsivity. The offender sample, for example, are post-charge and pre-sentence, meaning that they are in the mindset of both behaving, and more importantly being *seen to be* behaving, since their sentencing decision is impending and they are under constant monitoring and assessment.

A further limitation could be that the images were not arousing *enough*. Prior judgments were found that they were more 'arousing' than images of landscapes. However, being more arousing than the controls does not necessarily mean that the images were consequently able to elicit a sexual arousal response. To counter this any future study of this format should seek to develop a way to measure ongoing suborgasmic response, perhaps through a similar method to Ariely and Loewenstein's (2006) arousal thermometer. Conversely, it is also a possibility (although a somewhat unlikely possibility) that since the stimuli rating task arousal was conducted by a separate group from the internet and control groups that the two experimental groups (internet and control) included a number of participants for whom the images of landscapes elicited a visceral state in which they became more likely to choose the immediate response.

Conclusions

In finding that internet offenders discount the future to a lesser extent under conditions of sexual arousal this study runs counter to the previous research into this phenomenon. There may be a systematic reason for this and the limitations of the study have been discussed. It could, however, be the case that convicted internet offenders become *sophisticated* delay discounters. They are able to use their self-knowledge of previous outcomes of behaviour that they have engaged in whilst in a sexually aroused state (i.e., their access of SEM-c) that they are able to put into place effective self-management strategies that enable them to make decisions unaffected by the visceral factor. This is a hypothesis that requires further testing, but if found to be true would have implications for the treatment of internet offenders, perhaps recommending the use of relapse prevention

methods with a behavioural economic element and perhaps mindfulness

techniques in order to put theory into practice.

PART V:

DISCUSSION

Chapter 6:

DISCUSSION

Thesis Aims

The overall aim of this thesis was to investigate whether or not those psychological constructs outlined in the Integrated Theory of Sex Offending (ITSO), as well as other aspects of sex offender theory, can be used to explain the behaviour of individuals who access child pornography using the internet.

Summary of Findings

Chapter 1 reviewed the current literature on internet sex offenders and examined the applicability of sex offender theory (e.g., Integrated Theory of Sexual Offending, Self-Regulation Theory, etc) to the internet offender population. It was concluded that there was a great deal of potential for contemporary etiological and offence-process theories to explain internet offender behaviour. The growing base of research literature on internet offender behaviour and characteristics suggested that internet offenders do appear to display clinical symptoms such as intimacy and social skills deficits, deviant sexual interest, poor self-management, and offence-supportive cognitions. It was noted, however, that these deficits may manifest in novel ways in this population, and an assumption that the internet offender population is analogous to the child molester population may be erroneous.

The aim of Chapter 2 was to compare a community-based Probation Service sample of 505 internet and 506 contact child molesters on a battery of sexual offence-related psychological measures. These measures were related to

three of the four clinical constructs that were found to be potentially relevant to internet offenders in Chapter 1: interpersonal deficits, poor self-management, and offence-supportive cognitions. It was found that the most substantial distinction between the two groups was that contact offenders were more likely to have primary deficits related to offence-supportive cognitions and victim empathy than internet offenders. In addition to this, internet offenders were found to have a greater ability to relate to fictional characters. These findings suggested that contact offenders have a greater difficulty identifying and appreciating the harmful impact of sexual contact between children and adults and hold maladaptive beliefs relating to the ability of a child to consent to, initiate and enjoy sexual contact.

Internet offenders, it is hypothesized, may be more aware of the harmful nature of sexual contact between adults and children, but are able to distance themselves from the abusive nature of SEM-c and justify its use in the belief that they are not directly responsible for that harm and are simply a passive viewer of images. This is somewhat supported by the finding that in addition to a greater ability than contact offenders to understand the harm caused by sexual abuse, internet offenders also appeared to have an elevated ability to related to fictional characters. This appears to be an intuitive result, given the nature and production of child pornography as a form of deviant (not to mention illegal) entertainment, with the child performing a role for an audience. Victims are often instructed to smile and look at the camera, presenting the facade of a compliant, sexually-sophisticated child.

As it was noted in Chapter 2, the allocations of group membership (internet vs. contact) were dependent on the offender's index offence. This does

not account for previous offending histories in either group. As such there may have been individuals in the internet group who have committed contact offences and contact offenders who have a history of accessing SEM-c. Consequently, Chapter 3 examined a sample of 459 internet-only, 526 contact-only and 143 mixed internet/contact offenders on the same psychological measures as in Chapter 2. The mixed group consisted of individuals who had either: (1) a mixture of internet and contact index offences; (2) index internet offences, but at least one previous known contact offence; (3) index contact offences, but at least one previous known internet offence. The findings suggested that mixed offenders present a profile that shares more common characteristics with internet offenders than contact offenders. As such, mixed offenders, like internet offenders, appear to have an understanding of the harm caused by sexual contact between adults and children, that children are not able to initiate and consent to sexual activity, and demonstrate empathy for the victims of child sexual abuse.

This would appear to be contradictory, given that mixed offenders have committed a contact offence and would therefore have been exposed to the harmful realities of the sexual offence process, and would therefore be expected to have developed these cognitive distortions to justify those contact offences. One explanation for this discrepancy is the finding that mixed offenders can be distinguished from both internet-only and contact-only offenders is elevated scores indicating poor self-management. This lack of self-management skills may explain how a group of individuals who do not have deficits in empathy or frequent cognitive distortions can commit contact offences. Indeed, Ward & Hudson (1998) describe the use of SEM-c as a maladaptive self-management

146

technique to avoid contact offences. In addition, mixed offenders are found to demonstrate a similar elevated ability to relate to fictional characters as internet offenders. Again, this is perhaps unsurprising given their use of SEM-c and, as was noted in Chapter 2, the deliberate stylization of the material and the way in which its users relate to the material and scenes they view.

Chapter 4 followed on from the findings that individuals with SEM-c related offences, regardless of whether they have prior contact offences, do not seem to demonstrate cognitive distortions relating to the appropriateness of sexual contact between adults and children. This chapter sought to examine whether internet offenders endorse more internet offence-specific cognitive distortions. The Internet Behaviours and Attitudes Questionnaire (IBAQ: O'Brien & Webster, 2007) was used to measure endorsement of self-statements relating to internet use, online responsibility, and empathy for victims of SEM-c, in 177 U.K. internet offenders. Overall, endorsement of the items in the IBAQ was low with the two most frequently endorse items each only being endorsed by 48% of the sample and only 7 items being endorsed by one-quarter or more of the sample. This suggests that perhaps internet offenders do not hold offence-supportive beliefs to any great degree and that these beliefs are perhaps not a driving-force behind the use of SEM-c. Some endorsement was demonstrated though, and the most endorsed items were typically related to a feeling that internet and SEM-c use is compulsive and uncontrollable.

An exploratory factor analysis found that the 34 items tended to cluster into 5 factors: Nature of harm, compulsivity, online identity, indiscriminate arousal, and fantasy. It was also found that these five factors had the ability to discriminate between subgroups of offenders. Offenders who were found to be

'higher behaviour' offenders (i.e., those who more frequently used the internet for sexual purposes) scored significantly higher for compulsivity and online identity. It was noted that it seemed somewhat self-explanatory that someone who believes they are addicted to the internet and suffers withdrawal when they cannot access sexual material online would spend more time online for sexual purposes and vice versa, and perhaps would consequently feel more socially isolated and happier/more confident online than offline. It was also found that individuals who were not, and had not previously been, in a long-term relationship scored significantly higher on the online identity scale. Again, it seemed intuitive that an individual who either struggled to initiate and maintain appropriate adult relationships (or indeed chose not to) would endorse items relating to feelings of importance, confidence and happiness online.

The aim of chapter 5 was to seek to find some explanation for the offending behaviour of the seemingly sizeable minority of offenders who did not demonstrate offence-supportive cognitions, as well as examine the fourth clinical construct in sex offender theory – sexual arousal. Chapter 5 incorporated recent findings from behavioural economics that indicated that sexual arousal (and other visceral states) has a directly observable effect on decision-making behaviour. In economics it has been noted that adult males have an increased propensity to choose smaller immediate rewards over larger delayed rewards after being primed with sexually arousing cues. This could have implications for internet offenders who have, presumably whilst in a sexually aroused state, chosen immediate gratification through SEM-c and discounted the future consequences. Chapter 5 compared a sample of 17 adult male heterosexual internet offenders and 16 adult male heterosexual non-offending controls on a

test of delay discounting (MCQ: Kirby, Petry, & Bikel, 1999), under both (sexual) arousal and non-arousal conditions.

Contrary to expectations, the findings indicated that participants' demonstrated a significant decrease in preference for smaller immediate rewards in the arousal condition. Two potential explanations were provided. Firstly, as Loewenstein (1996) notes, as visceral influences intensify the individual's attention and focus on factors associated with the visceral influence increase. Consequently, it is possible that as sexual arousal intensifies the motivational focus is not on immediate gratification, but on achieving the maximum reward possible – even if that reward is delayed. Secondly, as Ariely and Loewenstein (2006) noted, the offender's own meta-understanding of their own preferences may be important. Where individuals are sophisticated delay discounters (O'Donognhue & Rabin, 2003), and demonstrate advanced self-awareness of the potential effect that sexual arousal may have on their behaviour, the more likely they may be to put controls on their behaviour in place. Hence, due to the expectation that they would be viewing images of women in lingerie, they were notified in advance that they would experience potential tests of self-control, and were able to manage any effect sexual arousal may have had. Also, for the offenders their recent experience of the consequences of previous inabilities to manage behaviour in sexual aroused states may have heightened their self-awareness of the effects of sexual arousal on their behaviour and they may have sought to control this.

Theoretical and practical implications for internet offenders

The findings in this thesis have potentially important implications for both our knowledge of the characteristics and behaviours of internet offenders, as well as our ability to assess and treat the population. In the sections below, the key differences between internet offenders and contact child molesters and the implications of this in terms of sex offender theory are discussed. The implications for mixed offenders and how we might conceptualize 'cross-over' is then discussed. The practical implications of these findings in terms of how we might go about assessing and treating this population are then addressed.

Differences between internet offenders and child molesters

The findings of this thesis suggest that the key difference between internet offenders (apparently regardless of whether they have a previous contact offence) is that internet offenders do not, en masse, appear to present with offence-supportive cognitions. This lack of endorsement applies not only to the beliefs regarding the sexual sophistication of children and the demonstration of empathy for victims of sexual abuse, but also to internet offence-specific beliefs, such as believing that just looking is not harmful, that the children in the images are undeserving of empathy, or that child pornography is a healthy source of sexual fantasy.

This appears to be contrary to the *cognitive distortion hypothesis,* as described by Gannon & Polascheck (2006), which states that when sex offenders come to the attention of clinicians or researchers they typically demonstrate established offence-related beliefs that facilitate sexual offending. Whether or not cognitive distortions are in fact criminogenic or problematic remains a controversial issue in sex offender research (see Maruna & Mann, 2006).

However, it would appear that for internet offenders the motivational forces at work do not even appear to be facilitated by these pro-offending attitudes. The demonstration of pro-offending attitudes from internet offenders that have been reported in clinical work and more qualitative research perhaps are an example of those offenders seeking to rationalise their behaviour in a clinical context, rather than representing any deeper underlying schema or implicit theories about the world or their behaviour.

Certainly, those offence-supportive statements that were more frequently endorsed in Chapter 4 appeared to be *action*-based, representing a belief that the actions and consequences of viewing SEM-c were not harmful and were unrelated to the sexual abuse that they depicted. As Ó Ciardha (2011) notes, however, there is a lack of theory-driven research that differentiates the cognitive products (i.e., the self-statements) from cognitive processes that might link attitudes and beliefs to deviant sexual interest and offending behaviour. These beliefs that viewing SEM-c are not harmful (although it would seem that most offenders in Chapter 4 would not endorse statements suggesting they should be legal) may be related to the second key difference between internet and contact offenders – the finding that SEM-c related offenders, regardless of any previous contact offences, are more able to relate to fictional characters.

This may have direct implications for sexual fantasy in users of SEM-c. It suggests that internet offenders are more able to engage in fantasy, through a greater ability to cognitively transport themselves into fictional narratives and engage with fictional characters on an emotional level. What remains to be seen is whether this ability pre-exists their use of SEM-c and thus may be some part of their motivation for accessing the material (though we would still need to

understand why SEM-c in particular was chosen) or whether continual engagement with SEM-c and other fictional material accentuates this ability. It certainly has a relevance to the use, and criminalisation, of non-photographic pornographic images of children (NPPIC or pseudo-images) – especially cartoon representations. If internet offenders are more able to emotionally engage with fictional narrative then perhaps although NPPIC do not depict real children – or if they do depict real children they do not depict actual sexual abuse – it does not necessarily mean that viewers are not able to experience realistic emotional and cognitive engagement with the scenes and characters. The concern in the U.K. Home Office's consultation document on NPPIC (Home Office, 2007) was that "the fantasy images themselves fuel abuse of real children by reinforcing potential abusers' inappropriate feelings towards children" (p. 5). If this is truly the case, then this finding that internet offenders are more able to relate to fictional narrative is one that has further implications in the risk management of internet offenders.

This ability to relate to fictional characters may also begin to explain how internet offenders are able to commit their offences whilst simultaneously knowing that sexual contact between adults and children is harmful to a child. As was highlighted in Chapter 1 it would appear that internet offenders are able to divorce the abusive element of the image from its sexual utility through processes of dehumanization and normalization. This element of dehumanization is therefore perhaps not about seeing the child as unworthy, or sexually sophisticated, etc, but rather as a fictional character. To the viewer the child remains simply an actor performing in a scene for their benefit as the audience and the reality of the image is discounted. Hence, the offender may

have the ability to empathise with the child in the image, but simply does not see that abuse as being borne out of a real-life situation.

One way to conceptualize this would be in terms of what Holland (2008) describes as the *suspension of disbelief*. Holland suggests that our brains link reality-testing with our need to act on what we perceive. When we are 'rapt' by a fictional narrative, be it film, television, or literature, we feel no scepticism because we cannot or will not act on what we are perceiving. Consequently, we do not doubt that, for example, Superman can fly or that animals can talk. Providing a neuropsychological basis for this Holland, citing work by Gerrig (1998), suggests that the reality-checking process in the brain is two-fold. The first system is 'unsystematic', it perceives and it believes what it perceives. The second system is 'systematic' and assesses the reality of what we perceive in terms of whether or not we need to act on it. It is this second system that Holland suggests we switch off for fictional works as we have no reason to invoke that system to compose responsive actions. As Prentice and Gerrig (1999) state, "Belief in fiction [that is, in the factual information represented in a fiction] is determined not by a critical analysis . . . but instead by the absence of motivation or ability to perform such an analysis" (Prentice & Gerrig ,1999: p. 542). So for internet offenders, they view the children in the images as characters in a fictional narrative. They have no need to act on the images that they view and hence they do not need to invoke the reality-checking systems, and so are able to experience the sexual element of the material without needing to question its harm or the consequences for the child. Indeed, the deliberate stylization of SEM-c in seeking to portray willing, compliant, sexually-sophisticated children is designed specifically to tap into this suspension of disbelief.

The possible effects of the suspension of disbelief in the offence process of internet offender remain a hypothesis and is as yet untested. This would represent a key potential avenue for further research. By identifying the relationship between the viewer and the image and whether or not the viewer is able to disengage the very cognitive processes that would allow them to empathise with the child in reality, rather than the child in the image, would be an interesting addition to the research literature. It would also be interesting to explore whether any potential links between internet offenders' apparent ability to relate to fictional characters and sexual fantasy. It may suggest that internet offenders are particularly skilled at immersing themselves in fictional narratives. It would certainly be a novel research thread to examine whether this ability is linked to offender's choice of pornographic material, or whether it precludes or is perhaps caused by use of pornographic material.

Implications for mixed offenders

The findings in Chapter 3 that mixed offenders present a profile that has more in common with internet offenders than contact offenders is perhaps the most surprising outcome in this thesis. It would perhaps have been expected that mixed offenders would present with similar characteristics as contact offenders. As Calder (2004) stated, the move from viewing SEM-c to contact offences is a massive one, and so in order to make that step possible one would expect that the individual would have generated, for example, offence-supportive cognitions that allowed them to justify sexual contact between themselves and their victim. However, this does not appear to be the case. We do not yet, however, have a complete understanding of the chronology of cross-over. It is likely to be the case

that there will be some who view SEM-c that will go on to commit contact offences. It is also likely that there are some who have committed contact offences who also view SEM-c either as part of their offending routine, or to fuel fantasy when there is no available victim. To

Chapter 1 highlighted the potential benefits of the S-R model to describe the interaction between contact and internet offenses – specifically the difference between passive under-regulation and active misregulation of offense behaviour. Self-regulation and self-management skills appears to be more intact for internet-only offenders than for contact offenders (Babchishin et al., 2011) and as Chapter 3 found, individuals with mixed offences too appear to demonstrate poor self-management. These self-management deficits could also provide some further understanding for the mixed offender pathways approach. Ward and Hudson (1998) suggested that the route to contact offending is be defined by both the goal (either approach or avoidant: Cochran & Tesser, 1996) and the strategy chosen to achieve that goal (active or passive). It may be possible to adapt the pathways model to describe the relationship between online and offline offending.

For example, a *misregulation* pathway (Ward & Hudson, 1998) might describe *contact-then-internet* individuals with previous contact offenses who use SEM-c as a strategy to manage their behaviour and are subsequently detected for internet offenses. An *active/passive escalation* pathway (Quayle & Taylor, 2002) might describe *internet-then-contact* individuals who are attracted to online SEM-c and have no prior history of contact offenses, but whose behaviour escalates due to either: (1) fantasy rehearsal related to ongoing exposure to the material, and an increase in motivation to act out activities they

have been viewing online (active); or (2) a failure to exert adequate control over behaviour when presented with an offline opportunity to act out activities they have been viewing online (passive). A *direct victimization* pathway (Beech, Elliott, Birgden, & Findlater 2008) might describe *internet-and-contact* individuals whose ongoing contact offending is augmented by use of SEM-c. These individuals' self-management problems come by virtue of their original positive and acquisitive goals towards sexual offending (Ward & Hudson, 1998).

In this thesis the data was not available to test these hypothetical pathways. This represents a potentially fruitful avenue for future research into the processes by which an individual becomes a mixed or 'cross-over' offender and in turn how we might go about assessing and treating those individuals in a context of a mix between internet offence components and contact offence components.

Implications for assessment and treatment of internet offenders

As well as having implications for our understanding of the characteristics and behaviours, the findings also have implications for the assessment and treatment of internet offenders. It could be argued that the findings suggest that three elements be addressed in assessment and treatment need: (1) the presence or absence of offence-supportive cognitions; (2) an increased emphasis on redressing the balance between online and offline activity; (3) utilizing treatment techniques that create an awareness of behaviour change under visceral conditions.

Firstly, the findings from Chapters 2 and 3 suggest the possibility, in assessment for internet offenders, that those who score highly for attitudes and

beliefs supportive of sexual contact between adults and children are perhaps individuals who are at greater risk of escalating from online to offline offences. However, incorporating findings from Chapter 4 suggests that internet offenders less frequently demonstrate pro-offending attitudes to both online and offline offending, which holds two major implications. Firstly, if it is the case that internet offenders do in fact hold pro-offending beliefs and attitudes, but that these are not being highlighted either by tools developed for contact offenders or by tools developed specifically for internet offences then there is a potential need to address the quality of the tools that are available. Secondly, if it the case that internet offenders do not hold offence-supportive cognitions then, as some commentators have noted with other sex offender treatment, we should be rethinking the inclusion of cognitive distortion modules in treatment for internet offenders.

A number of commentators have noted that there is only weak support for the cognitive distortion hypothesis and that both rigorous empirical testing and an emphasis on defining the concept are required, especially delineating between deviant and general excuse-making (Gannon & Polaschek, 2006; Maruna & Mann, 2006). Perhaps, given the previous discussion of suspension of disbelief and depersonalization, treatment of internet offenders' pro-offending attitudes should emphasize victim *identification* (as well as victim empathy) and the personalization of the victim.

There is also scope for other treatment needs to be addressed for internet offenders. There appears to be an argument for the assessment and treatment of elements relating to the balance between online and offline activity. The findings of Chapter 4 suggest that for some internet offenders' sexual compulsivity and a

feeling that their offline life is not as impressive or fulfilling than their online life may be important elements. This may be especially so for those who have problems initiating and maintaining offline relationships. This may lead to an increasing level of social isolation as online activities are consequently prioritised over offline activities, which in turn further strengthen those attitudes and beliefs, and the cycle continues. Hence, there is a need to incorporate relationship skills, both in terms of friendships and intimate relationships, into treatment packages for online offenders. A positive approach, focusing on the benefits of offline relationships, could potentially promote a sense that those skills that the offender used in building a strong online social network are also applicable in the offline world when utilized in appropriate ways.

Finally, there is a potential need for the inclusion of treatment elements that focus on self-management skills and the ability to identify, in advance, potential times where self-control may be tested and how to a effectively manage behaviour when this occurs. This is discussed in Chapter 5 where it is noted that the formula for this already exists in the form of relapse prevention (Laws, 1989; Pithers, 1990), which is designed to help the offender identify and manage risky situations and mental states. For internet offenders (indeed perhaps for all sex offenders) relapse prevention needs to fully focus on both external elements of risk and danger (i.e., those external circumstances that may lead to relapse) and also the awareness that internal processes, such as visceral factors, have an impact on behaviour. An awareness that we as humans are particularly poor at predicting how we will behave during intense emotional states (hot states) at times when we are not in that state (cold states) – described by Loewenstein

(2000) as a 'hot-cold empathy gap' – could improve the ability to identify these issues in advance and develop ways in which to minimize their effects. Similarly, other self-awareness techniques may also be of use for internet offenders, for example, mindfulness techniques that promote the idea that one will encounter intrusive thoughts and allow the individual to learn to embrace and self-manage these rather than seek to constantly put them out of mind (Howells, 2010; Gillespie, Mitchell, & Beech, *under review*).

Limitations

Though there are theoretical and practical applications of this thesis in terms of our understanding of the internet offender and their relation to other sex offenders, there were general limitations of the research beyond those specific issues discussed in each chapter.

Several of the studies use self-report data. Howitt and Sheldon (2007) noted that the disparity between clinical and self report measure approaches to eliciting and measuring cognitive distortions in internet offenders somewhat undermines the self-report approach for this population. In Chapters 2 and 3 the self-report measures were also developed for contact offenders based on theory developed for contact offenders. Hence, the scales used here may be measuring constructs that are perhaps either unrelated to internet offenders or are not capturing offence-related concepts relevant to online offences. Though we sought to address this issue in Chapter 4, there still remain conclusions drawn from Chapters 2 and 3 that should be viewed in light of the materials that were used to examine those differences between internet, contact and mixed offenders.

There may have been some sampling limitations in the thesis. In many cases offenders were categorized as either an internet, contact or mixed offender based on their known history of offending, and therefore they may have undetected offences of other types, making their categorization somewhat arbitrary. Internet offences are often difficult to detect, and hence there may be subsets of these offenders that we do not see or have access to (Neutze et al., 2010; Ray, Kimonis, & Donoghue, 2010). Similarly, in all of the chapters the offender groups were recruited from community-based criminal justice sources. This means that the sample may not be generalizable in two ways: (1) to those users of SEM-c who have not yet been detected; and (2) to incarcerated users of SEM-c. In the former, for example, it was noted in Chapter 5 that detection for an SEM-c offence may have been a factor in the 'sophistication' of the individual in terms of discounting future rewards. If we were able to access a non-criminal justice sample, we may find that delay discounting is a lot more naïve for individuals who have not yet experienced the consequences of the decisions that they are making under conditions of sexual arousal.

In terms of the differences between incarcerated internet offenders it is perhaps the case that these offenders would have more aggravated offences and been considered more of a risk to the public. They may have a greater history of contact offences and may have produced material (either real or pseudo-images) or they may have escalated towards contacting children online for either sexualised conversations or to groom children for offline offences. In all of these cases it may be that these offenders present with very different characteristics to our community samples and as such the findings within this thesis may not be representative of the whole internet offender population. In addition to this,

Chapters 4 and 5 recruited offender samples from the Lucy Faithfull Foundation and hence contained offenders who had self-referred and were self-funding treatment at a post-arrest, pre-sentence point of time. Hence, it could be possible that these samples are higher-functioning and certainly their seeking help is perhaps evidence of greater self-management skills than those who do not seek help during this time. Again, this could have a bearing on their levels of offence-supportive cognitions and their ability to make time-consistent decisions.

Conclusions

In conclusion, although the findings of this thesis provide new insights into the character and behaviour or internet offenders, there still appears to be a group of offenders for whom we have not yet satisfactorily found an explanation for why they choose to access SEM-c. It appears that the clinical symptoms that are traditionally related to sexual offending are relevant, however the way in which they manifest in this population remain to be fully identified and an evidence-base provided. Consequently, this thesis appears to ask more questions than it answers. Nonetheless, a number of potential areas for future research have been generated. There remains a need to better understand the cognitive structures and products of internet offenders, the effects of the online environment and the experience of sexual arousal on online behaviour, the cycle of social isolation and compulsivity as they relate to online activity and the chronology of internet and contact offences where they co-exist.

Appendix A

IBAQ Attitude items

a1. I feel more confident on the Internet than I do talking to people in real life.

*a2. I am not addicted to Internet child pornography.

a3. Using the Internet makes me feel important.

a4. The child was often smiling in the child pornography of I have looked at, and so I believe that the child is not being harmed.

a5. I feel I have committed a victimless crime given that I have not created any contact victims in these Internet offences.

a6. I have found myself aroused at the illegality of the child pornography.

*a7. I believe that looking at sexual pictures of children on the Internet should be classified as a criminal sexual offence.

a8. If I can't use the Internet to view pornography when I want to, I feel bad.

a9. The sexual pictures of children on the Internet were there anyway, so I was not harming anyone by looking at them.

a10. Sex is always on my mind.

a11. I feel panicky and anxious if I have not been able to view sexual pictures.

*a12. I do not use the Internet to escape from my problems.

*a13. All children who feature in pictures involving sexual acts on the Internet have been sexually abused.

a14. I prefer the idea of casual sex to sex in a relationship.

a15. I have few friends outside of the Internet.

a16. I think my life is better when I'm able to view child pornography from the Internet.

a17. Looking at sexual pictures of children on the Internet does not mean I have committed a sexual offence.

a18. As an adult my sexual relationships with other adults have been very dissatisfying.

a19. Child pornography is similar to art.

a20. I like to look at child pornography pictures when I masturbate.

*a21. Children pictured in sexual positions on the Internet experience bad effects afterwards.

a22. Looking at child pornography on the Internet makes me feel good.

a23. I feel that my use of Internet child pornography encourages me to act in ways that I would not normally act.

a24. There were no negative consequences associated with downloading child pornography.

a25. Other people look at Internet child pornography and therefore it is OK for me to do it.

a26. I feel more powerful after I use the Internet to look at child pornography.

a27. I believe that the children in the pictures I view enjoyed the experience.

a28. I have wanted to commit a contact sexual offence after looking at child pornography on the Internet.

a29. Child pornography is no different from adult porn.

a30. The Internet is a safe outlet for my fantasies.

a31. I prefer 'virtual' communication to 'face to face' communication.

a32. I believe that a child doesn't mind an adult doing sexual things to them.

a33. My life is too boring without viewing pornography on the Internet.

a34. Looking at child pornography is just a game.

*Reverse-scored

REFERENCES

Abel, G. G., Becker, J. V, & Cunningham-Rathner, J. (1984). Complications, consent, and cognitions in sex between children and adults. *International Journal of Law & Psychiatry*, *7*, 89-103. doi:10.1016/0160-2527(84)90008-6

Ainslie, G. W. (1975). Specious reward: A behavioral theory of impulsiveness and impulsive control. *Psychological Bulletin*, *82*, 463-496. doi:10.1037/h0076860

Ainslie, G. W., & Haslam, N. (1992). Hyperbolic discounting. In G. Loewenstein & J. Elster (Eds.), *Choice over time* (pp. 57-92). New York: Russell Sage.

Allan, A., Dawson, D., & Allan, M. M. (2006). Prediction of the risk of male sexual reoffending in Australia. *Australian Psychologist*, *41*, 60–68. doi: 10.1080/00050060500391886

Andrews, D. A., & Bonta, J. (2007). *The psychology of criminal conduct* (4th Ed.). Cincinnati, OH: Anderson.

Ariely, D., & Loewenstein, G. (2006). The heat of the moment: The effect of sexual arousal on sexual decision making. *Journal of Behavioral Decision Making*, *19*, 87-98. doi:10.1002/bdm.501

Ariely, D., & Wertenbroch, K. (2002). Procrastination, deadlines, and performance: self-control by precommitment. *Psychological Science*, *13*, 219–224. doi:10.1111/1467-9280.00441

Atkinson, C., & Newton, D. (2010). *Journal of Sexual Aggression*, *16*, 107-120. doi:10.1080/13552600903337683

Babchishin, K. M., Hanson, R. K., & Hermann, C. A. (2011). The characteristics of online sex offenders: A meta-analysis. *Sexual Abuse: A Journal of Research and Treatment*, *23*, 92-123. doi:10.1177/1079063210370708

Baltieri, D. A., & de Andrade, A. G. (2008). Comparing serial and nonserial sexual offenders: Alcohol and street drug consumption, impulsiveness and history of sexual abuse. *Revista Brasileira de Psiquiatria*, *30*, 25–31. doi: 10.1590/S1516-44462006005000067

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (2002). Selective moral disengagement in the exercise of moral agency. *Journal of Moral Education*, *31*, 101–119. doi:10.1080/0305724022014322

Barnett, R., & Maynard-Smith, S. (1988). *Packet switched networks: Theory and practice*. New York: Halstead Press.

Barratt, E. S. (1994). Impulsiveness and aggression. In J. Monahan & H. J. Steadman (Eds.), *Violence and mental disorder: Developments in risk assessment* (pp. 61-79). Chicago: University of Chicago Press.

Beckett, R. C. (1987). *The Children and Sex Questionnaire*. Available from Richard Beckett, The Oxford Clinic, Littlemore Health Centre, Sanford Rd., Littlemore, Oxford, U.K.

Beckett, R. C., & Fisher, D. (1994, November). *Assessing victim empathy: A new measure*. Paper presented at the 13th Annual Conference of the Association for the Treatment of Sexual Abusers, San Francisco.

Beech, A. R. (1998). A psychometric typology of child abusers. *International Journal of Therapy and Comparative Criminology*, *42*, 319-39. doi:10.1177/0306624X9804200405

Beech, A. R., Elliott, I. A., Birgden, A., & Findlater, D. (2008). The Internet and

    child sexual offending: A criminological review. *Aggression and Violent*

    Behavior, *13*, 216–228. doi:10.1016/j.avb.2008.03.007

Beech, A. R., Fisher, D., & Beckett, R. C. (1999, November). *Step 3: An evaluation of*

    the prison sex offender treatment programme (Home Office report).

    London: Crown Copyright.

Beech, A. R., Fisher, D., & Thornton, D. (2003). Risk assessment of sex offenders.

    Professional Psychology: Research and Practice, *34*, 339–52.

    doi:10.1037/0735-7028.34.4.339

Beech, A. R., & Ward, T. (2004). The integration of etiology and risk in sex

    offenders: A theoretical model. *Aggression and Violent Behavior*, *10*,

    31–63. doi:10.1016/j.avb.2003.08.002

Beitchman, J. H., Zucker, K. J., Hood, J. E., da Costa, G. A., Akman, D., & Cassavia, E.

    (1992). A review of the long-term effects of child sexual abuse. *Child*

    Abuse and Neglect, *16*, 101–118. doi:10.1016/0145-2134(92)90011-F

Bengtson, S. (2008). Is newer better? A cross-validation of the Static-2002 and

    the Risk Matrix 2000 in a Danish sample of sexual offenders. *Psychology,*

    Crime and Law, *14*, 85–106. doi:10.1080/10683160701483104

Bernard, F. (1989). *Paedophilia: A factual report*. Rotterdam: Enclave Press.

Bickel, W. K., Madden, G. J., & Petry, N. M. (1998). The price of change: The

    behavioral economics of drug dependence. *Behavior Therapy*, *29*, 545-

    565. doi:10.1016/S0005-7894(98)80050-6

Bishop, S. L., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., et al.

    (2004). Mindfulness: A proposed operational definition. *Clinical*

    Psychology: Science and Practice, *11*, 230-241. doi:10.1093/clipsy.bph077

Bourke, M. L., & Hernandez, A. E. (2009). The 'Butner Study' redux: A report of

the incidence of hands-on child victimization by child pornography

offenders. *Journal Family Violence*, *24*, 183–191. doi:10.1007/s10896-

008-9219-y.

Bradley M. M., & Lang P. J. (1994). Measuring emotion: The Self-Assessment

Manikin and the semantic differential. *Journal of Behavior Therapy and*

Experimental Psychiatry, *25*, 49-59. doi:10.1016/0005-7916(94)90063-9

Bumby, K. M. (1996). Assessing the Cognitive Distortions of Child Molesters and

Rapists: Development and Validation of the MOLEST and RAPE Scales.

Sexual Abuse: A Journal of Research and Treatment, *8*, 37-54.

doi:10.1177/107906329600800105

Burke, A., Sowerbutts, S., Blundell, S., & Sherry, M. (2002). Child pornography and

the Internet: Policing and treatment issues. *Psychiatry, Psychology and*

Law, *9*, 79–84. doi: 10.1375/pplt.2002.9.1.79

Buschman, J., Bogaerts, S., Foulger, S., Wilcox, D., Sosnowski, D., & Cushman, B.

(2010). Sexual history disclosure polygraph examinations with

cybercrime offenses: A first Dutch explorative study. *International Journal*

of Offender Therapy & Comparative Criminology, *54*, 395-411.

doi:10.1177/0306624X09334942

Buss, D. M., & Schmitt, D. P. (1993). Sexual strategies theory: an evolutionary

perspective on human mating. *Psychological Review*, *100*, 204–232.

doi:10.1037/0033-295X.100.2.204

Calder, M. C. (2004). The Internet: Potential, problems and pathways to hands-on

sexual offending. In M. C. Calder (Ed.), *Child sexual abuse and the Internet:*

Tackling the new frontier (pp. 1–24). Lyme Regis, Russell House
Publishing.

Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate
Behavioral Research*, *1*, 245-276. doi:10.1207/s15327906mbr0102_10

Cochran,W., & Tesser, A. (1996). The "What the hell" effect. Some effects of goal
proximity and goal framing on performance. In L. L.Martin & A. Tesser
(Eds.), *Striving and feeling: Interactions among goals, affect, and self-
regulation* (pp. 99–122). Hillsdale, NJ: Lawrence Erlbaum Associates.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd Ed.).
Mahwah, NJ: Lawrence Erlbaum Associates.

Cornish, D. B., & Clarke, R. V. (1986). *The reasoning criminal*. New York: Springer-
Verlag.

Cortoni, F., & Marshall, W. L. (2001). Sex as a coping strategy and its relationship
to juvenile sexual history and intimacy in sexual offenders. *Sexual Abuse:
A Journal of Research and Treatment*, *13*, 27-43. doi:1079-0632/01/0100-
0027$19.50/0

Craig, L. A., Beech, A. R., & Browne, K. D. (2006). Cross validation of the Risk
Matrix 2000 Sexual and Violent scales. *Journal of Interpersonal Violence*,
21, 1–22. doi:10.1177/0886260506286876

Cusson, M. (1993). A strategic analysis of crime: Criminal tactics as a response to
precriminal situations. In R. V. Clarke & M. Felson (Eds.), *Routine activity
and rational choice* (pp. 295–304). Piscataway, NJ: Transaction.

Danet, B. (1998). Text as mask: Gender, play, and performance on the Internet. In
S. G. Jones (Ed.), *CyberSociety 2.0: Revisiting Computer-Mediated
Communication and Community* (pp. 129–158). London: Sage.

Dawson, D. L., Barnes-Holmes, D., Gresswell, D. M., Hart, A. J., & Gore, N. J. (2009). Assessing the implicit beliefs of sexual offenders using the implicit relational assessment procedure. *Sexual Abuse: A Journal of Research and Treatment, 21*, 57-75. doi:10.1177/1079063208326928

Davis, M. H. (1980). A multi-dimensional approach to individual differences in empathy. *JSAS Catalogue to Selected Documents in Psychology, 10*, 85.

Davis, R. A. (2001). A cognitive-behavioral model of pathological Internet use. *Computers in Human Behavior, 17*, 187–195. doi:10.1016/S0747-5632(00)00041-8

Davis, R. A., Flett, G. L., & Besser, A. (2002). Validation of a new scale for measuring problematic Internet use: Implications for pre-employment screening. *CyberPsychology and Behavior, 5*, 331–345. doi:10.1089/109493102760275581

Dickey, D. (1996). Testing the fit of our models of psychological dynamics using confirmatory methods: An introductory primer. In B. Thompson (Ed.), *Advances in social science methodology* (pp. 219-227). Greenwich, CT: JAI Press.

Douglas, A. C., Mills, J. E., Niang, M., Stepchenkova, S., Byun, S., Ruffini, C., et al (2008). Internet addiction: Meta-synthesis of qualitative research for the decade 1996-2006. *Computers in Human Behavior, 24*, 3027-3044. doi::10.1016/j.chb.2008.05.00

Ducro, C., & Pham, T. (2006). Evaluation of the SORAG and the Static-99 in Belgian sex offenders committed to a forensic facility. *Sexual Abuse: A Journal of Research and Treatment, 18,* 15–26. doi:10.1007/s11194-006-9003-6

Durkin, K. F. (1997). Misuse of the Internet by pedophiles: Implications for law
enforcement and probation practice. *Federal Probation*, *61*, 14–18.

Durkin, K. F., & Bryant, C. D. (1999). Propagandising pederasty: A thematic
analysis of the online exculpatory accounts of unrepentant pedophiles.
Deviant Behavior, *20*, 103-127.

Edwards, S. S. M. (2000). Prosecuting 'child pornography': Possession and taking
of indecent photos of children. *Journal of Social Welfare and Family Law*,
22, 1–21.

Eke, A. W., Seto, M. C., & Williams, J. (2010). Examining the criminal history and
future offending of child pornography offenders: An extended prospective
follow-up study. *Law and Human Behavior*, *35*, 466-478,
doi:10.1007/s10979-010-9252-2

Eldridge, H. (1998). *Therapist guide for maintaining change: Relapse prevention
for adult male perpetrators of child sexual abuse*. London: Sage.

Elliott, I. A., & Ashfield, S. (2011). The use of online technology in the modus
operandi of female sex offenders. *Journal of Sexual Aggression*, *17*, 92-104.
doi:10.1080/13552600.2010.537379

Elliott, I. A., & Beech, A. R. (2009). Understanding online child pornography use:
Applying sexual offense theory to internet offenders. *Aggression and
Violent Behavior*, *14*, 180–193. doi: 10.1016/j.avb.2009.03.002

Elliott, I. A., Beech, A. R., Mandeville-Norden, R., & Hayes, E. (2009). Psychological
profiles of internet sex offenders: Comparisons with contact sexual
offenders. *Sexual Abuse: A Journal of Research and Treatment*, *21*, 76-92.
doi:10.1177/1079063208326929

Fan, X., Wang, L., & Thompson, B. (1999). The effects of sample size, estimation methods, and model specification on SEM fit indices. *Structural Equation Modeling*, *6*, 56-83. doi:10.1080/10705519909540119

Field, A. (2009). *Discovering Statistics Using SPSS* (3rd Ed.). London: Sage.

Finkelhor, D. (1984). *Child sexual abuse: New theory and research*. New York: Free Press.

Finkelhor, D., & Jones, L. (2006). Why have child maltreatment and child victimization declined? *Journal of Social Issues*, *62*, 685-716. doi: 10.1111/j.1540-4560.2006.00483.x

Flory, J. D., Harvey, P. D., Mitropoulou, V., New, A. S., Silverman, J. M., Siever, L. J., et al. (2006). Dispositional impulsivity in normal and abnormal samples. *Journal of Psychiatric Research*, *40*, 438-447. doi:10.1016/j.jpsychires.2006.01.008

Gagon, J. H. (1990). The explicit and implicit use of the scripting perspective in sex research. *Annual Review of Sex Research*, *1*, 1-43.

Gannon, T. A., & Polaschek, D. L. L. (2006). Cognitive distortions in child molesters: A reexamination of key theories and research. *Clinical Psychology Review*, *26*, 1000–1019. doi:10.1016/j.cpr.2005.11.010

Gerrig, R. J. (1998). *Experiencing narrative worlds: On the psychological activities of reading*. New Haven, CT: Yale University Press.

Gifford, A. (2002). Emotion and self-control. Journal of Economic Behavior and Organisation, 49, 113–130. doi:10.1016/S0167-2681(02)00061-6

Gillespie, A. A. (2005a). Tackling child pornography: The approach in England and Wales. In E. Quayle & M. Taylor (Eds.), *Viewing child pornography on*

the Internet: Understanding the offense, managing the offender, helping the victims (pp. 1-16). Lyme Regis, U.K.: Russell House.

Gillespie, A. A. (2005b). Indecent images of children: The ever-changing law. *Child Abuse Review*, *14*, 430-443. 10.1002/car.919

Gillespie, S. M., Mitchell, I. J., & Beech, A. R. (submitted). Treating disturbed emotional regulation in sexual offenders: The potential applications of mindful self-regulation and controlled breathing techniques. *Clinical Psychology Review*.

Glasgow, D. (2010). The potential of digital evidence to contribute to risk assessment of internet offenders. *Journal of Sexual Aggression*, *16*, 87–106. doi: 10.1080/13552600903428839

Green, L., & Myerson, J. (2004). A discounting framework for choice with delayed and probabilistic rewards. *Psychological Bulletin*, *130*, 769-792. doi:10.1037/0033-2909.130.5.769

Hald, G. M., Malamuth, N. M., & Yuen, C. (2009). Pornography and attitudes supporting violence against women: Revisiting the relationship in nonexperimental studies. *Aggressive Behavior*, *36*, 14-20. doi:10.1002/ab.20328

Hall, G. C. N., & Hirschman, R. (1992). Sexual aggression against children: A conceptual perspective of etiology. *Criminal Justice and Behavior*, *19*, 8–23. doi:10.1177/0093854892019001003

Hammond, S. (2004). The challenge of sex offender assessment: The case of Internet offenders. In M. Calder (Ed.), *Child sexual abuse and the Internet: Tackling the new frontier* (pp. 85-97). Lyme Regis, UK: Russell House Publishing.

Hanson, R.K. (1997). *The development of a brief actuarial risk scale for sexual offence recidivism* (User Report No. 1997-04). Ottawa: Department of the Solicitor General of Canada.

Hanson, R. K, & Harris, A. J. R. (2000). Where should we intervene? Dynamic predictors of sexual offense recidivism. *Criminal Justice and Behavior*, *27*, 6–35. doi:10.1177/0093854800027001002

Hanson, R. K., & Harris, A. J. R. (2001). *The Sex Offender Need Assessment Rating (SONAR): A method for measuring change in risk levels*. Available from www.sgc.gc.ca/epub/corr/e200001a/ e200001b/e200001b.htm. (NB: Please note this is an older version of SONAR and should not be used.)

Hanson, R. K., Harris, A. J. R., Scott, T. L., & Helmus, T. (2007). *Assessing the risk of sexual offenders on community supervision: The Dynamic Supervision Project* (User Report No. 2007-05). Ottawa: Corrections Research, Public Safety Canada. Available from:
www.publicsafety.gc.ca/res/cor/rep/_fl/crp2007-05-en.pdf

Hanson, R. K., & Thornton, D. (2000). Improving risk assessment for sex offenders: A comparison of three actuarial scales. *Law and Human Behavior*, *24*, 119–136. doi:10.1023/A:1005482921333

Hanson, R. K., & Thornton, D. (2003). *Notes on the development of a static-2002*. Available from: http://ww2.psepc-sppcc.gc.ca/publications/corrections/200103_Static_2002_e.asp

Hayton, J. C., Allen, D. G., & Scarpello, V. (2004). Factor retention decisions in explorator factor analysis: A tutorial on parallel analysis. *Organizational Research Methods*, *7*, 191-205. doi:10.1177/1094428104263675

Healy, M. (1997). *Child pornography: An international perspective*. Retrieved, 11

   October, 2010 from http://www.usemb.se/215e.html

Henry, O., Mandeville-Norden, R., Haves, E., & Egan, V. (2010). Do internet-based

   sexual offenders reduce to normal, inadequate and deviant groups?

   Journal of Sexual Aggression, *16*, 33-46.

   doi:10.1080/13552600903454132

Hernandez, A. E. (2000, November). *Self-reported contact sexual offenses by*

   participants in the Federal Bureau of Prisons' Sex Offender Treatment

   Program: Implications for Internet sex offenders. Presented at the 19th

   Research and Treatment Conference of the Association for the Treatment

   of Sexual Abusers, San Diego, CA.

Herrnstein, R. J. (1981). Self-control as response strength. In C. M. Bradshaw, E.

   Szabadi, & C. F. Lowe (Eds.), *Quantification of Steady State Operant*

   Behavior (pp. 3-20). Amsterdam: Elsevier, North-Holland.

Holland, N. M. (2008). Spider-man? Sure! The Neuroscience of suspending

   disbelief. *Interdisciplinary Science Reviews*, *33*, 312-320. doi:

   10.1179/174327908X392870

Home Office [U.K.] (2007). *Consultation on the possession of non-photographic*

   visual depictions of child sexual abuse. London: Home Office.

Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis.

   Psychometrika, *30*, 179-185. doi:10.1007/BF02289447

Howells, K. (2010). The 'third wave' or cognitive-behavioural therapy and

   forensic practise. *Criminal Behaviour and Mental Health*, *20*, 251-256.

   doi:10.1002/cbm.772

Howitt, D. (1995). *Paedophiles and sexual offences against children*. Chichester,

U.K: John Wiley & Sons.

Howitt, D. (1995). Pornography and the paedophile: Is it criminogenic? *British*

Journal of Medical Psychology, *68*, 15–27.

Howitt, D., & Sheldon, K. (2007). The role of cognitive distortions in paedophilic

offending: Internet and contact offenders compared. *Psychology, Crime*

and Law, *13*, 469-486. doi: 10.1080/10683160601060564

Internet Watch Foundation (2010). *2009 Annual and Charity Report*. Retrieved,

May 19, 2010, from

http://www.iwf.org.uk/documents/20100511_iwf_2009_annual_and_cha

rity_report.pdf

Internet World Stats (2011). *Internet usage statistics*. Retrieved, 8 October, 2010

from http://www.internetworldstats.com/stats.htm

Interpol. (2007, October). *Interpol's work to fight crimes against children* (Press

release). Retrieved November 26, 2007, from

http://www.interpol.int/public/ICPO/PressReleases/PR2007/PR20074

5background.asp

Interpol (2008). *Databases*. Fact Sheet (COM/FS/2008-07/GI-04). Retrieved

from http://www.interpol.int/Public/ICPO/FactSheets/GI04.pdf

Jewkes, Y., & Yar, M. (2010). *Handbook of Internet crime*. Cullompton, Devon, U.K.:

Willan.

Keltner, A. A., Marshall, P. G., and Marshall, W. L.. (1981). Measurement and

correlation of assertiveness and social fear in a prison population.

Corrective and Social Psychiatry, *27*, 41-47.

Keown, K., Gannon, T. A., & Ward, T. (2010). What's in a measure? A multi-
method study of child sexual offenders' beliefs. *Psychology, Crime and
Law*, *16*, 125-143. doi:10.1080/10683160802622022

Kennedy, G., Lalumière, M. L., & Mishra, S. (2009). *Motivational myopia: The effect
of sexual arousal on decision-making*. Poster presentation at the 28th
Annual Association for the Treatment of Sexual Abusers Conference,
Dallas, Texas.

Kennedy-Souza, B. L. (1998). Internet addiction disorder. *Interpersonal
Computing and Technology*, *6*, 1–2.

Kingston, D. A., Malamuth, N. M., Fedoroff, P., & Marshall, W. L. (2009). The
importance of individual differences in pornography use: Theoretical
perspectives and implications for treating sexual offenders. *Journal of Sex
Research*, *46*, 216-232. doi:10.1080/00224490902747701

Kingston, D. A., Yates, P. M., Firestone, P., Babchishin, K., & Bradford, J. (2008).
Long term predictive validity of the Risk Matrix 2000: A comparison with
the Static-99 and the Sex Offender Risk Appraisal Guide. *Sexual Abuse: A
Journal of Research and Treatment*, *20*, 466–484.
doi:10.1177/1079063208325206

Kirby, K. N. (2009). One-year temporal stability of delay discount rates.
Psychonomic Bulletin and Review, *16*, 457-462. doi:10.3758/PBR.16.3.457

Kirby, K. N. & Marakovic, N. E. (1996). Delay-discounting probabilistic rewards:
rates decrease as amounts increase. *Psychonomic Bulletin and Review*, *3*,
100–104. doi:10.3758/BF03210748

Kirby, K. N., Petry, N. M., & Bickel, W. K. (1999). Heroin addicts have higher

    discount rates for delayed rewards than non-drug-using controls. *Journal*

    of Experimental Psychology, *128*, 78-87. doi:10.1037/0096-3445.128.1.78

Koukounas, E., & Over, R. (1993). Habituation and dishabituation of male sexual

    arousal. *Behaviour Research and Therapy*, *31*, 575–585.

    doi:10.1016/0005-7967(93)90109-8

Krone, T. (2004). A typology of online child pornography offending. *Trends and*

    Issues in Crime and Criminal Justice, *279*, 1–6.

Lam, A., Mitchell, J., & Seto, M. C. (2010). Lay perceptions of child pornography

    offenders. *Canadian Journal of Criminology and Criminal Justice*, 52, 173-

    201. doi:10.3138/cjccj.52.2.173

Langevin, R., & Curnoe, S. (2004). The use of pornography during the commission

    of sexual offences. *International Journal of Offender Therapy and*

    Comparative Criminology, *48*, 572–586. doi:10.1177/0306624X03262518

Lanning, K. (1992). *Investigators guide to allegations of 'ritual child abuse'*.

    Quantico, VA: Behavioral Science Unit, National Centre for the Analysis of

    Violent Crime, FBI Academy.

Lanning, K. V. (2001). *Child molesters: A behavioral analysis* (4th Ed.). Arlington,

    VA: National Center for Missing and Exploited Children Retrieved 12 April

    2008 from http://www.missingkids.com/en_US/publications/NC70.pdf

Laulik, S., Allam, J., & Sheridan, L. (2007). An investigation into maladaptive

    personality functioning in Internet sex offenders. *Psychology, Crime and*

    Law, *13*, 523–535. doi:10.1080/10683160701340577

Laws, D. R. (1989). *Relapse prevention with sex offenders*. New York: Guilford

    Press.

Laws, D. R. (2003). Behavioral economic approaches to the assessment and

   treatment of sexual deviation. In T. Ward, D. R. Laws, & S. M. Hudson

   (Eds.), *Sexual Deviance: Issues and Controversies* (pp. 65-81). Thousand

   Oaks, CA: Sage.

Lawyer, S. R. (2008). Probability and delay discounting of erotic stimuli.

   Behavioural Processes, *79*, 36-42. doi:10.1016/j.beproc.2008.04.009

Lawyer, S. R., Williams, S. A., Prihodova, T., Rollins, J. D., & Lester, A. C. (2010).

   Probability and delay discounting of hypothetical sexual outcomes.

   Behavioural Processes, *84*, 687-692. doi:10.1016/j.beproc.2010.04.002

Levenson, J. S., Prescott, D. S., D'Amora, D. A. (2010). Sex offender treatment:

   Consumer satisfaction and engagement in therapy. *International Journal*

   of Offender Therapy and Comparative Criminology, *54*, 307-326.

   doi:10.1177/0306624X08328752

Loewenstein, G. (1996). Out of control: Visceral influences on behavior.

   Organizational Behavior and Human Decision Processes, *65*, 272–292.

   doi:10.1006/obhd.1996.0028

Loewenstein, G. (2000). Emotions in economic theory and economic behavior.

   The American Economic Review, *90*, 426-432.

Loewenstein, G., Nagin, D., & Paternoster, R. (1997). The effect of sexual arousal

   on predictions of sexual forcefulness. *Journal of Crime and Delinquency*,

   32, 443–473. doi:10.1177/0022427897034004003

Lucy Faithfull Foundation (2008). *'Inform+' treatment manual*. Available on

   request from The Lucy Faithfull Foundation, Nightingale House, 46–48

   East Street, Epsom, U.K., KT17 1HB.

MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in

    factor analysis. *Psychological Methods*, *4*, 84-99. doi:1082-989X/99/53.00

Malamuth, M. N., Addison, T., & Koss, M. (2000). Pornography and sexual

    aggression: Are there reliable effects and can we understand them?

    Annual Review of Sex Research, *11*, 26-91.

Malesky, L. A., & Ennis, L. (2004). Supportive distortions: An analysis of posts on

    a pedophile internet message board. *Journal of Addictions and Offender*

    Counseling, *24*, 92-100.

Mann, R. E., & Beech, A. R. (2003). Cognitive distortions, schemas and implicit

    theories. In T. Ward, D. R. Laws, & S. M. Hudson (Eds.), *Sexual deviance:*

    Issues and controversies (pp. 135-153). Thousand Oaks, CA: Sage.

Marshall, W. L. (2000). Revisiting the use of pornography by sexual offenders:

    Implications for theory and practice. *Journal of Sexual Aggression*, *6*,

    67–78. doi:10.1080/13552600008413310

Marshall, W. L., Anderson, D., & Fernandez, Y. (1999). *Cognitive behavioral*

    treatment of sexual offenders. Chichester, UK: Wiley.

Marshall, W. L., & Barbaree, H. E. (1990). An integrated theory of the etiology of

    sexual offending. In W. L. Marshall, D. R. Laws, & H. E. Barbaree (Eds.),

    Handbook of sexual assault: Issues, theories and treatment of the offender

    (pp. 257–275). New York: Plenum.

Marshall, W. L., Marshall, L. E., & Kingston, D. A. (2011). Are the cognitive

    distortions of child molesters in need of treatment? *Journal of Sexual*

    Aggression, *17*, 118-129. doi:10.1080/13552600.2011.580572

Maruna, S., & Mann, R. E. (2006). A fundamental attribution error? Rethinking cognitive distortions. *Legal and Criminological Psychology*, *11*, 155-77. doi :10.1348/135532506X114608

Marlatt, G. A., Tucker, J. A., Donovan, D. M., & Vuchinich, R. E. (1997). Help-seeking by substance abusers: The role of harm reduction and behavioural economic approaches to facilitate treatment entry and retention. In L. S. Onken, J. D. Blaine, & J. J. Boren (Eds.), *Beyond the therapeutic alliance: Keeping the drug-dependent individual in treatment* (National Institute on Drug Abuse Research Monograph No. 165, pp. 48-44). Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health.

Marziano, V., Ward, T., Beech, A. R., & Pattison, P. (2006). Identification of five fundamental implicit theories underlying cognitive distortions in child abusers: A preliminary study. *Psychology, Crime and Law*, *12*, 97-105. doi: 10.1080/10683160500056887

Mazur, J. E. (1987). An adjusting procedure for studying delayed reinforcement. In M. L. Commons, J. E. Mazur, J. A. Nevin, & H. Rachlin (Eds.), *Quantitative analyses of behavior: The effect of delay and of intervening events on reinforcement value* (Vol. 5) (pp. 55-73). Hillsdale, NJ: Erlbaum.

McAlinden, A-M. (2006). 'Setting 'em up': Personal, familial and institutional grooming in the sexual abuse of children. *Social and Legal Studies*, *15*, 339–362. doi:10.1177/0964663906066613

McAlvanah, P. (2009). Are people more risk-taking in the presence of the opposite sex? *Journal of Economic Psychology*, *30*, 136-146. doi:10.1016/j.joep.2008.10.002

McCabe, K. A. (2000). Child pornography and the internet. *Social Science Computer Review*, *18*, 73-76. doi:10.1177/089443930001800105

McManus, M., Long, M. L., & Alison, L. (2011). Child pornography offenders: Towards an evidence-based approach to prioritizing the investigation of indecent image offenses. In L. Alison, & L. Rainbow (Eds.), *Professionalizing Offender Profiling: Forensic and Investigative Psychology in Practice* (pp. 178-188). Abingdon, U.K.: Routledge.

Middleton, D. (2004). Current treatment approaches. In M. Calder (Ed.), *Child sexual abuse and the Internet: Tackling the new frontier* (pp. 99-112). Lyme Regis, UK: Russell House Publishing.

Middleton, D., Elliott, I. A., Mandeville-Norden, R., & Beech, A. R. (2006). An investigation into the application of the Ward and Siegert Pathways Model of child sexual abuse with Internet offenders. *Psychology, Crime and Law*, *12*, 589–603. doi:10.1080/10683160600558352

Money, J. (1986). *Lovemaps: Clinical concepts of sexual/erotic health and pathology, paraphilia, and gender transposition in childhood, adolescence, and maturity*. Buffalo, New York: Rometheus Books.

Morahan-Martin, J., & Schumacher, P. (2000). Incidence and correlates of pathological Internet use among college students. *Computers in Human Behavior*, *13*, 13-29. doi:10.1016/S0747-5632(99)00049-7

Motivans, M., & Kyckelhahn, T. (2007). *Federal prosecution of child sex exploitation offenders, 2006* (Report No. NCJ219412). Retrieved July 23, 2011, from http://bjs.ojp.usdoj.gov/index.cfm?ty=pbdetail&iid=886

National Probation Service (2005). *Internet sex offender treatment programme (i-SOTP) treatment manual*. Available on request from the Interventions and

Substance Misuse Group, National Offender Management Service,

Ministry of Justice, 102 Petty France, London, SW1H 9AJ, U.K.

National Probation Service. (2005). *Launch of new internet sex offender treatment programme (i-SOTP)* (Probation Circular No. 92/2005). Retrieved October 2, 2007, from

http://www.probation.homeoffice.gov.uk/files/pdf/PC92%202005.pdf

Neutze, J., Seto, M. C., Schaefer, G. A., Mundt, I. A., & Beier, K. M. (2011). Predictors of child pornography offenses and child sexual abuse in a community sample of pedophiles and hebephiles. *Sexual Abuse: A Journal of Research and Treatment*, *23*, 212-242. doi:10.1177/1079063210382043

Nowicki, S. (1976). *Adult Nowicki-Strickland Internal-External Locus of Control Scale*. Test manual available from S. Nowicki, Jr. Department of Psychology, Emory University, Atlanta, GA 30322.

Nowicki, S., & Duke, M. P. (1974). A locus of control scale for college as well as non-college adults. *Journal of Personality Assessment*, *38*, 136-137.

Nowicki, S., & Duke, M. P. (1982). A review of the Nowicki-Strickland locus of control scales. In H. Lefcourt (Ed.), *Research with the locus of control construct: Vol. 2. Methods and application* (pp. 9-39). San Diego, CA: Academic Press.

Nunes, K. L., Firestone, P., & Baldwin, M. W. (2007). Indirect assessment of cognitions of child sexual abusers with the implicit association test. *Criminal Justice and Behavior*, *34*, 454-475. doi:10.1177/0093854806291703

Nunnaly, J. (1978). *Psychometric theory*. New York: McGraw-Hill.

Ó Ciardha, C. (2011). A theoretical framework for understanding deviant sexual

    interest and cognitive distortions as overlapping constructs contributing

    to sexual offending against children. *Aggression and Violent Behavior*, *16*,

    492-502. doi:10.1016/j.avb.2011.05.001

Ó Ciardha, C., & Gannon, T. A. (2011). The cognitive distortions of child molesters

    are in need of treatment. *Journal of Sexual Aggression*, *17*, 130-141.

    doi:10.1080/13552600.2011.580573

O'Brien, M. D., & Webster, S. D. (2007). The construction and preliminary

    validation of the Internet Behaviors and Attitudes Questionnaire (IBAQ).

    Sexual Abuse: A Journal of Research and Treatment, *19*, 237-256.

    doi:10.1007/s11194-007-9057-0

O'Connell, R. (2004). From fixed to mobile Internet: The morphing of criminal

    activity on-line. In M. C. Calder (Ed.), *Child sexual abuse and the Internet:*

    Tackling the new frontier (pp. 37–56). London: Russell House.

O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of

    components using parallel analysis and Velicer's MAP test. *Behavior*

    Research Methods, Instruments, and Computers, *32*, 396-402.

    doi:10.3758/BF03200807

O'Donohue, W. T., & Geer, J. H. (1985). The habituation of sexual arousal. *Archives*

    of Sexual Behavior, *14*, 233–246. doi:10.1007/BF01542106

O'Donoghue, T., & Rabin, M. (2003). Self-awareness and self-control. In G.

    Loewenstein, D. Read, & R. Baumeister (Eds.), *Time and decision:*

    Economic and psychological perspectives on intertemporal choice (pp. 201–

    216). New York: Russell Sage Foundation Press.

Osborn, J., & Beech, A.R., (2006). *The suitability of Risk Matrix 2000 for use with internet sex offenders*. Unpublished Masters thesis, University of Birmingham, U.K.

Ost, S. (2011). Criminalising fabricated images of child pornography: A matter of harm or morality? *Legal Studies*, *30*, 230–256. doi:10.1111/j.1748-121X.2010.00161.x

Palk, G. R. M., & O'Gorman, J. (2004). Habituation of sexual arousal in sex offenders: The role of cognitive processes. *International Journal of Forensic Psychology*, *1*, 58–70.

Patton, J. H., Stanford, M. S., & Barratt, E. S. (1995). Factor structure of the Barratt Impulsiveness Scale. *Journal of Clinical Psychology*, *51*, 768-774. doi:10.1002/1097-4679(199511)51:6<768::AID-JCLP2270510607>3.0.CO;2-1

Paul, B., & Linz, D. P. (2008). The effects of exposure to virtual child pornography on viewer cognitions and attitudes toward deviant sexual behavior. *Communication Research*, *35*, 3-38. doi: 10.1177/0093650207309359

Paulhus, D. L. (1998). *Manual for the Balanced Inventory of Desirable Responding: Version 7*. Buffalo, NY: Multi-Health Systems.

Pennington, B. F. (2002). *The development of psychopathology: Nature and nurture.* New York: Guilford Press.

Pithers, W. D. (1990). Relapse prevention with sexual aggressors: A method for maintaining therapeutic gain and enhancing external supervision. In W. L. Marshall, D. R. Laws, H. E. Barbaree (Eds.), *Handbook of sexual assault: Issues, theories, and treatment of the offender* (pp. 343-361). New York, NY, US: Plenum Press.

Pithers, W. D., Marques, J. K., Gibat, C. C., & Marlatt, G. A. (1983). Relapse

    prevention with sexual aggressives: A self-control model of treatment and

    maintenance change. In J. G. Greer & I.R. Stuart (Eds.), *The sexual*

    aggressor: Current perspectives on treatment (pp. 214–239). New York:

    Van Nostrand Reinhold.

Prentice, D. A., & Gerrig, R. J. (1999). Exploring the boundary between fiction and

    reality. In S. Chaiken, & Y. Trope (Eds.), *Dual-process theories in social*

    psychology (pp. 529-546). New York: Guilford Press.

Putnam, D. E. (2000). Initiation and maintenance of online sexual compulsivity:

    Implications for assessment and treatment. *CyberPsychology and*

    Behavior, *3*, 553–563. doi:10.1089/109493100420160

Quayle, E., & Taylor, M. (2002). Child pornography and the Internet: Perpetuating

    a cycle of abuse. *Deviant Behavior*, *23*, 331-61. doi:

    10.1080/01639620290086413

Quayle, E., & Taylor, M. (2003). Model of problematic Internet use in people with

    a sexual interest in children. *CyberPsychology and Behavior*, *6*, 93–106.

    doi:10.1089/109493103321168009

Quayle, E., Vaughan, M., & Taylor, M. (2006). Sex offenders, Internet child abuse

    images and emotional avoidance: The importance of values. *Aggression*

    and Violent Behavior, *11*, 1–11. doi:10.1016/j.avb.2005.02.005

Rachlin, H. (1974). Self-control. *Behaviorism*, *2*, 94–107.

Radford, L., Corral, S., Bradley, C., Fisher, H., Bassett, C., Howat, N., & Collishaw, S.

    (2011). *Child abuse and neglect in the UK today.* London: NSPCC.

Ray, J. V., Kimonis, E. R., & Donahue, C. (2010). Legal, ethical, and methodological

    considerations in the internet-based study of child pornography

offenders. *Behavioral Sciences and the Law*, *28*, 84-105. doi: 10.1002/bsl.906

Riegel, D. L. (2004). Effects on boy-attracted pedosexual males of viewing boy erotica [letter to the editor]. *Archives of Sexual Behaviour*, *33*, 321-23. doi: 10.1023/B:ASEB.0000029071.89455.53

Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA loneliness scale: Concurrent and discriminant validity evidence. *Journal of Personality & Social Psychology*, *39*, 472-80. doi: 10.1037/0022-3514.39.3.472

Salter, A. (1988). *Treating child sex offenders and their victims: A practical guide*. London: Sage.

Saunders, D. G. (1991). Procedures for adjusting self-reports of violence for social desirability bias. *Journal of Interpersonal Violence*, *6*, 336-44. doi: 10.1177/088626091006003006

Sentencing Advisory Panel (2002). *The Panel's advice to the Court of Appeal on offenses involving child pornography*. London: Crown copyright. Retrieved, October 21, 2008 from http://www.sentencing-guidelines.gov.uk/docs/advice_child_porn.pdf

Seto, M. C., Cantor, J. M., & Blanchard, R. (2006). Child pornography offenses are a valid diagnostic indicator of pedophilia. *Journal of Abnormal Psychology*, *115*, 610–15. doi: 10.1037/0021-843X.115.3.610

Seto, M. C., & Eke, A. W. (2005). The criminal histories and later offending of child pornography offenders. *Sexual Abuse: A Journal of Research and Treatment*, *17*, 201–210. doi:10.1007/s11194-005-4605-y

Seto, M. C., Hanson, R. K., & Babchishin, K. M. (2011). Contact sexual offending by

men with online sexual offenses. *Sexual Abuse: A Journal of Research and

Treatment*, *23*, 124-45. doi:10.1177/1079063210369013

Seto, M. C., Maric, A., & Barbaree, H. E. (2001). The role of pornography in the

etiology of sexual aggression. *Aggression and Violent Behavior*, *6*, 35-53.

doi:10.1016/S1359-1789(99)00007-5

Seto, M. C., Wood, J. M., Babchishin, K. M., & Flynn, S. (in press). Online solicitation

offenders are different from child pornography offenders and lower risk

contact sexual offenders. *Law and Human Behavior*.

Sheldon, K., & Howitt, D. (2007). *Sex offenders and the Internet*. Chichester, U.K:

John Wiley & Sons.

Skelton, A., Riley, D., Wales, D., & Vess, J. (2006). Assessing risk for sexual

offenders in New Zealand: Development and validation of a computer-

scored risk measure. *Journal of Sexual Aggression*, *12*, 277–286.

doi:10.1080/13552600601100326

Sperry, D. M., & Gilbert, B. O. (2005). Child peer sexual abuse: preliminary data on

outcomes and disclosure experiences. *Child Abuse and Neglect*, *29*,

889–904. doi:10.1016/j.chiabu.2004.12.011

Stadtland, C., Hollweg, M., Kleindienst, N., Dietl, J., Reich, U., & Nedopil, N. (2006).

Evaluation of risk assessment instruments for sex offenders. *Nervenarzt*,

77, 587–595.

Steele, C. M. S. (2009). Web-based child pornography: Quantification and

qualification of demand. *International Journal of Digital Crime and

Forensics*, *1*, 58-69. doi: 10.4018/jdcf.2009100105

Stevens, J. (1996). *Applied multivariate statistics for the social sciences* (3rd Ed).
Mahwah, NJ: Erlbaum.

Stinson, J. D., Becker, J. V., & Sales, B. D. (2008). Self-regulation and the etiology of
sexual deviance: Evaluating causal theory. *Violence and Victims*, *23*, 35-51.
doi: 10.1891/0886-6708.23.1.35

Sullivan, J., & Beech, A. R. (2003). Are collectors of child abuse images a risk to
children? In A. MacVean & P. Spindler (Eds.), *Policing paedophiles on the
Internet* (pp. 11–20). London: The New Police Bookshop.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th Ed.).
London: Pearson International.

Tate, T. (1992). The child pornography industry: International trade in child
sexual abuse. In C. Itzin (Ed.), *Pornography: Women, violence and civil
liberties* (pp. 203–216). Oxford: Oxford University Press.

Taylor, M. (1999). *The nature and dimensions of child pornography on the
Internet*. Paper prepared for the International Conference Combating
Child Pornography on the Internet: Vienna, Austria Retrieved October 2,
2008, from http://www.stopchildpornog.at/

Taylor, M., Holland, G., & Quayle, E. (2001). Typology of paedophile picture
collections. *The Police Journal*, *74*, 97–107.

Taylor, M., & Quayle, E. (2003). *Child pornography: An internet crime*. Hove, U.K.:
Brunner-Routledge.

Taylor, M., & Quayle, E. (2006). The Internet and abuse images of children:
Search, pre-criminal situations and opportunity. In R. Wortley & S.
Smallbone (Eds.), *Situational prevention of child sexual abuse* (pp. 169-
195). New York: Criminal Justice Press.

Thornton, D. (unpublished). *Self-esteem Scale.* Available from David Thornton,

    P.O. Box 700, Sand Ridge Secure Treatment Center, 1111 North Road,

    Mauston, Wisconsin 53948, USA.

Thornton, D. (2002). Constructing and testing a framework for dynamic risk

    assessment. *Sexual Abuse: A Journal of Research and Treatment*, *14*, 139–

    54. doi:10.1023/A:1014620214905

Thornton, D. (2007). *Scoring guide for Risk Matrix 2000.9/SVC.* Retrieved 10

    January 2009 from

    http://www.cfcp.bham.ac.uk/Extras/SCORING%20GUIDE%20FOR%20R

    ISK%20MATRIX%202000.9-%20SVC%20-20(ver.%20Feb%202007).pdf

Thornton, D., Mann, R., Webster, S., Blud, L., Travers, R., Friendship, C., et al.

    (2003). Distinguishing and combining risks for sexual and violent

    recidivism. In R. Prentky, E. Janus, & M. Seto (Eds.), *Understanding and*

    managing sexually coercive behavior (Vol. 989) (pp. 225–235). New York:

    Annals of the New York Academy of Sciences.

Torrubia, R., Avila, C., Molto, J., Caseras, X. (2001). The Sensitivity to Punishment

    and Sensitivity to Reward Questionnaire (SPSRQ) as a measure of Gray's

    anxiety and impulsivity dimensions. *Personality and Individual*

    Differences, *31*, 837–862. doi:10.1016/S0191-8869(00)00183-5

Van den Bergh, B., Dewitte, S., & Warlop, L. (2008). Bikinis instigate generalized

    impatience in intertemporal choice. *Journal of Consumer Research*, *35*, 85-

    97. doi:10.1086/525505

Velicer, W. F., Eaton, C. A., & Fava, J. L. (2000). Construct explication through

    factor or component analysis: A review and evaluation of alternative

    procedures for determining the number of factors or components. In R. D.

Goffin & E. Helmes (Eds.), *Problems and solutions in human assessment: Honoring Douglas N. Jackson at seventy* (pp. 41-72). Norwell, MA: Kluwer Academic.

Ward, T. (2000). Sexual offenders' cognitive distortions as implicit theories. *Aggression and Violent Behavior*, *5*, 491–507. doi:10.1016/S1359-1789(98)00036-6

Ward, T., & Beech, A. R. (2006). An integrated theory of sexual offending. *Aggression and Violent Behavior*, *11*, 44-63. doi:10.1016/j.avb.2005.05.002

Ward, T., & Gannon, T. (2006). Rehabilitation, etiology, and self-regulation: The Good Lives Model of rehabilitation for sexual offenders. *Aggression and Violent Behavior*, *11*, 77–94. doi:10.1016/j.avb.2005.06.001

Ward, T., Gannon, T. A., & Keown, K. (2006). Beliefs, values, and action: The judgment model of cognitive distortions in sexual offenders. *Aggression and Violent Behavior*, *11*, 323–340. doi:10.1016/j.avb.2005.10.003

Ward, T., & Hudson, S. M. (1998). The construction and development of theory in the sexual offending area: A meta-theoretical framework. *Sexual Abuse: A Journal of Research and Treatment*, *10*, 47–63. doi:10.1177/107906329801000106

Ward, T., & Keenan, T. (1999). Child molesters' implicit theories. *Journal of Interpersonal Violence*, *14*, 821-838. doi:10.1177/088626099014008003

Ward, T., Keenan, T., & Hudson, S. M. (2000). Understanding cognitive, affective, and intimacy deficits in sexual offenders: A developmental perspective. *Aggression and Violent Behavior*, *5*, 41–62. doi:10.1016/S1359-1789(98)00025-1

Ward, T., Keown, K., & Gannon, T. A. (2007). Cognitive distortions as belief, value

    and action judgments. In T. A. Gannon, T. Ward, A. Beech, & D. Fisher

    (Eds.), *Aggressive offenders' cognition: Theory, research and practice* (53-

    70). Chichester, UK: Wiley.

Ward, T., Polaschek, D. L. L., & Beech, A. R. (2006). *Theories of sexual offending*.

    Chichester, U.K.: Wiley.

Ward, T., & Siegert, R. J. (2002). Toward and comprehensive theory of child

    sexual abuse: A theory-knitting perspective. *Psychology, Crime and Law*, *9*,

    319–351. doi:10.1080/10683160208401823

Ward, T., & Sorbello, L. (2003). Explaining child sexual abuse: Integration and

    elaboration. In T. Ward, D. R. Laws, & S. M. Hudson (Eds.), *Sexual deviance:*

    Issues and controversies in sexual deviance (pp. 3–20). London: Sage.

Ward, T., & Stewart, C. A. (2003). Criminogenic needs and human needs: A

    theoretical model. *Psychology, Crime, and Law*, *9*, 125–143.

    doi:10.1080/1068316031000116247

Watkins, B., & Bentovim, A. (1992). The sexual abuse of male children and

    adolescents: A review of current research. *Journal of Child Psychology and*

    Psychiatry, *33*, 197–248. doi:10.1111/j.1469-7610.1992.tb00862.x

Webb, L., Craisatti, J., & Keen, S. (2007). Characteristics of Internet child

    pornography offenders: A comparison with child molesters. *Sexual Abuse:*

    A Journal of Research and Treatment, *19*, 449–465. doi:10.1007/s11194-

    007-9063-2

Webster, S. D., Mann, R. E., Thornton, D., & Wakeling, H. C. (2006). Further

    validation of the short Self-Esteem Scale with sex offenders. *Legal and*

    Criminological Psychology, *12*, 207-216. doi:10.1348/135532506X114347

Wilkinson, N. (2008). *An Introduction to Behavioral Economics*. New York, NY:

    Palgrave Macmillan.

Wilson, M., & Daly, M. (2004). Do pretty women inspire men to discount the

    future? *Proceedings of the Royal Society B: Biological Sciences*, *271*, S177–

    S179. 10.1098/rsbl.2003.0134

Winder, B., & Gough, B. (2010). "I never touched anybody — that's my defence":

    A qualitative analysis of internet sex offender accounts. *Journal of Sexual*

    Aggression, *16*, 125-141. doi: 10.1080/13552600903503383

Wolak, J., Finkelhor, D., & Michell, K. (2011). Child pornography possessors:

    Trends and case characteristics. *Sexual Abuse: A Journal of Research and*

    Treatment, *23*, 22-42. doi:10.1177/1079063210372143

Wolf, S. C. (1984). A model of sexual aggression/addiction. *Journal of Social Work*

    and Human Sexuality, *7*, 131–148.

Wolf, S. C. (1985). A multi-factor model of deviant sexuality. *Victimology*, *10*,

    359–374.

Wortley, R., & Smallbone, S. (2006). Applying situational principles to sexual

    offenses against children. In R. Wortley & S. Smallbone (Eds.), *Situational*

    prevention of child sexual abuse (pp. 7-36). New York: Criminal Justice

    Press.

Zillmann, D., & Bryant, J. (1986). Shifting preferences in pornography

    consumption. *Communication Research*, *12*, 560–578.

    doi:10.1177/009365086013004003