Exploring Online Sexual Behaviours from a Forensic Psychological Perspective

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Thesis abstract

This thesis provides an investigation into online sexual behaviours from a forensic psychological perspective. A variety of methods were used to undertake this investigation, including a systematic review, a research case study, a quantitative research study and a psychometric critique.

Following an introduction in chapter one, chapter two details a systematic review. This investigated the relationship between young people's engagement in social networking, including their exposure to sexual risk behaviours from others and their own engagement in sexual risk behaviours. Results found that young people interacting with unknown people online posed the greatest risk for sexual solicitation. Due to limited research, the results were unable to infer causality owing to the cross-sectional design of the included studies. Furthermore, the results were unable to provide evidence on the influence of social networking on young people as perpetrators of harmful sexual behaviour (HSB). The research case study in chapter three explores this further, referring to the case of a young male (X) presenting with technology assisted harmful sexual behaviour (TA-HSB), describing an assessment, formulation, and intervention designed to enhance his skills and knowledge regarding his sexual behaviour online. Following the intervention it was revealed that there was an increase in X's scores of impulsivity, explanation for this are explored and a consideration of alternative assessment tools. It was revealed that a number of underlying issues are associated with

TA-HSB highlighting that interventions need to be tailored to meet the individuals differing needs, however, more research is needed to provide conclusive evidence on the effectiveness of current interventions.

Chapter four details an empirical research study which investigated the role of disinhibition on online sexual behaviours, using an online survey with participants from the general population. Due to different conceptualisations of disinhibition and the lack of established scales measuring online disinhibition, a number of scales were used to assess disinhibition. A significant positive relationship was found between the total scores for the measures of disinhibition and the self-reported engagement in online sexual activities (OSA) for females, however the correlation revealed a weak association. For the male participants only the measure of online disinhibition showed a significant positive correlation with OSA. Additional results of the research revealed a significant positive relationship between the measures of disinhibition and impulsivity for males and females. Males reported engaging in OSA significantly more than females, and viewing pornography was the most frequent OSA reported by both sexes. Furthermore, the best predictors of engagement in OSA's and areas for future research are discussed.

Chapter five evaluates the reliability and validity of the Barratt Impulsivity Scale (BIS-11) when used with forensic samples. The BIS-11 was used as one of the measures of disinhibition in chapter four. Within the critique, research has been discussed which has demonstrated that the BIS-11 showed good internal consistency for

use in a forensic population, however weaknesses of the measure included gaps in the research, lack of behavioural data and an over reliance on reporting the total score ignoring the subscales.

Finally, the findings from each methodology are considered together in chapter six, with a discussion and close to the thesis drawing together the implications of the research for the field of online sexual behaviour.

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Glossary of terms

AUC	Area Under the Curve
BIS-11	Barratt Impulsivity Scale- Version 11
BPS	British Psychological Society
BS	Boredom Susceptibility
CAMHS	Children and Adolescent Mental Health Service
CBT	Cognitive Behaviour Therapy
CEOP	Child Exploitation and Online Protection
CMC	Computer Mediated Communication
DBT	Dialectical Behavioural Therapy
DIDS	Drinking Induced Disinhibition Scale
DIS	Disinhibition
DIS-I	Disinhibition Inventory
DV	Dependent Variable
ES	Experience Seeking
FSIQ	Full Scale Intelligence Quotient
GTS	Guilford-Zimmerman Temperament Survey
HSB	Harmful Sexual Behaviour
I7	Impulsiveness Questionnaire
IIOC	Indecent Images of Children
IMR	Internet Mediated Research
ISST	Internet Sex Screening Test
IVE	Impulsivity Venturesomeness Empathy Questionnaire
Mdn	Median
NICE	National Institute for Health and Care Excellence
NOS	Newcastle Ottawa Scale
NSPCC	National Society for the Prevention of Cruelty to Children
OIDS	Online Induced Disinhibition Scale
OSA	Online Sexual Activities
OSB-I	Online Sexual Behaviours- Isolated
OSB-S	Online Sexual Behaviours- Social
PAI	Personality Assessment Inventory
PICTS-SV	Psychological Inventory of Criminal Thinking Styles**-** Short Version
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
RCI	Reliable Change Index
RSES	Rosenberg Self-Esteem Scale
SHPO	Sexual Harm Prevention Orders
SIDE	Social Identity of Deindividuation Effects
SRO	Sexual Risk Orders
SSS-V	Sensation Seeking Scale- Version 5
TA-HSB	Technology Assisted- Harmful Sexual Behaviour
TAS	Thrill and Adventure Seeking
USA	United States of America
WHO	World Health Organisation
WISC-V	Wechsler Intelligence Scale for Children- Fifth Edition
YISS	Youth Internet Safety Survey

Chapter one: Introduction to thesis

This chapter provides a general introduction to the research area explored by this thesis, and a brief overview of the current understanding from the literature on online sexual behaviours, including the importance of this from a societal and forensic psychological perspective. The chapter will be concluded with an overview of the aims of this thesis.

Sex and the internet

The internet became available to the public in the late 1980's. By the mid 1990's the popularity of the internet grew, with sex being found to be one of the most frequently used search terms within search engines (Cooper, 1998). More recently in 2018, it was found that 90% of adults in the United Kingdom were internet users (Office for National Statistics, 2018), and 33.5 billion people visited Pornhub (a well-known pornography website); equating to 92 million visitors daily and 962 searches per second (Pornhub, 2018). Doring (2009) provided an overview of research with adults in the field of sexual behaviours online, identifying that the internet is used for a variety of online sexual activities (OSA). OSA's describe internet-based activities, materials, and behaviours that are sexual in nature (Döring, 2009, 2012; Grov, Breslow, Newcomb, Rosenberger, & Baermeister, 2014). Literature has further demonstrated the internet's influence on sexual behaviours offline (Cooper et al., 2003; Shaughnessy et al., 2011), indicating that online and offline activities are often closely interlinked. Doring (2015) suggested that a wide

range of OSA available can be separated into six categories that parallel offline sexual activity: (1) sexual information, (2) sexual entertainment, (3) sexual contact, (4) sexual minority communities, (5) sexual products, and (6) sex work. Sexual information refers to the online exchange of information and advice which may be discretely obtained through the use of websites or discussion forums directed at changing sexual awareness, attitudes, and behaviours (e.g. safer sex, sexually transmitted infections, sexual pleasure, or sexual dysfunctions). Secondly, OSA can include the dissemination and consumption of sexual entertainment, such as erotic stories, pornographic pictures and videos for sexual pleasure. Sexual contact refers to the search for and participation in sexual contact for computer-mediated exchanges (e.g. sending messages with sexual content or webcam-based cybersex), as well as contacts leading to real-world sexual encounters (e.g. online dating or sex-seeking between consenting adults). Sexual minority communities include those individuals with non-mainstream sexual orientations or preferences who have difficulty finding like-minded persons who are able to easily and inexpensively locate each other on the Internet (e.g. lesbian, gay, bisexual, and transgender or kink/fetish communities). Sexual products includes obtaining information regarding sexual aids and toys and discretely buy and sell non digital items online. Finally, sex work refers to using and offering commercial sexual services such as professional paid cybersex over webcam and the online marketing of offline sex work.

Access to OSA has increased with the advancement of mobile technology, particularly through smartphones, meaning we now have

unlimited use of the internet in the palm of our hands (McCartan & McAlister, 2012). Smartphones can be used to access social media platforms, or websites that allow social interaction and this has expanded the range of mobile communicative practices and audiences' people are able to engage with, particularly in relation to young people (O'Keeffe & Clarke-Pearson, 2011). Within this field of research people who are under the age of 18 are often referred to as "children and young people". Therefore throughout this thesis, children and young people will be referred to under the same legal definition of a child, "…a child means every human being below the age of eighteen years unless under the law applicable to the child, majority is attained earlier" (United Nations Convention on the Rights of the Child, 1990).

Current research on online sexual behaviours

Research has suggested that OSA can bring both benefits, such as the opportunity to satisfy sexual needs in constructive ways, and potential risks, such as exhibit addictive or compulsive usage patterns that have negative consequences for themselves or others, though much of the existing research has focused on the risks of using the internet for sexual purposes (Doring, 2009). Three main types of OSA have been distinguished within the literature; compulsive, isolative and social use.

Compulsive OSA is characterized by excessive use that can affect the daily life of the individual, this behaviour is argued to provide negative consequences becoming dysfunctional and associated with addiction symptoms, such as loss of control and mood regulation

(Wery & Billieux, 2017). Isolative use is performed by individuals who do not interact with other people, this is commonly the viewing of pornography. A review of the internet's impact on sexual behaviours in general concluded that research has focused on the consumption of internet pornography; including harm to children and young people, addictive patterns of use, dissemination and consumption of illegal or deviant pornography, and the creation of negative role models through mainstream pornography (Doring, 2009).

Social participation is carried out by people who interact online with other individuals. Intertwined with the instant connectivity and mobility of smartphones, are physical and social risks that may begin in early adolescence, defined as ages 11 to 14 years (Hardin & Hackell, 2017). Sexting has become a common practice among young people (Ybarra and Mitchell, 2014; Doornwaard et al., 2017), yet, its definition remains a grey area. Sexting has broadly been defined as the sending of sexually explicit text messages or images via the internet or mobile phone (Drouin, Vogel, Surbey, & Stills, 2013; Houck et al., 2014). However, research has suggested a need to find a consensus on the definition of sexting in terms of actions (sending, receiving, and forwarding), media types (text, images, and videos), and content (Barrense-Dias et al., 2017).

Sexting has received media attention and become a necessary topic of interest in research because of the negative consequences that this activity could create. Several potentially adverse outcomes have been identified including dissemination of self-generated explicit images without consent, involvement with those under the legal age

leading to serious legal consequences, negative mental health repercussions and associated risk behaviours (Judge, 2012; Richards & Calvert, 2009; Walker & Sleath, 2017). Sexting has come to the attention of law when involving blackmail, sexual harassment and abuse, and lack of consent (Wolak, Finkerhor, & Mitchell, 2012).

The increase in the number of sex offenses linked to internet use has led to an increase in society's awareness of how the internet is used to groom victims (Beech et al. 2008). Grooming has been defined as ''a process by which a person prepares a child, significant adults and the environment for the abuse of this child. Specific goals include gaining access to the child, gaining the child's compliance and maintaining the child's secrecy to avoid disclosure" (Craven et al., 2007, p. 297). Research has found that online grooming can facilitate engagement in deviant sexual activities and the sexual exploitation of children (Marcum, 2007; O'Connell, 2003; Williams et al., 2013). Children and young people can be both victims and perpetrators of abuse, with an increase of young people displaying harmful sexual behaviour (Lewis, 2018). Harmful sexual behaviour (HSB) is defined as sexual behaviours expressed by children and young people under the age of 18 years old that are developmentally inappropriate, may be harmful towards themselves or others and/ or be abusive towards another child, young person or adult. (Hackett, Holmes & Branigan, 2016). It has been reported that at least one third of all sexual offences against children in the United Kingdom involved other children as perpetrators (Hackett et al., 2016). This has led to children's services reviewing strategies, interventions and approaches with children and young people who display HSB.

Explanations of online sexual behaviours

It has been argued that the accessibility, affordability and anonymity of the internet explains the power and attraction of using the internet for sexual purposes and fosters the development of cybercrime and deviant subcultures within society (Cooper, 1998). This has been referred to as the online disinhibition effect, which has been described as the lack of restraint one feels when communicating online in comparison to communicating in-person (Suler, 2004). Psychological research into disinhibited online communication has primarily focused on how the internet affects communication behaviour, however some differential approaches have attempted to identify attributes that make users particularly susceptible to online disinhibition (Voggesser, Singh & Goritz, 2018). To date there are no known studies which have explicitly explored online disinhibition and its relationship with sexual behaviours.

Thesis aims

Although research has explored online sexual behaviours, this area is ever growing and there continues to be a need for ongoing research. This thesis aims to provide a greater understanding by exploring what contributes to online sexual behaviours; in terms of both attributes of the online environment and the individual's personality, and further exploration of an intervention addressing HSB displayed online.

To summarise, the aims of this thesis are as follows:

1. To explore young people's engagement in and exposure to online sexual behaviours which may cause harm to themselves or others (Chapter 2).
2. To formulate a single case of technology assisted harmful sexual behaviour and determine the impact of treatment for the individual (Chapter 3).
3. To explore the relationship between disinhibition and online sexual behaviours (Chapter 4).
4. To critically evaluate the BIS-11 as a measure of impulsivity in a forensic population (Chapter 5).

Rationale for chapter two

Chapter one introduced the prevalence of the internet in today's society and the increasing salience of sexuality on the internet. Chapter two focuses on where sexual behaviours occur online and the influence this has on young people in terms of sexual risk behaviours. Sexual risk behaviours are defined throughout this thesis as behaviours that place individuals at risk of being victims or perpetrators of sexual exploitation.

It has been argued that social networking sites provide a context in which young people, who have a need for social acceptance and gratification and are still developing self-regulation skills, may find themselves vulnerable to pressures or unanticipated risk opportunities (Landry et al., 2017). This has been researched particularly in relation to sexual health risks, however, it remains unclear whether social networking contributes to the vulnerability of young people in terms of exposure to online risky sexual behaviour from others and engagement in harmful sexual behaviour (HSB).

A systematic review was undertaken to establish whether an association exists between young people's engagement in social networking and their exposure to sexual risk behaviours, which is important if research in this area is to progress. The outcomes will be discussed in terms of implications, and practice implications for reducing the sexual risks among young people.

Chapter two: The effect of social networking on young people's exposure to and engagement in sexual risk behaviours: A systematic review

Abstract

Background: Over the past decade social networking has increasingly impacted the lives of young people. The purpose of this systematic review was to determine whether there was an association between young people's engagement in social networking and their exposure to sexual risk behaviours from others and their own engagement in sexual risk behaviours.

Method: Systematic searches of seven bibliographic databases were conducted to identify literature relating to an association between social networking and sexual behaviour with a sample of young people. A search of the reference lists of key papers was also conducted.

Results: A total of twelve studies met the inclusion criteria and were included in the review. All included studies were assessed for quality using the Newcastle Ottawa Scale. Data synthesis indicated that the majority of studies explored the influence of social networking, such as instant messaging, use of chat rooms and blogging, on exposure to risk of online sexual solicitation.

Conclusion: Young people interacting with unknown people online posed the greatest risk for sexual solicitation. The majority of studies

included were cross sectional in design and only able to provide an association between social networking and young people's sexual behaviour.

Introduction

Background

Over the past decade technology and social media have changed the way young people interact with each other. Many young people use the internet on their mobile phones almost every day and without parental control (Livingstone, Bober, & Helsper, 2005). The communication uses of the internet have played an integral part within children and young people as they are able to develop an online profile from a young age through the use of social networking sites (Gemmill & Peterson, 2006; Jones, 2002; Lenhart & Madden, 2007; Subrahmanyam & Greenfield, 2008).

Social networking sites have been defined as interactive web and mobile platforms through which individuals and communities share, discover, co-create, or exchange information, ideas, photos, or videos within a virtual network (Naslund, Aschbrenner, Marsch & Bartels, 2016). Social networking sites allow users to create a profile and view other users' profiles within online social networks (Boyd & Ellison, 2007). Online profiles are used as a representation of internet user's social identity.

Adolescence is a transitional phase of growth and development between childhood and adulthood, the World Health Organization (WHO) defines an adolescent as any person between ages 10 and

19. This period is considered an important time in identity development as adolescents explore ways to present themselves and "be" in the world (Sadowski, 2008). The internet and social media represent an accessible opportunity to discover and explore human sexuality; increasing knowledge on sexual education, sexual health (Barak & Fisher, 2001), and enhancing opportunities for sexual self-exploration and social connection (Cooper, Boies, Maheu, & Greenfield, 1999). The internet is considered a highly sexualized environment (Cooper, Boies, Maheu, & Greenfield, 1999; Peter & Valkenburg, 2006). It is argued to provide easy, cheap and anonymous access to sexual material and communication, whilst removing many inhibitors (Herring, 2008). However, in more recent years there have been increased concerns about the sexual risks that the internet poses to young people and how they often lack the risk attenuation needed to discern and manage online dangers and content in safe and healthy ways (Delmonico & Griffin, 2008).

Among the potential sexual risks on the internet the following issues have been raised; being a victim of unwanted online sexual solicitation and actively engaging in HSB (Baumgartner et al., 2010). The sexual exploitation and abuse of young people over the internet is of substantial concern. Young people can become the victims of online sexual solicitation (receiving unwanted requests to talk about sex or to do something sexual; Ybarra, Espelage, & Mitchell, 2007) and actively engaging in risky sexual behaviour online. Growing research suggests young people are increasingly struggling with compulsive internet use and compulsive behaviours related to internet pornography and cybersex (Anderson et al., 2016; Delmonico & Griffin, 2008; Lam, Peng, Mai, & Jing, 2009; Rimington

& Gast, 2007; van den Eijnden, Spijkerman, Vermulst, van Rooij, & Engels, 2010). Research has suggested that regular and frequent exposure to sexual content in the media is related to greater sexual knowledge and more liberal sexual attitudes among young people (Flood, 2009). Furthermore, young people who engage in sexting are also more likely to be sexually active and may be more likely to be involved in sexually risky behaviours (Klettke, Hallford, & Mellor, 2014).

Whilst research predominately focuses on how young people are at risk of falling victim to online sexual abuse, they can also be perpetrators. This may include the making, viewing and distribution of indecent images of children, which can be initiated from sexting, or other types of illegal/harmful pornography, grooming other children and young people online, and the online sexual victimisation of children and young people through images and/or chat. Internet-enabled devices, such as smartphones, have indiscriminately allowed people of all ages to encounter, consume, create, and distribute sexually explicit content (Owens et al., 2012). Growing research has revealed the aforementioned phenomena are increasingly common for young people worldwide (Flood, 2007; Häggström-Nordin, Sanberg, Hanson, & Tydén, 2006; Hollis & Belton, 2017; Lo & Wei, 2005; Wolak, Mitchell, & Finkelhor, 2007).

The internet and use of social media, primarily through smartphones, have expanded the access to sexually explicit content and pornography; this increased access, coupled with the reality of teen's sexual identity development and exploration, has meant that young people today are more likely to be exposed to explicit sexual material

than those in prior generations (Ballester-Arnal, Gimenez- Garcia, Gil-Llario, & Castro-Calvo, 2016). It has been hypothesised that particular characteristics of young people, such as lack of control and sensation-seeking, facilitate risky use of cybersex, because young people do not have enough understanding and development to distinguish healthy and unhealthy use of it (Freeman-Longo, 2000).

Scoping exercise

There is currently limited research on the causes of sexually risky behaviours online and the influence of social networking on these behaviours. A scoping exercise was completed to locate any relevant systematic reviews and to gauge the volume of existing literature in the field. This included searching the Google search engine and Cochrane and Campbell Collaboration libraries. Scoping search results have revealed that research has focused on the link between social networking and risks related to sexual health. One relevant systematic review conducted by Smith et al (2016) was found, which investigated the link between sexual risk behaviours in young people and sexually explicit websites and sexting. However, this review did not focus on the influence of social networking and there remains a need for a systematic review of the literature in this area.

Aim

The objective of this review is to investigate through the available literature, a greater understanding of the relationship between social networking and young people's sexual behaviour. A clearer understanding will aim to increase awareness of the sexual behaviours young people are exposed to and engage in online, while

contributing to informing interventions on the risk of social networking for potential perpetrators and victims of harmful online sexual behaviours.

Methods

Search strategy

The search strategy comprised an electronic search of the Cochrane Collaboration library and seven bibliographic databases, including PsycINFO, MEDline, PsycARTICLES, SCOPUS, Web of Science, Pubmed and CINAHL. The grey literature searched included Google Scholar, OpenGrey, DART Europe, EThOS (UK), Nottingham eDissertations, Nottingham eTheses, Networked Digital Library of Theses and Dissertations (worldwide), ProQuest Dissertations and Theses. The search was conducted between 1st August 2018 to 9th August 2018.

The search strategy combined search terms identified in relevant papers during the scoping exercise. All possible variations of the search terms were used and modified where appropriate to meet the searching requirements of each database:

(adolescent OR teen OR "young people" OR youth OR "emerging adult") AND ("social network*" OR "social media" OR "SNS" OR online OR apps OR facebook OR snapchat OR instagram) AND ("sexual behavio*" OR sexuality OR "sexual risk" OR "online sexual abuse" OR "indecent images" OR cybersex)*

The term "emerging adult" was included in the search terms due to this term being identified during the scoping exercise. It has since been acknowledged that "emerging adult" often refers to 18-25 year olds (Arnett, 2000), therefore this term would not be included in future searches with an inclusion age range below 18 years old.

Table 1: Inclusion and exclusion criteria

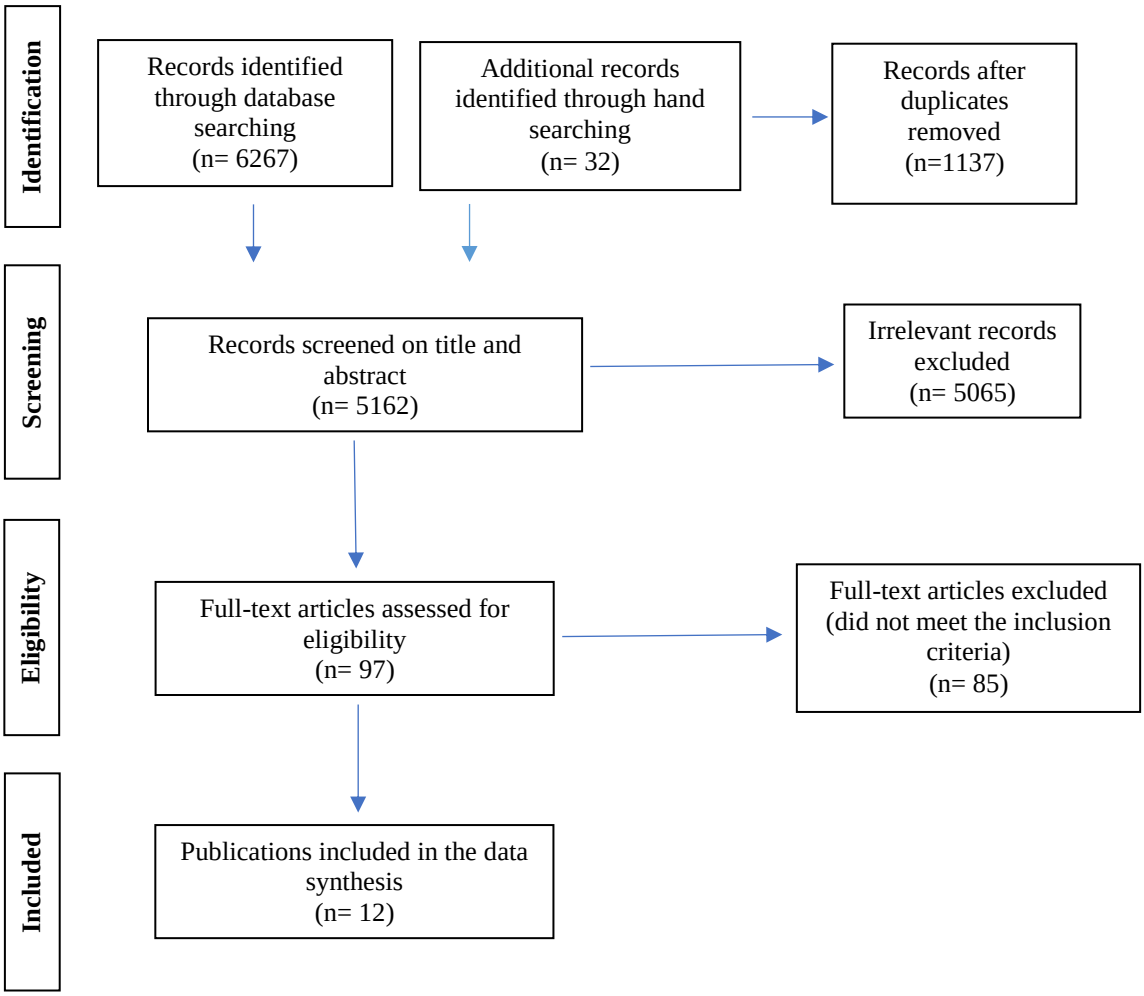
	INCLUSION	EXCLUSION
POPULATION	Males and females 10-18 years old	Under 10 years old Over 18 years old
EXPOSURE	Engagement in social networking sites, and activities associated with social networking, such as but not exclusive to instant messaging and blogging.	No exposure to social networking. No details of social networking activities.
OUTCOME	Any sexual behaviours whether this be online or offline.	No details of sexual behaviour.
CONTEXT	Association between social networking and sexual behaviour.	No association considered between social networking and sexual behaviour.
STUDY DESIGN	Quantitative studies such as cross-sectional, longitudinal.	Qualitative studies, reviews, opinion papers.

Only quantitative studies were included in the present review, quantitative research is used to explain phenomena by collecting numerical data that are analysed using mathematically based methods (Creswell, 1994). Qualitative research was considered to provide an in depth exploration of the research area. However, at present quantitative studies were deemed the most appropriate to answer the research question and provide an objective measure of the relationship between engagement in social networking sites and

sexual behaviour, while providing direct statistical comparison of the results. A review of qualitative research would be appropriate to further explore this area once the relationship between engagement in social networking sites and sexual behaviour has been determined. The first social networking site was developed in the late 1990's, however, social networking became popular in the early 2000's with the launch of sites such as MSN messenger, MySpace and Facebook. The search was limited to studies published after 2000, the justification for this being that research on social networking would be expected to be published after this date. Only articles written in English were included.

Study selection

Figure 1: PRISMA flowchart for the selection of eligible studies



The following selection process was followed using guidelines from the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA):

1. All the titles found with the search terms were screened to determine if the study was relevant. Any duplicates and irrelevant titles were removed.
2. The abstract of each study was then assessed in comparison with the inclusion/exclusion criteria, and the irrelevant papers removed. Full copies of the remaining papers were obtained.
3. The full papers were read in line with the inclusion/exclusion criteria (outlined in table 1) to determine which papers to include in the review.
4. The reference lists of the full text articles included in the review were hand searched to identify further eligible studies.

See Figure 1 for a literature selection flowchart.

Search results

The search initially yielded 6,267 hits, an additional 32 articles were identified through hand searching. 1,137 articles were duplicates and removed, leaving 5,162 articles which were screened on the title and abstract. Following a further 5065 articles being excluded, 97 full articles were obtained to assess their eligibility against the inclusion criteria. 85 articles were excluded at this stage, the reasons for papers being excluded from the review included; study design (qualitative and mixed methods), age range over 18 years old, did not specify social networking use or not an empirical study (such as

a review or book chapter). Following completion of the study selection process 12 articles were deemed relevant for inclusion in the review. See table 2 for an overview of the characteristics of the included publications.

Quality assessment

The Newcastle Ottawa Scale (NOS; Wells et al., 2013) for cohort studies was used to assess the potential threats to the internal and external validity of the longitudinal studies (studies that look at variables within the same subjects over an extended period of time). Each study was assessed and evaluated based on the NOS fulfilling the established criteria for the components of selection, comparability and outcome (see appendix A for a description of the scoring guide). Table 3 shows the results of the quality assessment for the longitudinal studies.

Table 3: Quality assessment of studies based on NOS for longitudinal studies

Study	***Selection (max 3 *)***		***Comparability (max 2 *)***	***Outcome (max 3 *)***			***Analysis (max 1 *)***	***Overall (max 9 *)***
	Representative sample (1)	*Ascertainment of the exposure (2)*	*Comparability of cohorts (3)*	*Assessment of the outcome (4)*	*Follow-up long enough (5)*	*Adequacy of follow-up cohorts (6)*	*Appropriate statistical methods (7)*	
Baumgartner et al (2012)	*	*	**	*	*	-	*	*7*
Chang et al (2016)	*	*	*	*	*	*	*	*7*

(1)=average in the target population or random sampling; (2)**=validated measurement tool, *=measurement tool is available or described; (3)*=comparison of participant age and sex, *=comparison of any additional factor; (4)**=independent blind assessment or record linkage, *=self-report; (5)*=one year or more; (6)*=all participants followed up or less than 10% or suggestion of no different of those not followed; (7)*=clearly described and appropriate statistical test*

The adapted NOS (Wells et al., 2003) was used for the cross-sectional studies (studies that analyses data from a population, at a specific point in time) which assessed selection, study adjustments and outcome (see appendix B for a description of the scoring guide). Table 4 shows the results of the quality assessment for the cross-sectional studies. All twelve studies were assessed and assigned a number of asterisks if a criterion was satisfactorily addressed in the paper. An overall quality score was calculated by adding the number of asterisks for each category.

Table 4: Quality assessment of studies based on the adapted NOS for cross-sectional studies

Study	***Selection (max 5 *)***				***Study adjustments (max 2 *)***	***Outcome (max 3 *)***		***Overall (max 10 *)***
	Representative sample (1)	*Sample size (2)*	*Non-respondents (3)*	*Ascertainment of the exposure (4)*	*Confounding factors controlled (5)*	*Assessment of the outcome (6)*	*Statistical test (7)*	
Baumgartner et al (2010)	*	*	-	*	*	*	*	*6*
Dowdell et al (2009)	*	*	-	*	**	*	*	*7*
Dowdell et al (2011)	-	*	-	-	*	*	-	*3*
Mitchell et al (2001)	*	*	*	-	*	*	*	*6*
Mitchell et al (2003)	*	*	-	*	*	*	*	*6*
Mitchell et al (2008)	*	*	-	*	**	*	*	*7*
Wells & Mitchell (2008)	*	*	-	*	*	*	*	*6*
Wolak et al (2008)	*	*	-	-	*	*	*	*5*
Ybarra et al (2007)	*	*	-	*	*	*	*	*6*
Ybarra & Mitchell (2008)	*	*	-	*	-	*	*	*5*

(1)=average in the target population or random sampling; (2)*=sample size 1000 (or greater) or otherwise justified; (3)*=comparison between the characteristics of respondents and non-respondents and satisfactory response rates; (4)**=validated measurement tool, *=measurement tool is available or described; (5)*=controls for participant sex, *=controls for any additional factor; (6)**=independent blind assessment or record linkage, *=self-report; (7)*=clearly described and appropriate statistical test*

Table 2: Overview of included studies and quality assessment

Study author/ year	Aims	Study population	Number of Participants	Exposure	Outcomes measured
Baumgartner et al (2010)	To explore whether (a) unwanted online sexual solicitation, (b) risky sexual online behavior, and (c) the perception of risks and benefits of risky sexual online behavior vary for males and females in adolescence and adulthood.	Netherlands, males and females; adolescents aged 12-17	1765	Use of instant messaging, internet chats, and social networking sites	Unwanted online sexual solicitation and risky sexual online behaviour.
Baumgartner et al (2012)	To investigate the prevalence and development of both online (OnSRB) and offline sexual risk behavior (OffSRB) in adolescence, to establish whether OnSRBs and OffSRBs are related, and to identify risk factors that deter- mine problematic pathways of OnSRB and OffSRB.	Netherlands; males and females; adolescents aged 12-18	1762	Instant messaging, Internet chats, and social networking sites.	Searched for someone on the Internet to talk about sex, searched for someone on the Internet to have sex, sent a photo or video in which they were partly naked to someone they knew only online, sent an address or telephone number online to someone they knew only online. Sexual intercourse with someone they had just met and sexual intercourse without condom with someone they had just met.
Chang et al (2014)	To identify longitudinal predictors of the occurrence of youth unwanted exposure to online pornography and online sexual solicitation victimization and perpetration	Taiwan, males and females; adolescents aged 15-16	2315	Online games and chat rooms	Unwanted exposure to online pornography, online sexual solicitation victimization, online sexual solicitation perpetration, pornography media exposure and offline sexual harassment perpetration
Dowdell et al (2009)	To more clearly identify the online general use, safety knowledge, and risk behaviours of middle school students	USA; male and female; students aged 12-16	404	Instant messaging, visiting websites, playing games	Posting personal information, using inappropriate websites, online harassment, posting picture online, engaging in topic of sex
Dowdell et al (2011)	To report basic social networking patterns among students and adult offenders as background information for health care professionals	USA; male and female; 404 middle school students, 2,077 high school students, 1,284 college student, 466 adult sexual offenders	4231	Social networking sites (Facebook, Myspace, Twitter), instant messaging, use of chat rooms	Posting personal information, talking to strangers online, meeting these strangers offline, engaging in sexual behaviour offline, being threatened or sexually assaulted, sexually related conversations, sexting (sharing nude photos)
Mitchell et al (2001)	To assess the risk factors surrounding online sexual solicitation of youth and distress due to solicitation	USA; male and females; youths aged 10-17	1501	I Use of chat rooms	Online risk behaviours, Sexual solicitation

Study author/ year	Aims	Study population	Number of Participants	Exposure	Outcomes measured
Mitchell et al (2003)	To explore the exposure of youth to unwanted sexual material on the internet, focusing on risk, impact and prevention	USA; 796 boys and 705 girls aged 10-17	1501	Email, instant messaging	Unwanted exposure to sexual material
Mitchell et al (2008)	To examine whether bloggers are at increased risk for online sexual solicitation or harassment	USA; male and female; youths aged 10-17	1500	Online blogging	Unwanted sexual solicitation (unwanted requests to engage in sexual activities or talk, give personal sexual information), online harassment (threats or offensive behaviour)
Wells & Mitchell (2008)	To explore the differences in internet use characteristics between high risk youth and other internet users	USA; male and female; youths aged 10-17	1500	Instant messaging, use of chat rooms, blogging	Sexual solicitation (requests to talk about sex, requests for sexual information, requests to do something sexually)
Wolak et al (2008)	To provide a basis for identifying which youth may be most at risk from interacting online with unknown people	USA; male and female; youths aged 10-17	1500	Instant messaging, use of chat rooms, online, blogging	Aggressive online sexual solicitation (requests to talk about sex, give sexual info or do something sexually), risky online behaviour (interacting with unknown people online, posting personal info and pictures, downloading images, visiting X-rated sites)
Ybarra et al (2007)	To examine whether sharing personal information and talking with strangers online or other behaviours associated with the greatest odds for online interpersonal victimisation	USA; male and females, youths ages 10-17	1500	Instant messaging, online dating sites, visiting	Disclosure of personal information, harassing behaviour, talking with someone met online, visiting X-rated websites, talking about sex with someone known only online
Ybarra & Mitchell (2008)	Are social networking sites unhealthy for youth, as defined by a place where internet victimisation is most likely to occur	USA; males and females; 10-15 year olds	1588	Instant messaging, use of chat rooms, social networking sites, email, online games, blogging	Unwanted online sexual solicitation (unwanted requests to talk about sex, provide sexual information, do something sexual), internet harassment (rude or mean comments, spreading rumours)

Data extraction

Using a data extraction form, which was developed for the purpose of this review (see appendix C), data in the following areas was extracted: study population (sample size, demographics), study methodology (study design, sampling method), the types and frequency of exposure to social networking, potential confounding variables and all outcome measures.

Results

Characteristics of included studies

Twelve articles met the inclusion criteria and were included in the review. All studies were quantitative in design; two longitudinal and ten cross-sectional studies, which all used a self-report measure, whether this was conducted over the phone, email, paper questionnaire or in an interview. Nine of the publications were conducted in the United States of America (USA), two in the Netherlands and one in Taiwan.

Six of the studies recruited participants from a national sample in the USA using a telephone survey developed by Finkelhor, Mitchell, and Wolak (2000) named the Youth Internet Safety Survey (YISS). The YISS-1, YISS-2 and YISS-3 were conducted in 2000, 2005, and 2010, providing comparative information on youth internet experiences at 5-year intervals. Both the information from the YISS-1 and YISS-2 were included within this review. One study used a different national survey in the United States called 'The Growing up with Media Survey', which was emailed to participants whose parents were

members of the Harris Poll Online. Dowdell et al (2009) recruited participants from two schools in a socioeconomic middle- to upper class suburban area of the USA, using an adapted version of the YISS instrument which was administered via pen and paper. Chang et al (2016) recruited from a random sample of schools using a self-administered questionnaire based on the YISS. Baumgartner et al (2010) and Baumgartner el al (2012) recruited from an existing nationally representative online panel within the Netherlands using measures based on items used in prior studies. One study was not clear on their recruitment procedures and measurement tools (Dowdell et al., 2011).

All studies included both male and female participants. In ten of the studies, participants' ages ranged from 10-18 years old. Two of the studies additionally included adult samples (Dowdell et al, 2011; Baumgartner et al, 2010), however, due to the age limits in the inclusion criteria only the data from the participants aged below 18 years old were used in this review.

Assessment of study quality

The quality of all the studies in the review were assessed using the NOS assessments. Studies were assigned asterisks for respective items which depicted a low risk for bias, while no asterisks represented a high risk for bias. No study was assigned ten asterisks, the ratings ranged from three to seven asterisks with the higher number of asterisks denoting the higher quality the paper. The reasons that studies were not awarded asterisks included not providing comparability between respondents and non-respondents

characteristics or an unsatisfactory response rate; not using a validated measurement tool or not providing a description of the tool; using a biased assessment of the outcome such as a self-report measure and failing to make adjustments for confounding variables.

The majority of the studies used a sample generated from a national telephone survey in the USA. This has been argued to be a representative sample of internet using youth (Mitchell et al., 2003). The response rate was disclosed in some of the papers, the response rate for the YISS has been reported as satisfactory at 81%. However, authors of the included studies acknowledged that the response rate dropped to 38% for the YISS-2. This has been argued to be reflective of a general decline in response rates for national telephone surveys (Curtin et al, 2005; Keeter et al, 2006; Kempt & Remington, 2007). The reasons for this, being acknowledged as caller identification, confusion with telemarketers, and survey saturation among the public. Despite this, it has been disputed that this decline in participation has not influenced the validity of most surveys conducted by reputable surveying organisations (Pew Research Center, 2012).

Study outcomes and exposure were determined using self-report methods by all the studies. Often the authors did not provide details of the questions asked in the measurement tools and none of the reports indicated whether the tools had been validated. As the majority of the studies included used the YISS survey, in the reports the survey was not fully described and readers were referred to previous papers for methodological information.

Within the included studies it was not always clearly defined in the papers what specific questions were asked in relation to engagement in social networking. More generally, young people were asked a variety of questions on their internet use including intensity of use, location in which the internet was used and what behaviours were engaged in online (Dowdell, 2009; Mitchell et al., 2008; Wells & Mitchell, 2008). In terms of social networking, the following sites have been specified; Facebook, Myspace, Twitter, YouTube, Flickr, LinkedIn and dating websites. The included studies have focused on specific online activities within social networking sites which have primarily related to interactions with others, whether this be communicating with people they know or do not know offline. Interactions with others have included through blogging, chat room use, internet chats and instant messaging. Some differences have been acknowledged between male and female online behaviours, with reports of females using social networking sites and chat rooms more than males (Dowdell et al., 2011).

Within the included studies the young people's engagement in sexual behaviour has been measured through their exposure to sexual contents, interactions with others online through sexually related conversations and engagement in risky online behaviours. Risky online behaviours were defined as interacting online with unknown people, posting personal information or pictures online, sending personal information/pictures to an unknown person, being friends with people online who they have never met in person, visiting X-rated web site intentionally, talking about sex to a person met online

(Wolak et al., 2008). Baumgartner et al (2012) also focused on offline sexual risk behaviours, such as sexual intercourse with someone they had just met and sexual intercourse without using a condom with someone they had just met. The majority of the studies reported the association between young people's engagement in risky online behaviours and their vulnerability to sexual solicitation.

Narrative data synthesis

A narrative data synthesis approach was adopted for this review as this was deemed the most appropriate analysis. Due to the different measures of sexual behaviours and areas of investigation within the included studies a meta-analysis was unable to be performed. The synthesis is divided into two main sections: young people's exposure to sexual behaviour from others and their own engagement in sexual behaviour.

Exposure to sexual behaviour

All twelve studies examined the relationship between social networking use and exposure to sexual behaviour from others. Three social networking activities were shown to be most commonly associated with exposure to sexual behaviours; instant messaging, use of chat rooms and blogging. Below is a description of the reported findings.

Instant Messaging (IM)

"Instant messaging is a real-time communication tool that allows two or more people who are using the same IM service to interact with

each other in real time" (Ybarra & Mitchell, 2008, p. 351). Five of the included studies investigated the influence of instant messaging on young people's exposure to sexual behaviour (Baumgartner et al., 2010; Dowdell et al., 2011; Mitchell et al., 2003; Wolak et al., 2008; Ybarra & Mitchell, 2008). Findings showed that more frequent use of online communication, such as chatting and instant messaging, increase the chances of unwanted online sexual solicitation (Baumgartner et al, 2010). Mitchell at al (2003) investigated youth's exposure to unwanted sexual material and found that of those who reported unwanted exposure to sexual material, 70% used instant messages. One study investigated interaction styles among youth internet users and found that youths who communicate with people they do not know online and engage in risky online behaviours were significantly associated with using instant messaging (Wolak et al., 2008). For youths who experienced unwanted sexual solicitation, it was reported that instant messaging was the most frequently cited activity these youths reported engaging in (Ybarra & Mitchell, 2008).

Use of chat rooms

"A chat room is a place online where people gather to chat. Most are open to anyone who wants to participate" (Ybarra & Mitchell, 2008, p. 351). Unlike instant messaging it occurs in an avenue for communities of users with a common interest. Communication occurs in real time and although chat is viewed by all participants in the room, it can also occur privately. Seven studies investigated the influence of youth's engagement in chat rooms on their sexual behaviour evidencing that risk factors for online sexual solicitation include the uses of chat rooms. (Chang et al., 2016; Dowdell et al.,

2011; Mitchell et al., 2001; Mitchell et al., 2003; Wells & Mitchell, 2008; Wolak et al., 2008; Ybarra & Mitchell, 2008).

Chang et al (2014) found more frequent chat room use was associated with online sexual solicitation and that males spent more time in chat rooms, which provided more opportunities for sexual solicitation. It was found that 73% of youths who reported unwanted exposure to sexual material participated in chat rooms (Mitchell et al., 2003). Furthermore, two studies found risk of sexual solicitation was higher for those youths who participated in chat rooms (Mitchell et al., 2001; Ybarra & Mitchell, 2008).

Dowdell et al (2011) found that 49.2% of middle school students (9-15-year olds) who reported chatting with strangers online disclosed they had met them in an online chat room. Of the 59 students who had chatted with stranger online, 32 reported meeting up with the strangers in person offline. Three respondents reported sexual assault or being inappropriately touched. Furthermore, youths who communicate with people they do not know online and engage in risky online behaviours were significantly associated with using chat rooms (Wolak et al., 2008).

Blogging

"Blogs are online journals. People use them as diaries or to comment on specific topics. Blogs can include detailed descriptions of personal experiences and feelings" (Ybarra & Mitchell, 2008, p. 351). Some blogs include contact information which allows contact with known and unknown people. Three studies investigated the influence of

blogging on young people's sexual behaviour (Mitchell et al., 2008; Wells & Mitchell, 2008; Ybarra & Mitchell, 2008). It is reported that bloggers were more likely to post personal information and interact with people they did not know online, with 33% reporting sexual solicitation (Mitchell et al., 2008). Ybarra and Mitchell (2008) found that those youths who experienced unwanted sexual solicitation reported that one of the activities that they spent most time doing when online was blogging, however this was only 3% of participants. It was concluded that blogging on its own is not related to increased risk for online solicitation, rather the greatest risk is posed from interacting with people met online. Therefore, risk increased if bloggers additionally used other forms of social networking which involved interacting with others online. Bloggers were reported to be more likely to also use instant messenger and one fifth of high-risk youths reported blog use (Wells & Mitchell, 2008).

Engaging in sexual behaviour

Two of the included studies investigated young people engaging in sexual behaviours (Baumgartner et al., 2012; Chang et al., 2014; Dowdell et al., 2011). Baumgartner et al (2012) investigated the relationship between online sexual risk behaviours (searched for someone online to talk about sex, searched for someone online to have sex, sent a photo or video in which they were partly naked to someone they knew only online, sent an address or telephone number online to someone they knew only online) and offline sexual risk behaviours (sexual intercourse with someone they had just met, sexual intercourse without a condom with someone they has just met). They found that adolescents' engagement in both online and

offline behaviours occurred simultaneously in the same 6-month period and adolescents tended to engage in online sexual risk behaviour before they engaged in offline sexual risk behaviours. Chang et al (2014) found that students who had higher levels of risk factors such as weekly chat room use, pornography media exposure, cyberbullying victimisation, and offline sexual harassment in grade 10 coupled with an increase in these risk factors from grades 10 to 11 were significantly more likely to become involved in sexual solicitation perpetration by 11th grade. Sexual solicitation perpetration was measured by the respondent indicating they had asked someone to talk about sex online and if they had asked someone to do something sexual online when the other person did not want to (it was unclear how this was measured). Dowdell et al (2011) reported that of those 146 high school male students who answered questions about meeting a stranger online, 33 further reported meeting the stranger offline and engaging in consensual sexual behaviour. Of the 157 high school females, 58 subsequently met offline with the stranger and 21 reported engaging in consensual sexual behaviour with the stranger.

Discussion

This systematic review reviewed the research evidence to explore whether an association has been established between young people's engagement in social networking and their exposure to sexual risk behaviours from others and own engagement in sexual risk behaviours. Overall all twelve included studies reported an association between engagement in social networking activities (such

as instant messaging, use of chat rooms and blogging) and young people's exposure to sexual material, access to communication with strangers, sexual solicitation and risks of offline contact and sexual assault. It has been suggested that participants who used the internet more frequently engaged in more online sexual risk behaviours and were also more often sexually solicited online (Baumgartner et al., 2010). It has been found that young people interacting with other people online, poses the greatest risk for sexual solicitation, particularly if they do not know the person offline (Mitchell et al., 2008; Ybarra et al., 2008). This has been shown to be higher with those young people who use chat rooms, where communication is open to the public as opposed to instant messaging where young people are more likely to engage with known contacts.

It should also be considered that focusing solely on the components of social networking that exposes young people to sexual solicitation ignores the individual characteristics of those young people who are at risk. Some of the studies included reported findings in relation to this. Wolak et al (2008) suggested that youths at risk of sexual solicitation include those with a range of problems including rule breaking, depression and social problems. It has been suggested that youths that have difficulty developing attachment with peers may be more likely to engage in inappropriate communication with people they do not know (Wells & Mitchell, 2008). Furthermore, females and older youths (aged 14-17) were found to be at particular risk of online sexual solicitation (Mitchell et al., 2001). Ybarra and Mitchell (2008) found females were significantly more likely to report unwanted solicitation on social networking sites. However, it has

been considered how males may be less likely to report online sexual solicitation. Research has recognised the underreporting of male sexual victimisation due to feelings of embarrassment or shame and beliefs that they would not be believed and/or taken seriously (Hammond et al, 2016).

Limited studies commented on the young people's own engagement in sexual risk behaviours, however, it is suggested that online and offline sexual risk behaviours are related and that the internet may be a place for young people to experiment with their sexuality prior to engaging in offline sexual risk behaviours (Baumgartner et al., 2012). The relationships between social networking and engagement in sexual behaviours remains to be explored.

Limitations

This review has a number of limitations, one of the main limitations was in relation to study design. Although an association was established between young people's engagement in social networking and increased risk of sexual solicitation, due to the cross-sectional design of the majority of the studies no causal inference can be determined. A review of longitudinal studies would better be able to determine causality, however within the research it has been noted that at present longitudinal studies investigating online sexual risk behaviours are lacking. Baumgartner et al (2012) has argued that in order to support prevention of online sexual risk behaviours occurring, investigating the development of this behaviour may help to understand the onset and peak of online sexual risk behaviours during adolescence. Therefore, longitudinal studies may help to

identify risk groups of adolescents. Furthermore a review of qualitative data may also provide a further exploration of the association between social networking and sexual solicitation. Ringrose et al (2012) explored young people's sexual communication via digital mediums using a qualitative methodology of combined interviews, focus groups and online ethnography of Facebook profiles. They found this an effective method that generated in-depth data on young people's everyday experiences of digital sexual communications. Within the included studies common predictors of online and offline sexual risk behaviours other than social networking have been considered such as sensation seeking, low educational level and gender, these may need further examination within future research, potentially through qualitative research.

The quality of the studies included in this review was varied, with the majority of the included studies being conducted in the USA using the same measurement tool and sampling method. Other measurement tools often only consisted of a few items and do not present established measurements. It has therefore been suggested that future studies should develop and validate new scales to measure online risk behaviour and perceptions (Baumgartner et al, 2010). All the studies also used self-report data, which is likely to result in bias from individuals responding in a socially desirable manner.

Another limitation was in relation to measuring the exposure and outcomes. The majority of the studies in the review reported on young people's risk of online sexual solicitation, with only three of

the included studies reporting on the influence of social networking on young people's own sexual behaviours. No further studies were identified in the search that met the inclusion criteria, exploring other sexual behaviours, in particular young people's engagement in sexual solicitation with them as the perpetrator. It has been reported that a significant proportion of online-facilitated sex offences are committed by young people, however limited research has been conducted into young people engaging in online harmful sexual behaviour (McNeish & Scott, 2018). Regarding exposure, the included studies were not always clear on the social networking sites which young people were exposed to and specific details about the chatrooms and blogs were not described, therefore, it was unclear whether these were on sexually related subjects. Due to the evolving world of social media some of the social networking sites described may now not be as popular as were when the study was published. New social networking trends are developing all the time, and research needs to evolve with these trends in order to provide relevant contributions to the evidence base.

Conclusions and recommendations

This paper provides a systematic review of the research evidence regarding the impact social networking has on young people's exposure to sexual risk behaviours from others and engagement in their own sexual risk behaviours. It is concluded from the evidence that there is an association between young people interacting with unknown people on social networking sites and the exposure of

sexual solicitation from others. Yet, the review highlights the limited research on the relationship between youth's engagement in social networking and them displaying HSB.

Future research should be directed to provide longitudinal studies in this area to infer causality underlying the observed associations. Additional research is required investigating young people who display HSB and also research conducted in different parts of the world, such as the United Kingdom. A review of qualitative research is also recommended to further explore the observed association and generate richer insight into young people's sexual behaviours online. As technologies evolve and more interactive applications are developed where young people are further able to communicate with unknown people online, it is suggested that more focus is placed on understanding how social networking influences sexual risk behaviours to prevent sexual solicitation.

Rationale for chapter three

The systematic review in chapter two highlighted the lack of research in relation to young people being perpetrators of harmful sexual behaviour (HSB). In Scotland it was found that child sexual offences committed by a child rose by 34% between 2011-2012 and 2015-2016 (IPS, 2017). Furthermore, a strong link has been established between children displaying HSB at a young age and going on to become perpetrators of abuse in adulthood, including child sexual exploitation (Barnardo's, 2016). In 2016 an inquiry into the support and sanctions for children who display HSB was completed within England that aimed to provide Parliament, Government and other local and national decision makers with a better understanding of this issue. It was found that HSB has become much more prominent in recent years, with specialist services reporting increasing numbers of referrals (Barnardo's, 2016). Moreover, there is support for therapeutic programmes working with young people displaying HSB (Righthand & Welch, 2001; Veneziano & Veneziano, 2002). Chapter three presents a research case study of a young male who presents with HSB online and details an assessment, formulation, and intervention designed to enhance his skills and knowledge around his sexual behaviour online.

Chapter three: A case study approach to working with young people who present with technology- assisted harmful sexual behaviour

Ethical considerations

For the purpose of anonymity and confidentiality the client described in this research case study shall be referred to as X. This report provides a factual account of an assessment and intervention conducted with X between August to October 2018. X was referred to a Young People's Crime Prevention Programme then allocated to the author, who was on placement as a Forensic Psychologist in Training within Young People's Services at the time. X was presenting with harmful sexual behaviour (HSB) online and therefore identified as a suitable case study. X was provided with full information regarding his treatment being written up as a case study in fulfilment of the Doctorate in Forensic Psychology, and consent was obtained by both X and his foster carer.

Abstract

Online illegal sexual activity and the sexual abuse of children is often associated with adult sex offenders; however, young people can also engage in HSB online and access sexually inappropriate images. Technology assisted harmful sexual behaviour (TA-HSB) has been described as when a child or young person demonstrates sexual behaviour online or through the use of technology that may be harmful to themselves or others, have a significant detrimental

impact on their daily functioning, or leave them vulnerable for criminal prosecution. This case study refers to the case of a young male presenting with TA-HSB, describing an assessment, formulation, and intervention designed to enhance his skills and knowledge around his sexual behaviour online. Outcomes were measured in relation to self-esteem, impulsivity and sensation seeking, while considering behavioural change. Results revealed a clinically significant increase in scores of impulsivity, however no further reports of TA-HSB were reported. Study limitations are considered and the implications for practice and future research are outlined.

Introduction

HSB is described as wide ranging including both contact (touching, masturbation, penetration) and non-contact behaviours (grooming, exhibitionism, voyeurism and sexting or recording images of sexual acts via smartphones or social media applications) (Ashurst, n.d.). Research has been drawn to this area due to the finding that a quarter to a third of people who commit acts of child sexual abuse are themselves children or young people (Hackett, Masson, & Phillips, 2005). Some characteristics appear more prominent in the backgrounds and presentation of those who display HSB, such as prior experience of physical or sexual abuse or neglect, witnessing domestic violence, a lack of positive male role models, or having parents with mental health or substance abuse issues (Glasser et al., 2001; Ogloff et al., 2012; Salter et al., 2003; Skuse et al., 1998).

Furthermore, research has suggested some degree of learning disability, a number of social skills deficits, a lack of sexual knowledge and high levels of social anxiety (Hackett, 2014). The vast majority of young people displaying HSB have been identified as boys and young men (McCuish & Lussier, 2017), although a small but growing number of females have been shown to be presenting with HSB (Hackett, 2014). Research suggests that females displaying HSB have experienced higher levels of sexual victimisation than males (Fromuth and Conn, 1997; Masson et al., 2015; Mathews et al., 1997; Miccio-Fonseca, 2000; Miccio-Fonseca, 2016; Kubik et al., 2003). Furthermore HSB tends to be identified at a younger age in girls than in boys, and tends to involve younger victims (Finkelhor et al, 2009). Overall, children and young people presenting with HSB have been found to be a diverse group with a complex set of motivations, background experiences and varying types of abusive or offending behaviour (Hackett et al., 2013).

The progression of technology and smartphones in today's society and the increased sexual curiosity and risk-taking amongst young people can lead to the increased possibility and opportunity for harmful behaviour (Quayle, 2007). The National Society for the Prevention of Cruelty to Children (NSPCC) coined the concept "technology assisted harmful sexual behaviour (TA-HSB)" which they defined as "One or more children engaging in sexual discussions or acts- using the internet and/or any image creating/sharing or communication device which is considered inappropriate and/or harmful given their age or stage of development" (Hollis & Belton, 2017, p. 8).

TA-HSB includes taking, making, processing and/or distributing indecent images of children (IIOC). Carr (2004) estimated up to 15 percent of IIOC consumers are young people. In more recent years this has increased to an estimation that one fifth of IIOC are self-generated and freely produced by young people as part of developmentally appropriate behaviour (Child Exploitation and Online Protection; CEOP, 2013). Phippen (2012) suggested that the norms for sexual behaviour among young people are evolving and some young people now consider sexting to be no more than flirting. However, with sexting it can be difficult to distinguish between coerced and non-coerced pictures (Horvath et al., 2013). Research suggests that young people involved in trading IIOC may be motivated to view these images out of curiosity, sexual deviancy, and/or peer pressure (Moultrie, 2006). When online, young people with deviant interests are more able to freely act upon these interests and communicate with likeminded individuals. Due to the perceived private and anonymous nature of the internet young people are able to change the way they present themselves to others (Davidson and Gottschalk, 2011; Quayle and Taylor, 2001; Simpson, 2013). This was supported by a survey in the United Kingdom (UK) which found 72% of young people believed that most people behave in a different way online to when they talk to people face to face (Ofcom, 2015).

Although typologies and theories of sexual offending can explain the occurrence and potential motives of some sexual behaviour online, these theories can present with limitations to understanding children and young people, particularly in terms of considering developmental

complexities or the potential ongoing victim experiences that they may be enduring (Lewis, 2018). For those young people who engage in HSB, it is suggested that these behaviours are just one element of their lives among a range of predisposing experiences, underlying vulnerabilities and presenting problems (Hackett, 2014). It is suggested that young people often lack the awareness and understanding of how their online behaviour may be circulated, inadvertently facilitating their vulnerability to be sexually exploited and as such, having engaged in self-victimizing behaviours (Bryce, 2011). Hackett (2014) suggested these individuals have experienced high rates of sexual victimisation and trauma, however there is also emphasis on familial, social, economic and developmental factors. This includes coming from highly problematic backgrounds, experiencing multiple disadvantages and adversities such as physical abuse and family violence, neglect, and poor parenting. They are likely to have had contact with child welfare services before the HSB emerged.

Brook (2012) has developed a model to help professionals identify the difference between healthy, problematic and harmful sexual behaviour dependant on age group. At present there remains limited professional discussion or training on practice-based approaches in the assessment, intervention and management of TA-HSB demonstrated by young people (Lewis, 2018). It is reported that most of the evidence on effective interventions for children and young people displaying HSB is inconclusive and generally comes from small clinical populations of adolescent males convicted of sexual offences (NICE, 2016). Interventions offered to young people

have frequently used a cognitive behavioural approach targeting offence-specific factors and developing relapse prevention strategies (Hackett, 2014). Recommendations to reduce risk of re-offending have suggested that interventions with young people who display HSB should use a multi-modal approach that is individual, holistic, systematic and goal specific (Righthand & Welch, 2001; Veneziano & Veneziano, 2002). Therefore, it is important to understand the HSB itself and distinguish between experimental, exploitative and harmful behaviour, ensuring that the intervention is appropriate for the type of behaviour displayed. Research suggests that young people who have experienced sexual abuse may re-enact the abuse they experienced and therefore the intervention will be required to address their risks and needs as sexually reactive children and victims (Ashurst, n.d). Interventions are also advised to be sensitive to the child's developmental status, while addressing wider aspects such as the young person's social existence and cognitive functioning (Ryan, 1999; Hackett 2001; Masson & Hackett, 2003, Hackett, 2014). Based on previous research (Hackett, 2006a; Hackett, 2006b; Neto et al., 2013), Lewis (2018) advised that practitioners may want to consider the following components when devising an intervention: education of safe internet use, dispelling the myth of anonymity, consequential awareness of TA-HSB, motivation to change, restriction of high risk websites, emotional management, sexual development, identification of triggers to HSB, understanding power and consent, challenging unhelpful beliefs and attitudes, development of protective factors, self-compassion, social and relationship skills, cyber-victim empathy and relapse prevention.

In order to contribute to the limited research on practice-based approaches to the assessment, intervention and management of TA-HSB demonstrated by young people, this report outlines a case study with a young male displaying TA-HSB. In accordance with the literature outlined, the assessment considered predisposing and underlying factors which may have contributed to the behaviour and the intervention was guided by the recommendations included in the research regarding adopting multi-model approaches and including components that address the risk and need of the individual (Ryan, 1999; Hackett, 2001; Masson and Hackett, 2003). A case study design was found to be an effective way to further explore and understand TA-HSB in young people using data from a real-life case.

Case history

The case history was provided from case notes and information provided first-hand by X.

Family relationships

X is a 16-year-old male who is the youngest of five siblings, all of whom have different fathers. None of X's mothers (referred to as Z) pregnancies were planned and her partners left when they found out she was pregnant. X's father is aware of his existence; however, there has been no contact between them. X has had a lack of a stable male father figure growing up and despite Z being in numerous relationships with the fathers of her children, these males have been described as unsuitable and numerous welfare concerns have been raised. A genogram was unable to be completed at this time due to limited information within social care records and X was unable to identify family members and their relationships.

It is reported that X's relationship with his siblings growing up involved sibling rivalry and attention seeking behaviour. In 2009 three of X's siblings made allegations of sexual abuse from their paternal uncle (Z's brother), who was subsequently convicted of sexual abuse towards children. It is unclear whether X suffered any sexual abuse, he has not disclosed any abuse at present.

Childhood background

There has been ongoing input from social care services with X and his siblings individually, and with Z for mental health needs. Z has various long-standing mental health problems and a history of physical and sexual abuse in her childhood. She experiences significant emotional difficulties in respect of former childhood abuse and domestic abuse. There is also a history of learning disabilities within the family. In terms of Z's parenting, it is reported that she struggles to maintain boundaries with the children and displays limited emotional affection. Due to Z's enduring mental health difficulties, she was no longer able to manage and respond to X's behaviour effectively. She stated X was "evil and bad", reporting suicidal thoughts and desires to hurt X. In November 2014 X was placed in his first residential placement but returned home full time from foster care on May 2015. X was taken back into care in October 2015. X moved foster placement four times and was placed in respite care within these placements. During this time, X's siblings remained in the parental home.

Mental health

X was referred to Child and Adolescent Mental Health Services (CAMHS) in October 2010 in relation to his emotional wellbeing. In February 2010 a psychiatric report for X highlighted concerns in relation to low self-esteem and depression, however there is no evidence X received treatment in relation to these concerns. X has been described as facing ongoing issues in relation to his self-esteem and confidence, describing feeling "not good enough". Reports suggest that growing up, X's self-worth and identity took "a daily battering" at home from his mother, and at school with statements of X experiencing bullying. In 2011 Z reported X had taken knives from the kitchen drawer and threatened to harm himself, he had also made comments such as "I want to die". Growing up X's behaviour was described as violent and aggressive, which his mother struggled to manage. It is reported he was increasingly violent by assaulting his mother and siblings, verbally abusive to neighbours and destroyed property within the family home.

Education

Social care records indicate X refused to attend school on a regular basis and there were reports of challenging and aggressive behaviour leading to him being excluded. X has self-reported that he found school difficult due to experiencing bullying and being distracted by his peers. Professionals working with X have reported that he tends to function in many ways similar to a much younger child and therefore finds it easier to engage with younger people than himself. During the time of the case study X was attending college, however further concerns had been raised regarding disruptive behaviour.

Social and intimate relationships

X identified a number of friends from secondary school and college, however the extent to which these provide X with appropriate social support is questioned. X has previously been bullied and reports he spends his free time with his foster carer and two other children residing in his foster home. X has reported he has previously had relationships with females, however he has not engaged in sexual intercourse with his girlfriends. X has stated a desire to be in a relationship and has tended to focus on females much younger than himself. It is reported that when a female has refused to be his girlfriend, he has been verbally abusive towards her and/or insinuated that he will harm himself when he has been rejected.

Current difficulties

There are reports that X has previously drawn phallic images and written comments that they are his brother's "magic wand", it is unclear when this happened and whether it was a one off or episodic behaviour. In 2017 (age 15) X used his brother's identity on social media, claiming his brother's tattoo drawings were his own. He also used this account to message a 12-year-old female asking her to send inappropriate sexual pictures to him. Services became aware of this behaviour when the female's father contacted Police and concerns were raised regarding X engaging in TA-HSB following this. X has acknowledged that asking underage females for sexual images is illegal and recognised the repercussions of this behaviour. X reported he has deleted the account he created with his brother's

identity and only uses social networking sites to communicate with friends he has met at school and college.

Method

X was referred to the psychology service for a cognitive assessment and intervention focusing on exploring and addressing his TA-HSB, while educating him on appropriate relationships and ways to communicate online. X is under the age of 18 years old, therefore written consent was gained from both himself and his carer prior to undertaking the intervention.

Assessment

Due to the concerns regarding X's level of cognitive functioning the assessment began with a Wechsler Intelligence Scale for Children-Fifth Edition (WISC-V; Wechsler, 2014). X's cognitive assessment indicated his general cognitive ability was in the very low range when compared to other children his age (Full Scale Intelligence Quotient (FSIQ) of 79). The research on young people with a learning disability who display HSB indicates these individuals are likely to demonstrate more impulsive and opportunistic behaviours (Fyson, 2007). Furthermore, they are likely to be influenced by a lack of appropriate peer relationships and sex education and may not understand the harmful nature of their behaviours.

In order to explore X's peer relationships and levels of sex education, a semi-structured interview was conducted as part of the assessment, which aimed to explore his perception of appropriate

relationships, sexual behaviour and his online behaviour. The information obtained is provided within the case history. There is currently limited published research on the most appropriate ways to assess young people displaying HSB, however, there is support for assessments which consider the specific risks of the young person's behaviour and motivations while considering their needs and strengths at individual, family and community levels (Griffin et al., 2008; Hackett, 2014; Prentky et al., 2010).

Psychometric measures were used in addition to assess X's risks and vulnerabilities. They were administered pre and post treatment to consider any change. All psychometric measures used were self-report measures.

The Rosenberg Self-Esteem Scale (*RSES; Rosenburg, 1965*)

From the assessment concerns were highlighted in relation to X's self-esteem, therefore the RSES was chosen to assess X's feelings about himself. Furthermore, research has found people with low self-esteem are more likely to use pornography (Livingstone & Smith, 2014). The RSES is a self-report measure of self-worth by assessing positive and negative feelings about oneself. The scale comprises of 10 items, with a higher score indicating higher levels of self-esteem. Research has demonstrated that the RSES has good measures of reliability and validity with a sample of adolescents in the United Kingdom (Bagley & Mallick, 2001).

Sensation Seeking Scale *(SSS-V; Zuckerman, 1979, Zuckerman, 1994)*

The SSS-V was chosen to assess X's tendency to pursue novel and stimulating experiences and determine whether his TA-HSB could be related to sensation seeking behaviours. Sensation seeking young men have been found to take more risks online (Livingstone & Smith, 2014). The SSS-V is a 40 item forced-choice self-report scale measuring the level of stimulation or arousal a person will seek. It can be scored as a general measure of sensation seeking by summing all items but can also be split into four 10 item factors: Thrill and Adventure Seeking (TAS), Experience Seeking (ES), Disinhibition (DIS) and Boredom Susceptibility (BS). The higher the score the more likely a person is to seek out novel and intense sensations. The SSS-V is a widely used tool, which has been found to be reliable (Zuckerman, 1979) and associated with a wide range of behaviours.

The Barratt Impulsiveness Scale (*BIS-11; Patton, Stanford & Barratt, 1995)*

Impulsivity is commonly associated with risky sexual behaviour (Charnigo et al., 2013; Hoyle, Fejfar, & Miller, 2000), therefore the BIS-11 was used to assess this. The BIS-11 is a 30 item self-report measure that uses a 4-point Likert-type scale. It is designed to assess the personality and behavioural construct of impulsivity. Items are scored to yield six first order factors (attention, motor, self-control, cognitive complexity, perseverance and cognitive instability impulsiveness) and three second-order factors (attentional, motor and non-planning impulsiveness). Research has shown acceptable psychometric properties such as test-retest

reliability, internal consistency and criterion-related validity (Vasconcelos, Malloy-Diniz & Correa, 2012).

Formulation

A compassion focused formulation (Gilbert, 2009) was developed based on emerging themes from the assessment sessions. At times it was difficult to collaboratively develop the formulation with X as his account of his childhood was different to that recorded in reports and case notes. X reported his childhood as positive with limited difficulties and described a consistent and close relationship with his mother. It has been considered within the formulation why his perception of this period differs, taking into account his perception of the norm and appropriate relationships. See figure 2 for a visual diagram of the formulation.

Historical Influences

From an exploration of X's historical experiences, a significant experience noted was when he was taken into care while his siblings remained in the family home. As this was his mother's decision, feelings of abandonment from his mother may have arisen however due to X's positive feelings this possibly shaped his perceptions of relationships and what he perceived as "normal" and appropriate. Reports indicate X moved around several care placements and has had sporadic contact with his mother and siblings, limiting his experiences of a warm and affectionate relationship. X has expressed a view that love only occurs in an intimate relationship and does not believe in its presence in family relationships, suggesting further support for his skewed view of relationships.

Within his childhood, X observed several failed relationships between his mother and male partners, possibly influencing his perception of healthy and secure relationships, developing a view of others as abusive and unloving. Although there is no evidence at present of X experiencing sexual abuse and this is something he has not disclosed, he was living in the family home when his siblings were abused further skewing his view of appropriate relationships.

Key fears and threats

Early experiences possibly left X feeling insecure in relationships with an insecure view of himself. X expressed a view of himself as worthless and stupid, with fears that others will be critical of him and think negatively of him. X has also expressed concerns that others will reject and abandon him, which possibly originates from his early experience of rejection from the family home. This development of a negative self-identity is hypothesised to have contributed to X experiencing anxiety when in social situations.

Safety, protective and compensatory strategies

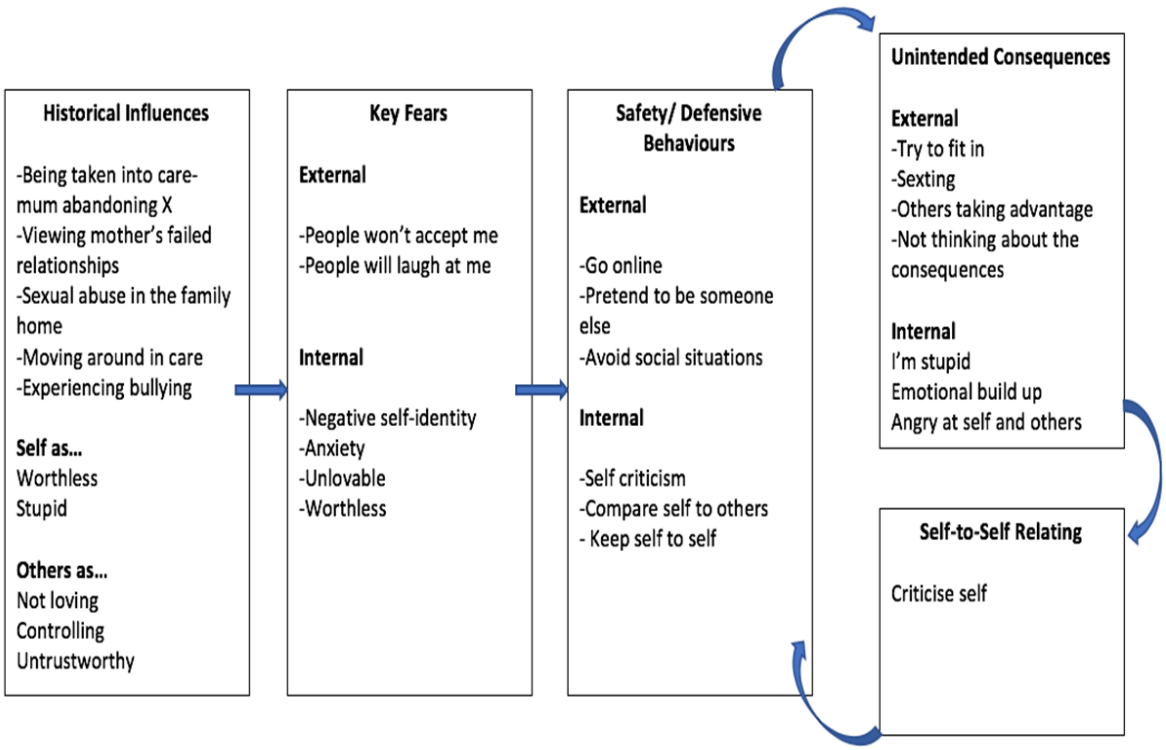
In order for X to deal with the external threat of rejection from others, it is hypothesised that he attempts to seek closeness from others and the only way he feels safe to do so is possibly online. Due to a negative self-identity, X may feel safer taking on the identity of someone else. X has spoken about his admiration for his brother and he possibly views his brother as someone who is accepted, as unlike X he was not rejected by his mother and removed from the family home. In person, X acknowledges that he avoids social situations,

which is where he cannot be someone else and risks feeling rejected and criticised by others. Internally he keeps to himself, comparing himself to others, it is considered that self-criticism may feel safer than hearing it from others.

Unintended consequences and self-to self-relating

X moves between trying to fit in with his peers and socially withdrawing himself. In order to fit in with others X is possibly influenced by peers and not always thinking of the consequences of his actions, which can lead to others taking advantages of him. These feelings may re-activate external protective strategies of withdrawal and avoidance. Internally, emotions can build up, possibly resulting in increased feelings of anger towards himself and others. These unintended consequences may fuel X's self to self-relating and feelings of self-criticism.

Figure 2- Visual diagram of X's compassion focused formulation



Intervention

The intervention consisted of ten sessions; the initial session included an introduction with X and his foster carer where informed consent was obtained, two sessions completed the assessment process (interview, completion of psychometric and cognitive assessment), and one session completed the post intervention psychometric measures. Six sessions were used for the intervention which was designed to develop X's knowledge and skills on appropriate relationships and ways to communicate online. In line with previous research the intervention focused on developing further understanding of X's TA-HSB; identifying previous circumstances leading to the behaviour while supporting him to accept responsibility for the behaviour and educate X on appropriate relationships and ways to communicate online. The outstanding areas which were advised for consideration by Lewis (2018) were recommended for future work.

The intervention used a multi-modal approach adopting concepts and techniques from cognitive behavioural therapy (CBT) with psychoeducational elements, while adhering to the guidelines from the National Institute for Health and Care Excellence (NICE; 2016). Based on these guidelines, sessions were structured but flexible to meet the needs of X, factoring in his social context and development stage. This included adapting the intervention to X's learning strengths and weaknesses based on the results from his cognitive assessment. Due to X's difficulties with short term memory each session began with a recap of the previous session. Furthermore, the

assessment suggested X understands information more easily when it is presented in a verbal, rather than visual, format, therefore, this was considered when planning sessions.

During the first meeting it was agreed with X that appointments would be arranged through his foster carer. This was necessary as he was prone to forgetting about appointments and X's foster carer agreed to remind him to attend each session. Research also suggests the importance of participation and engagement of parent and carers (Ashurst, 2015). Therefore, communication with X's carer was fundamental to gain insight into X's presentation within the family home but also to assist with rehabilitation plans.

Throughout the intervention the aim was to continue to build trust while avoiding blame and judgement. This allowed a therapeutic relationship to be built, allowing X to feel comfortable disclosing information. The intervention was adjusted as it acknowledged factors which may have contributed to the TA-HSB and understanding of the HSB itself. This was consistent with a child-centred approach, focusing on X's needs, strengths and the risks that he is exposed to (Myers, 2002).

Sessions will be outlined below detailing the session content and underpinning theory:

Session 1: Healthy and unhealthy relationships

Due to X's exposure to unhealthy relationships and his limited experience of healthy relationships, the first session focused on relationships. This session aimed to increase X's sexual knowledge, developing healthy attitudes towards sex and towards the rights of others. In accordance with NICE guidelines this included sex education, covering consent and boundaries while considering social and moral considerations. Social network mapping was used to identify X's social support and close relationships, including exploring his online and offline friends. This is a semi- structured approach used to obtain information about a person's perception of their social network (Tracy & Whittaker, 1990). Research has supported social network mapping with children who have suffered abuse (Frederico, Jackson & Black, 2006). From here there was a focus on relationship education including distinguishing between healthy and unhealthy relationships while incorporating skills to develop healthy relationships with others.

Session 2: Ending relationships and abusive relationships

Session two continued on from session one, further looking at relationships. The aim of session two focused on defining the difference between healthy, unhealthy and abusive relationships and how these can present in different relationships including intimate, peer and social relationships. The teen power and control (Pence & Paymar, 1993) was used to teach the dynamics of an abusive relationship and help explain the different ways someone can use power and control to manipulate a relationship such as peer pressure, isolation/exclusion, sexual coercion, threats,

minimise/deny/blame, intimidation, using social status and anger/emotional abuse. In contrast the equality wheel (Pence & Paymar, 1993) was used to illustrate the concepts in relationships that promote respect and equality, demonstrating appropriate ways of interacting in healthy relationships such as negotiation and fairness, non-threatening behaviour, respect, trust and support, honesty and accountability, self-confidence and personal growth, shared power and communication. Due to the reports that X has responded to rejection by making threats to harm himself, the session went on to explore appropriate endings to relationships and the use of Dialectical Behaviour Therapy (DBT) skills such as emotion regulation to manage relationship endings. DBT is a type of cognitive behavioural therapy to teach people how to live in the moment, cope healthily with stress, regulate emotions, and improve relationships with others (Linehan, 1993).

Session 3: High risk situations

Session 3 explored triggers and high-risk situations where X has previously engaged in TA-HSB. Research has suggested that successful interventions addressing HSB include developing skills in strategies to handle high-risk situations (Lawson, 2003), and managing impulsivity (Belton et al, 2014). An exercise explored X's response to receiving messages online of a sexual nature from various known and unknown contacts. A CBT approach identified his thoughts and feelings to receiving these messages, while developing his skills to stop and think, while problem solving different solutions to the problem. This included exploring the consequences of TA-HSB, such as legal implications and the effect of TA-HSB on the victim.

Session 4: Identity

Due to X using his brother's identity and from the perception that X struggles with an internal sense of self, this session explored identity. Within this session, self-exploration was used to support identity formation by encouraging X to explore his general likes and dislikes and views regarding self and others. The internet is argued to play a major role in a young person's developing self-identity, (O'Sullivan, 2014) and self-expression (Haddon et al., 2012). The session was used to develop X's understanding of what type of image X is portraying online and how this differs from the image portrayed in real life, dispelling myths of anonymity whilst increasing his understanding how his current online behaviour can affect various aspects of his future.

Session 5: Self-esteem

Following on from session four, this session focused on self-esteem. The aim of the session was building X's self-esteem by looking at his strengths and achievements and by challenging his negative self-perceptions and cognitive distortions. Interventions for HSB, which have been valued by youths and carers, have included developing self-esteem and self-efficacy (Campbell et al, 2018). A CBT approach was used to explore situations where X has negative thoughts about himself, looking at the details of the situation, what he was thinking and feeling, the evidence to support/not support the thought and how he might challenge this thought.

Session 6: Future and safety planning

The final session aimed to conclude the intervention by looking towards the future and safety planning. The session focussed on how X can make good choices to keep himself and others safe sexually while educating him on safe internet use. Safety planning has been shown to reduce the risk young people pose to others and themselves (NICE, 2016). This session involved setting goals for the future, supporting X to develop a sense of self and achieve a good life plan (Ward & Stewart, 2003).

Results

Psychometric assessment

X completed the psychometric assessments one week prior to starting the intervention and one week after completing the intervention. During assessment at the pre-intervention stage X's score on the RSES was 22, which is within the normal range, as scores below 15 suggest low self-esteem. Following the intervention his score remained the same at 22. On the SSS-V X's score post intervention increased. Looking more specifically at the subscales there was an increase on all scales except experience seeking, which is defined as the pursuit of an unconventional lifestyle via unplanned activities and/or hallucinatory drugs (Zuckerman, 1994). X scored highly on the BIS-11 pre and post intervention on all subscales, indicating high levels of impulsivity across the construct. X completed the pre assessment measurements during our first meeting while his foster carer was present, whereas he completed his post assessment measures with only myself present following the development of a

therapeutic relationship during the intervention. It is hypothesised that the measures completed post intervention may have been a truer representation of X's scores and pre intervention he may have responded in a socially desirable way.

Clinical significance was determined using Reliable Change Index (RCI). The pre and post results for all three measures are displayed in table 5. No clinically significant change was shown for the RSES or the SSS-V, however the BIS-11 total score indicated a significant increase in impulsivity. It is important to consider whether the intervention increased X's impulsivity or whether there is another reason his level of impulsivity was shown to increase; this will be considered throughout the rest of this chapter.

Table 5: Results of pre and post treatment measures

Measure	**Pre**	**Post**	**RCI**	**Reliable change**
RSES	22	22	0	No reliable change
SSS-V				
Boredom Susceptibility	3	5	-1.09	No reliable change
Disinhibition	3	5	-1.21	No reliable change
Experience Seeking	4	3	0.54	No reliable change
Thrill and Adventure	4	5	-0.60	No reliable change
Seeking	14	18	-1.12	No reliable change
Total				
BIS-11				
Attentional Impulsiveness	17	21	-1.35	No reliable change
Motor Impulsiveness	23	29	-1.66	No reliable change
Non-planning Impulsiveness	31	36	-1.36	No reliable change
Total	71	86	-2.50	Reliable change

Professional opinion and behavioural observations

X attended all ten sessions offered and arrived promptly. His participation and motivation throughout sessions was consistent. X presented as engaged throughout the assessment, formulation and treatment however a consideration was given to how honest he was being throughout due to the contradictions with previous reports. Prior to engaging in this case study, X had previously started an intervention regarding his HSB which focused on the legal implications of the behaviour. Research has suggested that professionals working with young people who display harmful sexual behaviour should use a trauma informed approach, avoiding blame or judgment and not prioritising criminal justice (The Children's Society, 2018). There is a concern that as X previously engaged in work which focused on the criminal implications of his behaviour, he may have been reluctant to be honest about his behaviours through fear of the repercussions. Despite this, X demonstrated good understanding of legal implications of sexting and messaging females under the legal age.

Throughout the time of the intervention X's behaviour presented as stable and there were no further reports of TA-HSB. As the sessions progressed X became involved in a relationship with a female his age, however, by the end of the intervention the relationship had ended, and he was pursuing another relationship. At this time, he was observed prior to sessions and after sessions to be receiving and sending multiple messages. Communication from X's foster carer indicated he was often messaging multiple females telling them he loved them. In line with X's results in the WISC-V he presented as

much younger than his age and this was further displayed by his behaviour in the family home, such as his inability to independently care for himself.

Discussion and study limitations

This case study describes an assessment, formulation and short-term intervention aimed at exploring and addressing a young male's TA-HSB, while educating him on appropriate relationships and ways to communicate online. The psychometric assessment used within this case study only revealed a clinically significant increase in X's scores of impulsivity, despite this not being the intended change in direction. However, measuring impulsivity using self-report assessments has been argued to be less sensitive to state changes in impulse behaviour (Matusiewicz, Reynolds & Lejuez, 2011), therefore behavioural measures have been recommended to complement self-report data. In terms of the design of the assessment and intervention there is a consideration of whether the most appropriate assessment tools were selected to measure change across this intervention. Self-report measures rely on individuals possessing a level of personal reflection and insight, and due to X's low cognitive ability, consideration has been given to whether this may affected his verbal comprehension of the assessment tools. Furthermore, as one of the general aims of the case study was increasing awareness about online safety, a measure of change in knowledge may have been beneficial to assess the success of the intervention. As behavioural observations indicated X presented with no further incidents of TA-HSB, this could suggest a positive result for this intervention. Other

factors have been considered to contribute to X's behavioural stability throughout the intervention, including how his living situation has stabilised as he was placed in a supportive family home with a secure and caring female mother figure. It has been argued that children and young people that engage in low level TA-HSB may be lacking fundamental needs, therefore supporting them to feel warmth and nurture from a supportive caregiver can be a helpful place to start an intervention (Lewis, 2018).

As the intervention progressed the case exposed several presenting problems, which were hypothesised to be contributing to X's TA-HSB. Due to the short-term nature of the intervention, not all presenting problems were able to be addressed and it was questioned whether the areas covered were in enough detail to provide positive change. Recommended adaptations to the intervention would include a longer-term intervention in order to allow time to initially focus on the fundamental needs of the young person, while factoring in substantial time to develop a therapeutic alliance and build trust. Due to the sensitive and potentially incriminating nature of the subject of HSB, this can cause young people to minimise or deny this behaviour leading to difficulties in engagement, therefore building a therapeutic relationship is essential to the success of the intervention. Although X appeared to engage well in the sessions there were concerns regarding his honesty and his ongoing communication with females online. The study was limited by the lack of monitoring on X's online behaviours, although there were controls on the amount of time spent using his phone within the family home, it is unclear the activities he was engaging in and the content of his interactions with

people online. It has been suggested that external factors such as supervision of internet access and rules around technology are managed in order to keep the young person safe until they are ready to develop their understanding in managing general risks and promoting protective factors (Grant, 2006).

Following the intervention, it has been identified that X required further support developing his skills and knowledge regarding his TA-HSB. Areas that research has deemed appropriate for intervention for TA-HSB which were either not covered or needed additional support include emotional management, sexual development, self-compassion and victim empathy. Reviewing this in collaboration with X's formulation it is recommended that further intervention should focus on his view of himself and self-compassion, as this was hypothesised to be at the forefront of X's difficulties. Furthermore, X would benefit from an additional intervention aimed at addressing his social anxiety and developing his social skills. Due to X's cognitive functioning the WISC-V revealed he is likely to sometimes be awkward in social situations because he may not understand others' subtle nonverbal cues. It is possible that this may contribute to why X feels more confident using the internet and online messaging rather than face to face communication.

Implications for future research and practice

There is currently limited and inconclusive research on psychologically informed interventions available for young people displaying HSB. It is advised that more research is undertaken with

a diverse range of young people to ensure that interventions are tailored to meet young people's differing needs. Furthermore, it would be beneficial for research to provide conclusive evidence on the effectiveness of current interventions in order to understand this behaviour further and to support those young people displaying TA-HSB. It is argued that without ongoing learning in this area, practitioners and professionals are inappropriately informed in their assessment and management of these young people (Hamilton-Giachritsis, Hanson, Whittle & Beech, 2017).

Rationale for chapter four

The chapters so far have identified an association between young people interacting with unknown people on social networking sites and the exposure to sexual solicitation from others. Limited research has been conducted on the relationship between young people's engagement in social networking and them displaying HSB. Despite this, there is an increasing number of young people demonstrating TA-HSB and requiring interventions from specialist services. Chapter three has described an assessment, formulation and intervention of a 16 year old male displaying TA-HSB. This case study evidenced how there are several presenting problems hypothesised to contribute to TA-HSB and a short term intervention made limited clinical significant change in terms of impulsivity, sensation seeking and self-esteem. Further conclusive research is required to understand TA-HSB and guide psychologically informed interventions for young people displaying this behaviour. In order to understand TA- HSB it is important to establish what influences this behaviour; one explanation is the role of online disinhibition. Chapter four considers the influence of disinhibition on adult online sexual behaviours by investigating the role of the personality trait of disinhibition and the attributes of the internet that are argued to cause online disinhibition.

Chapter four: Online disinhibition and the relationship with online sexual behaviours

Abstract

Over the past ten years, research has suggested that people often behave differently when online; referred to as the online disinhibition effect. The present study explored this phenomenon by investigating the role of disinhibition on online sexual behaviours, which has not been previously explored within the literature. Adult participants were recruited from the general population (N=138) completing an online survey which measured trait disinhibition, impulsivity and a newly adapted scale measuring online disinhibition, alongside a measure of engagement in online sexual activities (OSA). Analysis revealed gender differences with males reporting higher engagement in OSA, however both sexes reported viewing pornography as the highest recorded OSA. Significant positive associations were found between trait disinhibition, impulsivity and OSA, however these were small in size. Online disinhibition was found to be the best predictor of OSA, which supports previous research on the online disinhibition effect (Suler, 2004). The implications of this study and recommendations for future research are discussed.

Introduction

Online sexual behaviours

The internet has revolutionised the computer and communications world, with it being one of the most accessible mediums in today's society. In 2018 it was reported that 90% of adults in the UK have used the internet in the last 3 months (Office of National Statistics, 2018). This has had a profound impact on human sexuality, smartphones have transformed the ways in which sexual relationships are experienced (Coyne et al, 2011), and there has been an increase in the consumption of online sexual material and the range of sexual activities engaged in online (Pornhub, 2018). Over the last 20 years, a considerable number of empirical studies have researched the use of the internet for a variety of sexual activities. Research has been conducted with young people as detailed earlier in the thesis, however, the research referred to within this chapter refers to adults online sexual behaviours. The term "online sexual activities" (OSA) have been coined, which refer to sexual-related content and activities observable on the internet (Adams, Oye, & Parker, 2003; Cooper, McLoughlin, & Campbell, 2000; Leiblum & Döring, 2002). Doring (2009) outlined a wide range of phenomena associated with sexual behaviour online, such as pornography, sex education and sexual contacts, which can be engaged in within an extensive spectrum of online services and applications (e.g., websites, online chat rooms, peer-to-peer networks). Research has found that the behaviours of online sexual material users have accelerated rapidly, with online users now reported to be doing things sexually or obsessing about things that

were never a part of their sexual repertoire prior to accessing online sexual material (Schneider, 2000). Furthermore, Schneider (2000) found that certain types of pornography which were initially viewed out of curiosity, quickly became the focus of the online user's sexual interest.

Online Disinhibition

A possible explanation for the rise in internet sexuality is individuals appearing to express themselves more openly and feeling less restrained when online, influencing them to explore territory they would never explore in the real world, and potentially taking more risks in online behaviours (Joinson, 2007; Suler, 2004). This has been referred to as "disinhibition" and describes a loss of constraints that a person experiences when behaviour is no longer controlled by concerns about self-presentation or judgements by others (Joinson, 1998). This is argued to lead to both positive and negative consequences. The positive manifestations have been referred to as "benign disinhibition" (Suler, 2004, 2005) and can include efforts to improve self-understanding and personal development, an opportunity to discover and enrich sexual interests, and explore new emotional or experiential realms of one's identity. The negative results of loss of inhibition, involve behaviours that include harassing, abusing and threatening others, increasing risks for criminal and harmful sexual behaviours, and has been referred to as "toxic disinhibition" (Suler, 2004). It has been argued that even when engaging in legal activities online "the opportunity to commit crime is never more than three or four clicks away" (Demetriou & Silke, 2003, p. 220). It is therefore important to understand why people

feel uninhibited and behave in deviant ways online. However, due to the different conceptualisations of online disinhibition, research on the causes of online disinhibition has so far been non-conclusive.

Explanations of online disinhibition

Most of the explanations of online disinhibition are based on established theories, one of the key theories is deindividuation. This theory states that people in a group tend to decrease private self-awareness, self-regulation, and self-evaluation, causing anti-normative and disinhibited behaviour (Diener, 1980; Festinger et al., 1952; Zimbardo, 1970). Anonymity, in particular, has been identified as one of the key causes of deindividuation. It has been argued that anonymous conditions within a group setting result in a loss of self-awareness and that this loss is the key element which facilitates deindividuation (Diener, 1980). Since the early 1990s research has begun to explore the effects of anonymity in computer-mediated communication (CMC). Prevailing research in CMC supports a positive relationship between anonymity and self-disclosure (Bailenson, Yee, Merget, & Schroeder, 2006; Chiou, 2006, 2007; Joinson, 2001; McKenna & Bargh, 2000). Furthermore, research has taken into consideration the special features of the internet that are not available during face to face communications, such as reduced social cues in interactions, which is argued to lead to reduced social norms and constraints (Kiesler et al., 1984), contributing to antinormative and deregulated behaviour.

This approach has been criticised for taking the social influence out of computer mediated communication (Spears & Lea, 1992). A further explanation comes from the Social Identity of Deindividuation

Effects theory (SIDE; Reicher, 1982) which argues that deindividuation does not occur because people lose their own identity but rather, they replace their individual identity with a group identity. Within an online context it is suggested that factors such as anonymity or lack of cues reinforce group salience, making people conform to the group norms (Spears & Lea, 1992, Postmes & Spears, 1998).

An alternative integrative approach for the online disinhibition effect has been proposed by Suler (2004) which combines different theorised factors that may lead to online disinhibition, into a single model. Six possible contributing factors have been proposed, the first being dissociative anonymity. Suler (2004) argues that when online, people can hide or alter their identities enabling them to feel less vulnerable about expressing themselves and engaging in antisocial or harmful behaviours. A sense of anonymity allows people to feel free of the expectations and constraints placed upon them by people who know them, compartmentalising their behaviour in an online identity that is not integrated with their offline identity. Further research has supported anonymity as a main factor in inducing the online disinhibition effect (Bargh & McKenna, 2004; Bargh, McKenna, & Fitzsimons, 2002; Joinson, 1998, 2001, 2007; McKenna & Seidman, 2005; Spears, Lea, & Postmes, 2007; Suler, 2004; Tanis & Postmes, 2007).

The second contributing factor is invisibility. In many online environments' communication occurs through text where people cannot see each other. This shield from physical visibility is argued to lower inhibitions as people do not need to worry about tone and

body language allowing them to misrepresent themselves. In text communication such as e-mail and message boards, the interaction is asynchronous, which is the third contributing factor of online disinhibition (Suler, 2004). People do not interact with each other in real time, allowing them to take minutes, hours, days, or even months to reply. This delay allowing people time to think about what they would like to say and not having to cope with someone's immediate reaction is argued to disinhibit people. The fourth factor is solipsistic introjection which explains that given the absence of physical cues online, online companions can become a character within one's intrapsychic world which is based on how the person presents themselves but also by one's internal representational system based on personal expectations, wishes and needs. This is argued to allow people to feel more comfortable talking to other people and lead to disinhibition. The fifth contributing factor is dissociative imagination. Some people see their online life as a kind of game with rules and norms that do not apply to everyday living (Suler, 2004). Once they turn off the computer and return to their daily routine, they believe they can leave that game and their game identity behind. They can relinquish their responsibilities for what has happened online as they believe it has nothing to do with reality. The final factor which contributes to online disinhibition, according to Suler (2004), is minimization of status authority. In most online environments everyone has an equal opportunity to voice themselves, regardless of status, wealth, race or gender. Therefore, with the appearances of "authority" minimized this leads to less self-awareness and, in turn, to more anti-normative behaviour online.

However, there have been very few experimental studies demonstrating the online disinhibition effect and it has been argued that explanations for the online disinhibition effect which rely simply on aspects of the internet are doomed to fail in fully explaining disinhibited behaviour online (Joinson, 2004). Thus, it is important to consider how individual differences play a role in enabling online users to be more susceptible to online disinhibition, which can include personality traits. The broad personality trait of disinhibition reflects the tendency to behave in an under-constrained versus over-constrained manner. It is believed that disinhibited individuals are driven by stimuli of the immediate moment often recklessly pursuing thrilling and dangerous experiences, with little regard for the concerns of others or thinking about the longer-term consequences of their behaviour (Dindo, McDade-Montez, Sharma, Watson & Clark, 2009). Disinhibition is argued to be manifested through impulse, sensation seeking and risk-taking actions (Anderson, Smith & Fischer, 2003; Dindo et al, 2009; Leeman, Grant & Potenza, 2009). Therefore, it is suggested that those individuals with disinhibited personality traits may be likely to engage in impulsive, sensation seeking and risk-taking behaviours online leading to deviant sexual behaviours. Despite the numerous explanations of online disinhibition, it is felt that examining disinhibited online behaviour from a more integrative perspective is worthwhile.

Relationship to offending

For some online users the need for sexual satiation has the potential to escalate into a criminal act. Research has suggested that some men who access child pornography online were led there by earlier

access to adult sexual sites (Cooper et al., 1999; Cooper, Delmonico & Burg, 2000, Greenfield, 1999; Schneider, 2000). The number of registered sexual offenders in England and Wales has risen from 34,939 in 2010 to 60,294 in 2019 (Ministry of Justice, 2010, 2019). The rise has been linked to the increase in online sexual offenders (Babchishin, Hanson & Hermann, 2011; Motivans & Kyckelhahn, 2007; Wolak, Finkelhor, & Mitchell, 2009). Certain attributes of the internet, such as the perceived affordability, accessibility and anonymity are described to exhibit the online disinhibition effect and are used to explain the attraction of the internet for sex offenders (Cooper, 1998). Pornography and sexual experiences are easily accessible online, anytime, day or night through smartphones. People may feel that they are anonymous and unknown online, detaching their online behaviour from their offline life and identity. Furthermore, pornography and sexual experiences online may come at a low cost, or free. However, research has also shown that impulsivity is a core characteristic of several disorders commonly diagnosed among offenders and that disinhibition as a personality trait is an important risk factor for recurrent sexual offending behaviour (Smid & Wever, 2016). Disinhibition and impulsivity have been frequently used as interchangeable constructs; however, disinhibition may be conceptualised as a general background for behavioural impulsivity (Luria, 1969).

As explained, there are a rising number of online sexual offenders and it is expected that as the internet expands further into parts of our daily lives, and commonly accessible in the palm of our hands

through smartphones, that criminal and harmful sexual online behaviour is likely to increase.

Aims

This study aimed to add to the literature related to the impacts of internet use on sexual behaviour. Research on online sexual behaviours currently focuses on who engages in OSA, what they do when online and the impact of their online behaviours on their lives. This research is the first to explore whether disinhibition influences online sexual behaviour. By looking at this relationship we aim to have a clearer understanding of online disinhibition and the risks of how online sexual behaviour can escalate to illegal behaviours and offending.

This study aimed to explore:

- The relationship between disinhibition and the reporting of OSA.
- The differences between male and female reporting of OSA.
- The relationship between the measures of impulsivity and disinhibition.
- What contributes to OSA.

The hypotheses are as follows:

- There will be no significant relationship between online disinhibition and OSA.
- There will be no significant difference in reporting of OSA between males and females.

- There will be no significant relationship between impulsivity and disinhibition.
- There will be no significant relationship between time spent online and reporting of OSA.

Method

Participants

A power analysis was used to determine the smallest sample size suitable to detect the effect of a given test at the desired level of significance. The analysis indicated for a t-test with a medium effect size (0.15), 128 participants; 64 males and 64 females, would be required in order to achieve power of 0.9. Participants were recruited from the general population using a snowballing strategy. The study was advertised through social media (e.g. Facebook) and on online discussion boards/forums (e.g. callforparticipants.com, surveycircle.com). In order to be included in the survey participants were required to be over 18 years old and consent to participate for their data to be used in the study, ten participants were excluded due to not meeting the inclusion requirements. A final sample of 138 participants (64 males and 74 females) were included in the study, indicating a 79% response rate.

Design

The study utilised a cross sectional quantitative self-report survey design. Ethical approval was sought and granted by the University of Nottingham Faculty of Medicine and Health Sciences Research Ethics Committee in January 2018. Ethical issues were considered, in line

with the British Psychological Society ethics guidelines for internet mediated research (BPS, 2017), when designing and implementing this research. Due to the study measuring sexual behaviour, which is a sensitive subject, internet mediated research (IMR) was viewed to be the most suitable method to collect data on this topic. Research has suggested that the internet may be a useful tool for conducting research on sexual behaviour, one reason argued that it allows participants to remain anonymous (Cooper, Scherer, & Mathy, 2001).

Measures

Demographics

Participants were asked to provide demographic information on their age, gender, ethnicity, and relationship status. This information was collected in order to describe the sample and compare it against a previously described profile of an internet sex user; heterosexual male, average age of 35 years, college educated or in college, and either married or in a committed relationship (Cooper et al., 1999). Furthermore, questions were asked in relation to internet use, such as time spent per week online and time spent per week engaging in sexual material online. This was defined as any activity that involves sexuality for the purposes of recreation, entertainment, exploration, support, education, commerce and/or seeking out sexual or romantic partners (e.g. viewing or posting sexually explicit pictures or videos, visiting educational websites, seeking dating partners using apps and dating websites, exchanging instant messages about desired or fantasised sexual acts with another person, engaging in sexual acts at the same time as someone else on webcam/FaceTime etc.)

Disinhibition/impulsivity

There are currently no established scales for measuring online disinhibition, therefore a number of scales were utilised to measure disinhibition.

- *The Disinhibition Inventory (DIS-I; Dindo, Mcdade- Montez, Sharma, Watson & Clark, 2009)*

  The DIS–I is a 65 item multifaceted measure of disinhibition (see appendix D). Participants are asked to respond to statements on a 5-point Likert scale, ranging from 1 (*strongly disagree)* to 5 (*strongly agree*). The DIS–I yields a total score and five subscale scores, including Prosociality (including Goal Orientation and Considerateness), Manipulativeness, Risk Taking, Distractibility, and Orderliness. Dindo et al (2009) indicated that the DIS-I showed good internal consistency in both development and cross-validation samples. Cronbach's alpha was used to measure internal consistency, which refers to the extent to which all the items in a test measure the same concept or construct. There are different reports about the acceptable values of alpha, ranging from .70 to .95 with higher values demonstrating higher levels of reliability (Cortina, 1993). Alpha values below .70 are questionable, with values below .50 deemed as unacceptable (George & Mallery, 2003). A high Cronbach's alpha of .90 and .89 was found for the total DIS-I score and across the subscales reliability coefficients (α ranges = .81 to .88 and .82 to .87). Convergent and discriminant validity has also been shown, with the DIS-I total score correlating most highly with conceptually related

constructs such as the Guilford-Zimmerman Temperament Survey Disinhibition subscale (GTS; Guilford & Zimmerman, 1949) and the NEO Personality Inventory Agreeableness and Conscientiousness subscales (NEO PI-R; Costa & McCrae, 1992). A measure of the personality trait of disinhibition was chosen to determine whether engagement in online sexual behaviours was associated with a general tendency as to behave in an under-constrained manner. The DIS-I was the only identified scale measuring the personality trait of disinhibition which demonstrated good validity and reliability.

- *The Online Induced Disinhibition Scale (OIDS) adapted from the Drinking Induced Disinhibition Scale (DIDS; Leeman, Toll & Volpicelli, 2007)*

  The DIDS is a 9-item self-report questionnaire measuring disinhibited thoughts, feelings and behaviours that occur when respondents drink alcohol. Due to there being no established scales to measure online disinhibition this scale was adapted by the author with questions edited to explore experiences while online rather than while drinking. The DIDS assesses multiple types of disinhibiting effects of alcohol which were deemed applicable to the disinhibiting effects of the online environment. Each item is answered by choosing one of six possible Likert-type responses (1 or 2= never or very rarely, 5 or 6 = very often). The adapted OIDS has three subscales; Euphoric/Social (e.g. 'acting more friendly or outgoing around others than when not online), Negative/Dysphoric (e.g. 'feeling more depressed than when not online') and Sexual

(e.g. 'hooking up with someone who you are not dating'). All three subscales of the DIDS have been shown to have good internal consistency and adequate test-retest reliability (Leeman et al, 2007). The OIDS was tested for reliability and demonstrated high internal consistency (α >.78). See appendix E for the scale.

In relation to measuring online disinhibition additional questions related to the six dimensions of Suler's (2004) conceptualisation of online disinhibition have been included (see appendix F).

- *The Barratt Impulsiveness Scale (BIS-11, Patton, Stanford & Barratt, 1995)*

  The BIS-11 is a 30-item measure of impulsiveness (see appendix G). A measure of impulsivity was included as research suggests that disinhibition as a personality trait is manifested through impulsivity. The BIS-11 in particularly was chosen as it is regarded as the most commonly used self-report measure of impulsivity (Spinella, 2007). Respondents are asked to rate their agreement with statements about their tendencies on a four-point Likert scale ranging from 'rarely/never' to 'almost always/always'. Subscales measure attentional (inability to concentrate), non-planning (lack of forethought), and motor impulsivity (acting without thinking). The BIS-11 shows acceptable/good reliabilities (α =0.59 to 0.74 for subscales, 0.83 for total) and convergent validity (Stanford et al., 2009).

Online sexual activities (OSA)

OSA were measured by asking respondents to self-report their engagement in a variety of online sexual behaviours using an 18-item scale. There are currently no established scales to measure OSA, therefore, eleven items of this scale were adapted from the Internet Sex Screening Test (ISST; Delmonico & Miller, 2003), which is a 25-item, true-false scale that yields a total score measuring problematic online sexual behaviour. This included five items from the Online Sexual Behaviour- Social (OSB-S) subscale, which measured the tendency to engage in interpersonal interactions with others during online sexual behaviour (e.g. "I have participated in sexually related chats with strangers"). Four items from the Online Sexual Behaviours- Isolated (OSB-I) subscale which measured the tendency to engage in solitary online sexual behaviours (e.g. "I have masturbated while on the internet"). These two subscales were included to determine different types of cybersex behaviour, as early research has indicated how males and females engage in different forms of online sexual behaviours, with females engaging in more social forms and males in in more visual, isolating activities (Cooper et al., 2000). Two items were from single item scales referred to as Non-home Computer Use for OSB (the tendency to access sexual sites from computers other than the home computer) and Accessing Illegal Sexual Material (the tendency to view illegal sexual material on the internet). Assessment of non-home use of the internet was included as research had found how nearly 20% of employees engaged in sexual misuse of the internet while at work (Greenfield, 1999) and assessing engagement in illegal online behaviour was used

to determine more problematic online behaviours. Analysis of the internal consistency of these scales indicated a Cronbach's alpha coefficient of .78 for the OSB-S subscale and .73 for the OSB-I subscale (Delmonico & Miller, 2003). In order to measure more specific online sexual activities, an additional seven questions were included asking about experimenting with sexuality, access to legal/illegal pornography and engagement in more recent online sexual behaviour trends such as revenge pornography. Revenge pornography is defined as the distribution of private and personal explicit images or video footage of an individual without their consent, with the intention of causing them embarrassment and distress (Ministry of Justice, 2015). Furthermore, questions were added about participants' perceptions of their online sexual behaviours and whether this had caused any repercussions in their lives to further determine more problematic behaviours (see appendix H for the scale in its entirety). The OSA demonstrated good reliability with a Cronbach's alpha coefficient of .87.

Due to using newly developed scales, all measures were piloted prior to data collection commencing. The pilot study ran in January 2018 with a sample of 20 participants who reviewed the scales for face validity, wording and general appropriateness for measuring the intended constructs. Minor amendments were made to the some of the questions of the OSA scale which were adapted from the ISST due to the American wording and spelling. Furthermore, the rating scale of the OIDS was reserved in order to follow the direction of the rating scales for the other measures, to reduce risk of errors in scoring.

Procedure

Participants were directed to complete the survey through an online survey tool (Bristol Online Surveys), where once they had confirmed they were over 18 years old they were presented with an information sheet which detailed what the study involved and addressed ethical considerations, such as anonymity and confidentiality (see appendix I). Consent was obtained by participants if they confirmed their understanding of the study and they proceeded to the survey (see appendix J).

Data Analysis

Quantitative data collection occurred between January to May 2018 and analysis followed in June 2018 using SPSS statistical software (version 25). Initial analysis determined the distribution of the data and the internal reliability of each of the scales was calculated using the Cronbach's alpha. Further data analysis included a Mann Whitney U test to determine the difference in the variables between the male and female groups, a Kruskal-Wallis test to determine differences between age groups, correlations to establish whether a relationship existed between disinhibition and the reporting of online sexual behaviours and regression analysis was used to determine the relationship between the measures of disinhibition and the variance in online sexual behaviours.

Results

Data screening

Data screening identified outliers, an observation that lies an abnormal distance from other values in a random sample from a population. Only seventeen participants were identified as aged 45 years or older, further analysis revealed that nine of these were females who reported spending no time engaging in OSA and the eight males primarily only identified engaging in viewing pornography online. The influence of these outliers were considered on the rest of the data and it was deemed appropriate to remove participants over 45 years old from the final sample. Further data screening established whether the dependent variable (DV) was normally distributed and based on analysis of the skew and kurtosis values and from the Shapiro-Wilk's W test of normality, the DV was positively skewed and did not meet the assumptions of parametric data. Data transformation included log and square root transformation, which corrected the skew of the data however the DV continued to significantly deviate from a normal distribution. Therefore non-parametric tests were performed and methods of bootstrapping.

Demographics

Once outliers were removed, the overall sample comprised of 138 participants, 64 males and 74 females. Participant's ethnicity was identified as predominately White English/ Welsh/ Scottish/ Northern Irish/ British. Ages ranged from 18-44 years old with the majority between the ages of 25-34 years old. Most respondents identified as

being in a relationship or married, with only 27.5% identifying as single. Time spent online varied from 2-62+ hours with engagement in sexual behaviours between 0 minutes to 40+ hours per week. See table 6 for more details on participant demographics.

Table 6: Participant demographics

		N	%
GENDER	Female	74	53.6
	Male	64	46.4
ETHNICITY	White English/ Welsh/ Scottish/ Northern Irish/ British	102	73.9
	White Irish	3	2.2
	Any other white	20	14.5
	Asian/Asian British	5	3.6
	Black/African/Caribbean/Black British	1	0.7
	Mixed Ethnicity	7	5.1
AGE	18-24 years	42	30.4
	25-34 years	78	56.5
	35- 44 years	18	13.0
RELATIONSHIP STATUS	Single	38	27.5
	In a relationship	70	50.7
	Married	28	20.3
	Other	2	1.4
HOURS SPENT ONLINE (PER WEEK)	2-4 hours	5	3.6
	4-8 hours	7	5.1
	8-12 hours	17	12.3
	12-16 hours	15	10.9
	16-20 hours	20	14.5
	20-26 hours	15	10.9
	26-32 hours	11	8.0
	32-38 hours	17	12.3
	38-44 hours	7	5.1
	44-50 hours	7	5.1
	50-56 hours	9	6.5
	56-62 hours	2	1.4
	62+ hours	6	4.3
HOURS SPENT ENGAGING IN SEXUAL ACTIVITIES ONLINE (PER WEEK)	0 minutes	49	35.5
	1-30 minutes	30	21.7
	30 minutes- 1 hour	15	10.9
	1-2 hours	8	5.8
	2-4 hours	14	10.1
	4-6 hours	8	5.8
	6-8 hours	7	5.1
	8-12 hours	3	2.2
	16-20 hours	2	1.4
	20-25 hours	1	0.7
	40+ hours	1	0.7

All measures were analysed to determine the internal reliability of the scales and gender differences.

Online Sexual Activities (OSA)

A total score was calculated by summing together participant's "true" responses to the items in the OSA scale, higher scores indicated the higher number of OSA the participant engaged in. The mean total score on the OSA scale was 24.06 (SD=4.08) out of a possible score of 36. The scale demonstrated good reliability with a Cronbach's alpha coefficient of .87. Analysis did indicate that items "I have shared a sexual image of an individual online without their consent" and "I have gotten into trouble due to my online sexual behaviours" were not highly correlated with the scale overall, however deletion of these items did not improve the reliability of the scale. When looking more specifically at the OSB-S and OSB-I subscales devised by Delmonico and Miller (2003), the OSB-S subscale showed a Cronbach's alpha of .71 and the OSB-I showed a Cronbach's alpha of .78, which was consistent with previous research (Delmonico & Miller, 2003).

In accordance with the research aims, gender differences were explored establishing that males scored significantly higher (Median (Mdn)=25) on the OSB scale compared to females (Mdn=22), U= 1485, p=.000. Previous research had indicated that males and females engage in different forms of online sexual activities with females reporting more social forms of cybersex behaviours while males reported engaging in more visual and isolating activities (Cooper et al., 2000). However, results from this study found that males scored significantly higher than females on both the OSB-S (U=1738, p=.005) and OSB-I subscales (U=1643. P=.001). Males

scored higher on all items, however an overview of male and female responses to the OSA is given in table 7 to show the variation in the scores for each item.

Table 7: Male and female engagement in OSA by age group

OSA item	***Male (%)***			***Female (%)***		
	18-24 (N=17)	*25-34 (N=33)*	*35-44 (N=14)*	*18-24 (N=25)*	*25-34 (N=45)*	*35-44 (N=4)*
I have searched for sexual material through an internet search tool.	77	88	100	92	67	75
I have participated in sexually related chats with strangers.	65	33	43	36	24	25
I have used the internet to access pornography	77	94	100	84	56	75
I use sexual humour and innuendos with others while online.	71	49	64	52	33	50
I have masturbated while on the internet.	71	88	86	76	42	25
I have accessed sexual sites from other computers besides my home computer.	41	18	36	20	7	0
I use the internet to experiment with different aspects of sexuality (e.g. bondage, homosexuality, anal sex etc.).	47	30	50	60	22	0
I have a sexualized username or nickname that I use on the internet.	6	3	14	8	4	0
I have increased the risks I take online (given out name and phone number, met people offline, etc.).	29	27	14	16	13	25
I have met face-to face with someone I met online for romantic purposes.	41	58	57	12	36	25
I have come across illegal sexual material while on the internet.	41	9	29	24	11	0
I have shared a sexual image of an individual online without their consent.	6	3	0	0	2	0
I have posted/ traded sexual material on or through the internet (e.g. self-photos, photos of others, videos).	65	30	21	24	16	0
I have stayed up after midnight to access sexual material online.	65	52	36	52	18	0
I have come across images of individuals who appeared to be less than 18 years old.	41	12	29	20	13	0
I have tried to conceal myself or the places I have been online (e.g. clear history, delete downloaded files, use anonymous services).	59	64	64	80	31	50
I have noticed a progression in my sexual risk taking behaviours (either online or offline) as a result of my cybersex behaviour	18	12	29	16	7	0
I have gotten into trouble due to my online sexual behaviours.	0	6	14	0	2	0

Further analysis was performed to investigate the differences in OSA scores between the age groups for males and females. A Kruskal-Wallis test revealed no significant difference in male's engagement in OSA between the 18- 24 year olds (Mdn=28), 25-34 year olds (Mdn=25) and 35-44 year olds (Mdn=25), $\chi2(2)=1.810$, $p>.05$. A statistically significant difference in OSA between the age groups was found for the females, $\chi2(2)=10.322$, $p=.006$. However, post hoc testing revealed only a significant difference between the 18-24 year olds (Mdn=24) and 25-34 year olds (Mdn=21), $\chi2(2)=9.593$, $p=.002$. No significant difference was found with the 35-44 year olds (Mdn=22).

Due to the significant differences established between males and females, further analysis was completed separately for both sexes.

Disinhibition/Impulsivity

BIS-11

The descriptive statistics for the BIS-11 are shown in table 8 for males and table 9 for females. The BIS-11 total score demonstrated good internal reliability within both males and female participants ($\alpha >.75$), however all three subscales demonstrated lower internal reliability ($\alpha <.75$). This is consistent with previous research (Stanford et al., 2009). Males scored significantly higher (Mdn= 66) than females (Mdn=61) on the BIS-11 total score ($U=1854$, $p=.028$). Within the subscales males also scored significantly higher than females on the attentional ($U=1911$, $p=.050$) and motor subscales ($U=1729$, $p=.006$).

Table 8: Descriptive statistics of the male participants for the OSA, BIS-11, DIS-I and OIDS (N=74)

	MEAN (SD)	**RANGE**	**SCALE α**
OSA	25.38 (3.84)	18-34	.84
BIS-11			
ATTENTIONAL	17.17 (3.03)	10-23	.56
MOTOR	24.00 (4.05)	15-35	.62
NON-PLANNING	24.34 (4.53)	16-39	.67
TOTAL SCORE	65.52 (9.09)	48-85	.79
DIS-I			
PROSOCIALITY	63.09 (7.50)	37-78	.84
GOAL ORIENTATION	31.14 (5.10)	11-40	.86
CONSIDERATENESS	31.95 (4.62)	23-40	.84
MANIPULATIVENESS	36.70 (8.80)	20-57	.86
RISK TAKING	24.91 (5.18)	13-40	.83
DISTRACTIBILITY	47.13 (10.17)	24-68	.89
ORDERLINESS	30.73 (5.96)	15-42	.79
TOTAL SCORE (MEAN)	2.54 (0.33)	1.65-3.29	.73
OIDS			
EUPHORIC/SOCIAL	10.51 (3.50)	3-18	.83
NEGATIVE/DYSPHORIC	9.05 (3.27)	3-18	.69
SEXUAL	7.45 (4.01)	3-18	.79
TOTAL SCORE	27.02 (8.49)	9-45	.83

Note: OSA= Online Sexual Activities scale, BIS-11=Barratt Impulsiveness Scale; DIS-I= Disinhibition Inventory; OIDS= Online Induced Disinhibition Scale

DIS-I

See tables 8 and 9 for the descriptive statistics of the DIS-I. The DIS-I subscales and total score all demonstrated good internal reliability according to their Cronbach's Alpha coefficients (α >.67), which was in line with previous research conducted by Dindo et al (2009) during scale development. Males scored significantly higher (Mdn=2.55) than females (Mdn=2.39) on the DIS-I total score (U=1750, p=.008). Males also scored significantly higher on the risk-taking

(U=1805, p=.016) and manipulativeness (U=1565, p=.001) subscale. Whereas females scored significantly higher on the considerateness (U=1736, p=.007) subscale.

Table 9: Descriptive statistics of the female participants for the OSA, BIS-11, DIS-I and OIDS (N=64)

	MEAN (SD)	**RANGE**	**SCALE α**
OSA	22.92 (3.96)	18-34	.87
BIS-11			
ATTENTIONAL	15.97 (3.80)	8-27	.71
MOTOR	22.08 (4.33)	11-33	.68
NON-PLANNING	23.39 (4.83)	14-36	.70
TOTAL SCORE	61.45 (10.11)	33-87	.82
DIS-I			
PROSOCIALITY	65.70 (7.13)	48-80	.80
GOAL ORIENTATION	31.78 (4.47)	21-40	.77
CONSIDERATENESS	33.92 (4.78)	15-40	.83
MANIPULATIVENESS	31.19 (9.90)	17-61	.91
RISK TAKING	22.38 (5.81)	8-34	.85
DISTRACTIBILITY	46.43 (11.38)	23-66	.91
ORDERLINESS	31.95 (7.41)	13-45	.89
TOTAL SCORE (MEAN)	2.34 (0.45)	1.35-3.20	.67
OIDS			
EUPHORIC/SOCIAL	11.12 (3.54)	3-18	.81
NEGATIVE/DYSPHORIC	8.73 (4.20)	3-18	.88
SEXUAL	6.12 (3.93)	3-18	.89
TOTAL SCORE	25.97 (9.23)	9-50	.87

Note: OSA= Online Sexual Activities scale, BIS-11=Barratt Impulsiveness Scale; DIS-I= Disinhibition Inventory; OIDS= Online Induced Disinhibition Scale

OIDS

See tables 8 and 9 for the descriptive statistics of the OIDS. All subscales and total score showed good reliability (α >.69). No significant differences were found between males and females scores

on the OIDS total score. However, males (Mdn=7) scored significantly higher than females (Mdn=4.5) on the sexual subscale (U=1859.5, p=.025).

Correlations

In order to explore the relationship between disinhibition and the reporting of online sexual behaviour in accordance with the research aims, correlation analysis was completed. Due to the numerous measures of disinhibition (OIDS, BIS-11, DIS-I) this meant various correlations were explored with the OSA separately for both males and females. Significant positive associations were revealed between OSA scores and BIS-11 total score, DIS-I total score and OIDS total score for females, however only significant positive associations were found between OSA scores and OIDS total scores for males (See table 10).

Table 10: Significant correlations between OSA score and variables

	Correlations		
	N	**rs**	**P value**
Males			
OIDS total score	74	.595	.000
Females			
BIS total score	64	.425	.000
OIDS total score	64	.406	.000
DIS total score	64	.512	.000

Note: OSA= Online Sexual Activities scale, BIS =Barratt Impulsiveness Scale; DIS = Disinhibition Inventory; OIDS= Online Induced Disinhibition Scale

A further aim of this research was to explore the relationship between the different disinhibition/impulsivity measures, therefore, a correlation analysis was performed (see table 11), which showed positive relationships between the BIS-11, DIS-I and OIDS within the males and female participants. All relationships were found to be significant except for the DIS-11 and OIDS within the male sample.

Table 11: Correlation coefficients between BIS, DIS and OIDS

		DIS	***BIS***	***OIDS***
MALE	***BIS***	.591*** (0.405-0.737) N=64	1	.396*** (0.195-0.561) N=64
	OIDS	.310 (0.079-0.517) N=64	.396*** (0.195-0.561) N=64	1
	DIS	1	.591*** (0.405-0.737) N=64	.310 (0.079-0.517) N=64
FEMALE	***BIS***	.730*** (0.601-0.813) N=74	1	.333** (0.086-0.550) N=74
	OIDS	.407*** (0.152-0.626) N=74	.333** (0.086-0.550) N=74	1
	DIS	1	.730*** (0.601-0.813) N=74	.407*** (0.152-0.626) N=74

*Note: BIS =Barratt Impulsiveness Scale; DIS = Disinhibition Inventory; OIDS= Online Induced Disinhibition Scale. *=p<0.05, **=p<0.01, ***=p<0.001). BCa bootstrap 95% Confidence levels reported in brackets.*

Further correlation analysis revealed that hours spent online per week was significantly positively related to male participants score on the OSA scale (rs=.314, (0.047-0.541), p=.011) and time spent engaging in sexual material online per week (rs=.343, (0.123-0.515), p=.005). Similar results were found for the females with

hours spent online per week being significantly positively related to scores on the OSA scale (rs=.447, (0.244-0.627), p=.000) and time spent engaging in sexual material online per week (rs=.379, (0.53-0.577), p=.001).

Regression

To explore the final aim of the research, a regression analysis was performed to determine the relationship between the independent variables and the variance in online sexual behaviours (see table 12). Due to the data deviating from a normal distribution, bootstrapping was performed. Results indicated that online disinhibition measured by the OIDS significantly predicted online sexual behaviours for both males (b=.17 (0.05, 0.30), p<.01) and females (b=.11 (0.02, 0.19), p<.05).

Table 12: Linear model of predictors of OSA.

	N	***b***	***SE B***	***β***	***p***
	Males				
OIDS	*64*	*.17* (0.05, 0.30)	*.07*	*.00*	*.001*
	Females				
OIDS	*74*	*.11 (0.02, 0.19)*	*.05*	*-.01*	*.039*

Note: 95% confidence intervals reported in parentheses. Confidence intervals and standard errors bases on 2000 bootstrap samples.

Discussion

The aim of this study was to contribute to the literature on exploring the relationship between internet use and sexual behaviour by investigating whether online disinhibition increased engagement in

OSA. In order to answer this, the research firstly investigated the relationship between disinhibition and the reporting of OSA's, finding a significant positive relationship between the total scores for the BIS-11, DIS-I and OIDS and the self-reported engagement in OSA. However there were gender differences which will be discussed below. In response to additional research aims the following results can be summarised as follows: There was a significant positive relationship between measures of disinhibition, however again some gender differences were found. Males reported engaging in OSA significantly more than females and viewing pornography was the most frequent OSA reported. Regression analyses enabled the best predictors of engagement in OSAs to be ascertained, identifying online disinhibition.

Gender differences

In the current study gender differences were identified between males and females, necessitating separate data analysis for the two groups. Males were found to score significantly higher than females on the OSA scale, indicating that males identified engaging in more sexual activities online. This is consistent with early research on online sexual behaviours, which detailed the profile of an internet sex user as a heterosexual male, average age of 35 years, college educated or in college, and often married or in a committed relationship (Cooper et al, 1999). In the present study sexual orientation was not measured however the majority of the male participants were aged between 25-34 years (51.6%) and in a relationship or married (64.1%). Males in relationships have been previously identified as more reactional OSA users and problematic

use has been more frequently associated with single men (Ballester-Arnal et al., 2014), this may possibly explain why the current sample identified less engagement in problematic and illegal behaviours as the majority of the sample tended to be in relationships.

In terms of gender differences in sexual activities, males have previously been found to engage primarily in isolated sexual behaviours while females engaged in more social sexual interactions (Cooper et al., 2000, Green, Carnes, Carnes, & Weinman, 2012; Schneider, 2000). Within this study males reported higher engagement in both isolated and social activities. Analysis has revealed, although not significant, that both males and females indicated that the activities they reported highest participation in were searching for sexual material through an internet search tool, using the internet to access pornography, masturbating while online and trying to conceal themselves or places they have been online. This is in line with more recent research, which is suggesting that gender gaps in sexual behaviour have been closing and men and women differ in few of their experiences of OSA (Shaughnessy & Byers, 2014; Shaughnessy et al., 2011). Differences between the female age groups showed that the 18-24 year olds reported the highest engagement in OSA, and this was significantly higher than the 25-34 year olds. However, when looking more specifically at the OSA, it is noted that the 25-34 year olds reported higher engagement in meeting face to face with strangers whom they had met online, sharing an image without consent and that they had gotten into trouble due to online behaviours. The differences with the 35-44 year olds was not considered to be significant, which may be due to the

small number of participant within this age group. Despite being not significant the OSA engaged in within this age group for the females included increasing the risks they take online, such as given out name/phone number and meeting offline. These behaviours identified as higher for the 25-34 year olds and 35-44 year olds are more consistent with online dating, which has been shown to be popular for those within these age ranges (Valkenburg & Peter, 2007). Engagement in OSA was also highest for the 18-24 year olds males, however no significant differences were found between the age groups. In line with Cooper et al (1999) profile of an internet sex user, the 35-44 year olds identified higher engagement in the following OSAs; searching for sexual material online, using the internet to access pornography, experimenting with different aspects of sexuality online, tried to conceal self or places visited online, noticed a progression in sexual risk taking behaviours, and gotten into trouble due to OSA.

Males scored significantly higher on the sexual subscale of the OIDS, indicating higher levels of sexual disinhibition online. They also scored higher on the attentional and motor subscales of the BIS-11 (Patton et al., 1995), indicating that males rated themselves higher on inability to concentrate and acting quickly with thinking. Furthermore, they indicated higher scores on the risk taking and manipulativeness subscales of the DIS-I related to thrill seeking and a need for excitement, and also a selfishness and taking advantage of others. Within previous research there does not appear to be consistent differences between men and women on impulsivity (Feingold, 1994; Patton et al., 1995; Reynolds et al., 2006). However

it is suggested that people with higher impulsivity are more likely to engage in hypersexual behaviours (Walton, Cantor, & Lykins, 2017). Therefore, due to males within this study demonstrating higher levels on acting quickly with thinking, risk taking, and a need for excitement, this may be indicative of why they scored higher on engagement in OSA.

Relationship between disinhibition and OSA

There was a significant positive relationship between the total scores for the BIS-11, DIS-I and OIDS and the self-reported engagement in OSA for females. However, the correlation revealed a relatively weak association between these variables with only the DIS-11 scale revealing a more moderate association with OSA for females. For the male participants only the total score for the OIDS showed a significant positive correlation with the OSA, again this was only a moderate association. The results from the regression analysis provided further evidence of the best predictors of engagement in OSA. OIDS was shown to significantly predict online sexual behaviours for both males and females. The gender differences suggest that for females' online sexual behaviour is influenced by a higher levels of trait disinhibition and experiencing online disinhibition, whereas for males only online disinhibition influenced their online sexual behaviours.

Disinhibition measures

Due to the limited established and psychologically robust measures of online disinhibition, several different measures of disinhibition were used including trait disinhibition, impulsivity and a newly

adapted scale, measuring online disinhibition. Therefore, the study further aimed to investigate the relationship between the different measures of disinhibition. A significant positive relationship was found between the BIS-11, DIS-I and OIDS for the female participants, indicating that the variables are moving in the same direction, however the association between the OIDS and DIS-I, and OIDS and BIS-11 demonstrated a weak correlation. The association between the OIDS and the DIS was not significant for the male participants. A stronger and sufficient degree of correlation was found between the BIS-11 and the DIS-I total scores for both males and females. Research has suggested that impulsivity and disinhibition are complex constructs that comprise content within multiple domains of personality. Due to the different conceptualisations and definitions of these constructs it is difficult to generate psychological robust measures that demonstrate content validity as different measures are likely to measure different conceptualisations.

Limitations

Several limitations are present in this study. Firstly, newly developed scales were used that are not currently psychometrically robust, therefore there is limited research on the psychometric properties of these scales. However, it is noted that in order to measure online disinhibition, a newly coined concept, this cannot be avoided. A further limitation is that there is no clear definition of online disinhibition and disinhibition in general, making it difficult to use one assessment to measure this concept that has satisfactory reliability

and validity. Thus, different measures of disinhibition may provide different results and it should be considered that the weak relationship between disinhibition and OSA may be a result of the measures rather than the phenomena itself. It is considered that there are many individual differences in whether or not people act disinhibited online and the strength of underlying feelings, needs, and drive level influences how people behaviour. Suler (2004) has argued that the online disinhibition effect will interact with different personalities in different ways, possibly causing small deviations from the person's behaviour offline, while others may cause more dramatic changes.

Limitations of using self-report measures relies on respondents reporting their behaviours honestly. Although online studies are favoured for research with regards to sexual behaviours due to the anonymity offered by the internet and although the survey was anonymous it is believed that respondents may have minimised some of their sexual behaviours in the fear that they would be identified, in particularly in relation to reporting illegal sexual behaviour. Two of the questions in the OSA scale related to illegal sexual behaviours were not correlated with the scale overall. It is considered that respondents did not report these due to concerns of consequences of doing so.

Another limitation of this method is using an online survey where the sample is self-selected can affect the representativeness of the sample (Khazaal et al., 2014). The sample obtained was from a majority white, 25-34 years old and in a relationship, furthermore

demographics on sexual orientation was not collected. Therefore, concluding that this sample represents users of OSA could be overgeneralised and data from a more diverse sample should be collected and analysed prior to drawing these conclusions.

Conclusions and future research

Online disinhibition has been explored over the years however this study is the first to explore the relationship between online disinhibition and engagement in OSA. Results indicated that males reported higher levels of engagement in OSA, with both males and females reporting accessing pornography as the most engaged in sexual behaviour. Significant positive relationships were found between the measures of disinhibition and engagement in OSA, however, the majority of these associations were determined as weak. Stronger associations were found between trait disinhibition and OSA for females, and online disinhibition and OSA for males. The highest predictor of engagement in OSAs was found to the measure of online disinhibition, supporting research on the online disinhibition effect to influence online sexual behaviour. Limitations within this study include the difficulties in the conceptualisation of online disinhibition and lack of psychometrically robust measures cannot be ignored. Future research should focus on producing and validating a scale that can be used to measure online disinhibition. Furthermore when exploring what influences OSA, individual differences need to be considered, therefore, additional psychometric measures on general personality traits should be included in future research. Furthermore, while a quantitative method provides an objective

measure of the relationship between online disinhibition and OSB, a qualitative method would allow future research to further explore and better understand the complexity of a phenomenon.

As the internet continues to grow, research needs to be continually explored within this field. It has been suggested that personal identity is complex, and people express themselves in different ways under different conditions (Suler, 2004). It would be beneficial to provide a better understanding of the multifaceted concept of disinhibition, while considering the appeal of internet attributes and different applications used. Furthermore, future research using a forensic sample of online sexual offenders would be valuable in order to determine risk factors of how OSA can lead to offending.

Rationale for chapter five

Due to the lack of established psychometric scales measuring disinhibition, the Barratt Impulsivity Scale (BIS-11; Patton et al., 1995) was used in both the research case study and empirical research study. The BIS-11 was chosen due to it being the most widely used tool to measure impulsivity within research and clinical settings. Despite this, no published critical evaluation of the BIS-11's use with forensic populations could be identified. Therefore, chapter five presents a critique of the BIS-11, with an overall focus on forensic application of the tool.

Chapter five: The use of the Barratt Impulsivity Scale (BIS-11) with forensic populations: a psychometric critique

Abstract

The Barratt Impulsivity Scale (BIS-11) is a widely cited and popular psychometric tool used to assess the personality/behavioural construct of impulsivity. Research has demonstrated that impulsivity is a strong predictor of offending behaviour and recidivism, with more recent research indicating that violent offenders displayed greater impairments on measures of impulsivity than non-violent offenders. Therefore, accurately measuring impulsivity in forensic populations allows offenders' risk factors and treatment needs to be better identified, directing appropriate treatment and potentially reducing future offending. The aim of this critique was to explore the validity and the reliability of the BIS-11 when used with forensic samples. Despite some evidence that the BIS-11 demonstrates good internal consistency for use in a forensic population, practical implications and limitations have been discussed. These include gaps in the research, lack of behavioural data and an over reliance on reporting the total score, consequently, ignoring the multi-dimensional aspect of the construct.

Introduction

Impulsiveness is viewed as a complex multi-dimensional construct integrating biological, cognitive, behavioural and social data (Barratt & Patton, 1983; Barratt, 1993). There have been difficulties generating an accepted definition of impulsivity and an examination of the various operational definitions demonstrates a lack of consensus from the literature on how the construct of impulsivity should be conceptualised, due to disagreements of the underpinning theoretical assumptions. One of the most commonly used definitions defines impulsivity as a 'predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions to the impulsive individual or to others' (Moeller, Barratt, Dougherty, Schmitz & Swann, 2001, p. 1784). Generally, the various definitions of impulsivity have described an inability to wait, a tendency to act without forethought, insensitivity to consequences, and an inability to inhibit inappropriate behaviours (Ainslie, 1975; Barkley, 1997; Barratt & Patton, 1983; Eysenck, 1993; Rachlin & Green, 1972).

Impulsivity has been linked to offending behaviour with research demonstrating that it is a strong precursor to delinquent acts (Lynam & Miller, 2004; McGuire, 1995; Pallone & Hennessy, 1996; White et al., 1994). It is believed that as an individual's arousal level increases, the inability to inhibit one's impulses may trigger serious aggressive or violent incidents, whilst also demonstrating that impulsivity may hold predictive utility for reoffending across forensic mental health services (Sedgwick, Young, Das & Kumari, 2016).

Therefore, the construct of impulsivity is significantly important in research and clinical fields concerning risky behaviours and some mental disorders, and over the years there has been growing interest in assessing impulsivity.

A number of psychometric measures have been developed to assess impulsivity, including cognitive and behavioural measures, but, self-report tools assessing impulsivity as a trait are the most prevalent. Self-report tools ask respondents to rate themselves on specific behaviours or characteristics and assess the individual's perceptions of the causes of their impulsive behaviours. The Barratt Impulsivity Scale (BIS-11; Patton et al., 1995) is regarded as the most commonly used self-report measure of impulsivity (Spinella, 2007) and is frequently used to measure self-reported trait impulsivity in offender populations (Haden & Shiva, 2008). A common treatment target for offender rehabilitation is assisting offenders to become better regulators of their impulses (Andrews & Bonta, 2006). Therefore, establishing a standardised measure of impulsivity is important within a forensic population as there is a greater risk of impulsive risk behaviours and the use of a standardised measure can help professionals deliver more suitable and effective treatment.

Aims

This chapter considers the use of the BIS-11 (Patton et al., 1995) with forensic populations by outlining the tool, bringing together relevant literature in this area, and critically examining the properties of the BIS-11 (see appendix G). Normative and psychometric properties (including internal reliability, face validity, predictive

validity, construct validity, convergent validity and content validity) will be considered, with an overall focus on forensic application of the tool. Practical implications, limitations and further research in the area will be discussed.

Overview of the BIS-11

The BIS was developed by Barratt and his colleagues measuring trait impulsivity, which is defined as an individual's tendencies to think and behave impulsively across a range of situations (Patton et al., 1995). The BIS is currently in its 11th revision and is known as the most widely used self-report measures of impulsivity in both research and clinical settings. The BIS-11 was developed to more specifically measure the sub-traits of impulsiveness, including cognitive impulsiveness (making quick decisions), motor impulsiveness (acting without thinking) and non-planning impulsiveness (lack of forethought) (Barratt, 1985).

Table 13: Factor structure of the BIS-11

2nd Order Factors	1st Order Factors	Number of items
Attentional *(assesses the ability to focus attention and concentrate)*	Attention	5
	Cognitive Instability	3
Motor *(assesses the tendency to act quickly or on the spur of the moment and to give up easily)*	Motor	7
	Perseverance	4
Non-planning *(assesses the tendency to act without consideration for the future and preference for challenging cognitive tasks)*	Self-Control	6
	Cognitive Complexity	5

The BIS-11 is a 30-item measure, scored on a scale from one (rarely/never) to four (almost always/always). Total scores range from zero to 120, with greater scores indicating greater impulsivity. The BIS-11 consists of six first-order factors (attention, motor, self-control, cognitive complexity, perseverance and cognitive instability), and three second-order factors (motor, non-planning and attentional). See table 13 for an overview of the factor structure of the BIS-11.

Normative data

Normative data have been obtained from a sample of 412 undergraduate students (279 females, 130 males, 3 undefined), 164 substance abuse patients (110 male, 54 female), 84 general psychiatric inpatients (male 39, female 45) and 73 male prison inmates (Patton et al, 1995).

Table 14: Descriptive Statistics and Internal Consistency Coefficients for the BIS-11 Total Score (Patton et al, 1995)

	Males			Females			Total group			
Group	**N**	**M**	**SD**	**N**	**M**	**SD**	**N**	**M**	**SD**	**Cronbach's alpha**
Undergraduate students	130	64.94 (d)	10.19	279	63.32	10.16	412	63.82	10.17	.82
Substance-abuse patients	110	69.00 (d)	10.21	54	69.78	10.51	164	69.26	10.28	.79
General psychiatric patients	39	69.74 (d)	11.54	45	72.78	13.43	84	71.37	12.61	.83
Prison inmates	73	76.30 (a,b,c)	11.86							.80

a- *Differs significantly from undergraduates (p<.05)*

b- *Differs significantly from substance abuse patients (p<.05)*

c- *Differs significantly from general psychiatry patients (p<.05)*

d- *Differs significantly from prison inmates (p<.05)*

The results indicated that motor impulsiveness and non- planning impulsiveness were consistent with past studies (Barratt, 1985; Luengo et al., 1991) and found to be similar to Eysenck's (Eysenck & Eysenck, 1967) impulsiveness subtraits of impulsiveness narrow and non-planning. In terms of attentional impulsiveness, cognitive items loaded onto all factors suggesting that cognitive processes underlie impulsiveness in general. No significant within-group sex differences were found. The BIS-11 total score was internally consistent across the different populations and within an acceptable range for applied use within these populations. The first and second order factors were inter-correlated significantly, suggesting that the item pool is a measure of the general personality trait of impulsiveness. It was concluded that the BIS-11 has potential clinical utility for measuring impulsiveness among selected patient and forensic populations. Since its development the BIS-11 has been used with a diverse range of clinical samples including substance use disorders, depression, bipolar disorder, and attention deficit/ hyperactivity disorder, suicide attempters and criminal offenders.

Use with forensic populations

Impulsivity is a dynamic risk factor with elevated levels being demonstrated in forensic populations. Impulsivity has been implicated in various offender samples including increased risk for general, violent and sexual offending (Andrews, Bonta & Wormith, 2006; Wong & Gordon, 2000). The BIS-11 has been utilised with numerous criminal populations producing varying results.

Offenders have been found to be more impulsive than non-offenders on all three subscales of the BIS-11 (Smith, Waterman & Ward, 2006). Further analysis has compared impulsivity levels in violent and non-violent offenders with violent offenders reporting higher overall levels of impulsivity, with the exception of non-planning and attentional impulsivity (Smith et al., 2006). Gordan and Egan (2011) investigated the validity of the BIS-11 to postdict criminal convictions and prison breaches of discipline. Mixed results were found, the motor subscale correlated significantly with total convictions, non-violent convictions and violent prison breaches of discipline. The non-planning subscale was shown to correlate with total convictions and non-violent convictions, while the attentional subscale of the BIS-11 did not correlate with any behavioural measures describing criminal history and disciplinary transgressions.

There have been contradictory results within a forensic inpatient population. When investigating predictors of institutional aggression among male mentally ill offenders, research has found that the BIS-11 total score of impulsivity was a stronger predictor of disciplinary offences than the inpatient's current offence (Wang & Diamond, 1999). Reactive violence has been shown to have a stronger relationship to impulsivity, with research reporting that among personality disordered male offenders with a history of violent offences, offenders with high impulsivity tend to engage in more reactive violence within the institution (Dolan & Fullam, 2004).

McDermott, Edens, Quanbeck, Busses and Scott (2007) found only the cognitive impulsiveness scale of the BIS-11 was weakly related

to patient directed aggression. Differing results from a male inpatient forensic psychiatric sample found that the cognitive component of impulsiveness was not supported within this sample (Haden & Shiva, 2008). It was concluded that non-planning, along with attentional impulsiveness was related to more severe criminal charges. Haden & Shiva (2008) have argued that the motor and non-planning impulsiveness subtraits measured by the BIS-11 may be essential in defining impulsivity in a mentally ill forensic population.

While the BIS-11 has been widely cited within research with forensic populations, contradictory results have been produced. In order to assess whether the BIS-11 is effective in measuring impulsivity in forensic settings it would be beneficial for further research with various forensic populations to clarify some of these differences.

Psychometric properties

Face Validity

Face validity refers to whether a measure appears to assess what it is supposed to assess. From a review of the individual items and the measure in its entirety, it is clear that the BIS-11 assesses constructs related to impulsivity. Although face validity is valuable, research suggests that psychometrics which are high in face validity are also susceptible to social desirability responding (Bornstein, Rossner, Hill & Stepanian, 1994). This can be problematic in a forensic population due to the perceived potential implications that the outcome of psychometrics can have. Motivations for a biased response within a forensic sample may include inferences about the consequences of

responding including an attempt to avoid treatment or appear as though treatment has been beneficial to aid the prospect of release/discharge. As impulsiveness has been implicated in aggressive behaviour and recidivism in various offender samples (Barratt, Stanford, Kent & Felthous, 1997; Dolan & Anderson, 2002; Prentky, Knight, Lee, & Cerce, 1995; Vazsonyi, Cleveland, & Wiebe, 2006) it is important to consider socially desirable responses when interpreting the scores of the BIS-11 with this population. It may be recommended that the use of a social desirability tool, such as the Paulhus Deception Scale (PDS; Paulhus, 1998), as well as taking into account behavioural observations and clinical reports be considered when assessing impulsivity. Research supports the use of a deception scale with various subtypes of forensic populations to aid reliability (Tan & Grace, 2008).

Predictive Validity

Predictive validity can be understood as assessing whether scores on the assessment are related to the later display of a criterion variable. Impulsivity is recognised as being a significant cognitive predictor of violence (Brugman et al., 2016). Most of the research conducted in a forensic population using the BIS-11 has been cross sectional in design and therefore there is limited research on the predictive validity of the measure. One study has been found to compare the predictive validity of impulsivity measures for violence and other antisocial behaviours within a forensic mental health population (Alford, O'Rourke, Doyle & Todd, 2018). Results indicated that the BIS-11 total scores were observed to yield poor predictive validity (AUC=.62). More research using a longitudinal approach is required

to assess and provide conclusive results on the predictive validity of the BIS-11. Prior to this, it is suggested that the BIS-11 should not be examined in isolation with forensic populations to predict violent and antisocial behaviours.

Content Validity

Content validity refers to the extent to which the assessment assesses all aspects of the assessed construct. It has been suggested that a clear and consistent definition of a construct will influence the level of content validity (Haynes, Richard & Kubany, 1995). Due to the difficulty obtaining a clear definition and understanding of impulsivity, developing a content valid measure has had its difficulties and there is limited research to support the content validity of the BIS-11. Therefore, in order to understand impulsivity in a forensic population it would be considered good practice to use more than one measure or assessment tool.

Construct Validity

Construct validity measures the extent to which the assessment measures what it is supposed to measure. Impulsivity has been considered to be a central aspect of most psychiatric disorders (Moeller et al., 2001). Therefore, in order to evaluate the construct validity of the BIS-11 associations have been examined between impulsiveness, psychiatric disorders and psychopathology (Haden & Shiva, 2008). In a sample of forensic inpatients significant associations have been found between the BIS-11 and psychiatric diagnoses such as anxiety, depression, paranoia, schizophrenia, borderline, antisocial traits and self-reported psychopathology.

Furthermore, elevated BIS scores (motor and non- planning) were found with those diagnosed with a mood, substance related, or Axis II disorder (Haden & Shiva, 2008). Haden & Shiva (2008) examined associations between BIS-11 and psychopathology, measured by the Personality Assessment Inventory (PAI; Morey, 1991). BIS-11 scores were found to be significantly related to most of the PAI scales. Positive associations were identified between impulsivity and the self-harm subscale. While mania was significantly related to motor impulsiveness in a positive direction, the relationship was negative with non-planning impulsiveness. The PAI scale for antisocial features was not associated with non- planning impulsiveness, while its association with the PAI aggression scale was weaker compared to its association with the motor impulsiveness scale.

Convergent validity is a subcategory of construct validity (Haynes et al., 1995). Convergent validity refers to how closely two measures of the same construct correspond with one another. Due to impulsivity being a multi-dimensional construct and different assessment tools tend to assess the different conceptualisations of impulsivity, convergent validity can be difficult to determine. Despite this Miller, Joseph and Tudway (2003) found that the items on the Impulsiveness Questionnaire (I7; Eysenck et al., 1985) addressed similar underlying constructs as the BIS-11. Further evidence for convergent validity has been provided by Stanford et al., 2009 who found the BIS-11 total score was significantly associated with other self-report measures of impulsivity (r = .63) and disinhibition (r = .39). Specifically, within a forensic sample the BIS-11 has shown positive correlations with the Eysenck Impulsivity Venturesomeness

Empathy Questionnaire (IVE; Eysenck et al, 1985) and the Psychological Inventory of Criminal Thinking Styles Short Version (PICTS-SV; Walters, 1995) (Gordan & Egan, 2011).

Although the BIS-11 has been shown to correlate highly with similar self-report measures demonstrating convergent validity, it has not significantly correlated with behavioural measures of impulsiveness (Barratt & Patton, 1983; Lane, Cherek, Rhoades, Pietras, & Tcheremissine, 2003, Stanford et al., 2009). It has been suggested that the reason for this being that self-report measures assess personality traits occurring over extended periods of time and reflect an individual's subjective experience, while behavioural measures assess state-dependent aspects of impulsivity (Dougherty, Mathias, & Marsh, 2003).

Internal Reliability

Internal reliability measures the extent that the assessment is self-consistent, that is, whether each item within a scale or subscale assesses the same construct. A common measurement of internal reliability is by calculating the Cronbach's Alpha. A systematic review of the psychometric properties of the BIS-11 indicated that sixteen studies investigated the internal consistency of the BIS-11 total score ranging from .69 to .80, indicating satisfactory scale homogeneity (Vasconcelos, Mallory-Diniz & Correa, 2012). Looking specifically at the use of the BIS-11 with a sample of forensic inpatients the Cronbach's Alpha was .71. Yet, when the internal consistency was calculated for each subscale within the BIS-11 the results were poor to fair with a score of .68 for Nonplanning, .45 for Motor, and .49 for

Attentional Impulsiveness (Haden & Shiva, 2008). This could be explained by the small number of items in the first and second order subscale as it has been suggested that lower coefficient values can be the result of a low number of items within a scale (Field, 2014).

Test–Retest Reliability

Test-retest reliability measures whether scores on a measure are the same if the assessment is completed at two different points in time. Vasconcelos et al (2012) reported five studies which investigated test-retest reliability of the BIS-11 total score. Time intervals varied from two weeks (Orozco-Cabal et al., 2010), one month (Yao et al, 2007; Yang et al, 2007; Stanford et al., 2009), two months (Fossati et al., 2002; Guleç et al., 2008) and six months (Hartmann et al., 2011). The reported test-retest correlation coefficient ranged from 0.66 to 0.83, indicating fair to satisfactory reliability. However, Stanford et al (2009) reported the test-retest reliabilities for the second order factors to be fair (Attentional: ρ = .61, Motor: ρ = .67, Non-planning: ρ = .72), while the test-retest reliabilities for the first order subscales ranged from poor to fair (ρs = .23 to .72). Of the studies investigated none of the samples included an offending population, therefore the test-retest reliability of the BIS-11 in forensic populations is yet to be explored.

Discussion

The aim of this psychometric critique was to critically examine the psychometric properties of the BIS-11 when used with a forensic population. Some support has been found for the psychometric

properties of the BIS-11, including good internal consistency for use in a forensic population (Haden & Shiva, 2008; Stanford et al., 2009). Other advantages discussed include the availability of normative data and amount of previous research using this scale in a variety of clinical populations, including forensic populations. Nevertheless, a number of issues have been highlighted which need to be considered when the BIS-11 is applied in practice.

Self-report assessments are widely used to measure impulsivity, however there are a variety of limitations associated with this form of measurement. Self-report measures of impulsivity rely on respondents providing a subjective account of how they act, think and feel in situations. People may be unwilling to disclose information that may be perceived negatively by others (Lejuez, Read, Kahler, Richards, Ramsey et al., 2002) leading to social desirability biases. Furthermore, self-report measures have been argued to be less sensitive to state changes in behaviour (Matusiewicz, Reynolds & Lejuez, 2011), therefore it has been suggested that one way to avoid this is by using behavioural measures of impulsivity to complement self-report data. Evidence suggests that behavioural measures of impulsivity use standardised laboratory-based computerized tasks and can be organized into three broad behavioural domains: impulsive decision-making, inattention, and disinhibition (de Wit, 2009; Reynolds, Penfold & Patak, 2008). Some of the advantages of behavioural measures are their uses in treatment studies and within-subjects designs (Dougherty, Mathias, March & Jagar, 2005). They are more sensitive to state dependent change in behaviour such as pharmacological, physiological and environmental (Dougherty,

Marsh-Richard, Hatzis, Nouvion & Mathias, 2008; Swann, Pazzaglia, Pham, Dougherty & Moeller, 2005). There is a lack of normative data available for behavioural measures of impulsivity use in forensic settings. Attempts have been made to establish which approach or single tool to measure impulsivity is preferable over others, this has been inconclusive. Numerous studies have found little or no correlation between behavioural, self-report and cognitive measures (Gerbing et al., 1987; Parker & Bagby, 1997; White et al., 1994). This has suggested that different approaches are not comparable and measure different facets of impulsivity. Thus, due to limitations with face validity and convergent validity, it is considered that using the BIS-11 in isolation to measure impulsivity may not be sufficient and using other assessment methods and tools to compliment results from the BIS-11 would be recommended.

Another limitation of the research completed using the BIS-11 is that despite the three- subscale structure most studies focus on the singular total score, particularly when reporting the internal reliability. Stanford et al (2009) have argued the BIS-11 total score should be neither over-interpreted nor reported alone, given the multidimensional nature of impulsivity. The subscales provide distinctive information about the different facets of impulsivity and some individuals scores may elevate on some subscales but not others (Tamam, Zengin, Karakus & Ozturk, 2008). Despite the argument that the reporting of the BIS-11 subscale scores is crucial and should be considered in conjunction with the total score, they remain rarely reported which impedes the interpretation of measure.

Conclusion

Sixty years after its initial development the BIS-11 continues to be the most widely used instrument to measure impulsivity and has been translated into at least 11 other languages. The BIS-11 has shaped the conceptualisation of the construct of impulsivity and has made an impact across a broad range of domains, including criminal justice. This critique has highlighted some strengths and areas of weakness, which users should be aware of and consider when using the BIS-11 for measuring impulsivity with forensic populations. In clinical practice in order to achieve a comprehensive understanding of a person's level of impulsivity, it is suggested that information from the BIS-11 should be used in conjunction with other tools and measurements, such as behavioural observations and clinical judgement. Future research would be supported to further explore the contradictory results previously found on the psychometric properties of the BIS-11 and provide further normative data with a diverse range of forensic populations. Furthermore, additional longitudinal data would be beneficial to provide results on the BIS-11's ability to predict offending behaviour.

Chapter six: Conclusion and general discussion

The aim of the present thesis was to explore and build on the previous research to develop a better understanding of what influences online sexual behaviours. Within this final chapter, the findings from each chapter will be considered individually and as a whole including their implications for future research and practice.

Chapter two aimed to explore young people's engagement in and exposure to online sexual risk behaviours. A systematic review explored the effect of social networking on young people's exposure to and engagement in sexual risk behaviours. Previous research had not specifically focused on the influence of social networking and in order to investigate this clear inclusion and exclusion criteria were applied. Following an assessment of quality, a narrative analysis indicated an association between engagement in social networking activities (such as instant messaging, use of chat rooms and blogging) and young people's exposure to sexual material, access to communication with strangers, sexual solicitation and risks of offline contact and sexual assault. The risk for sexual solicitation was shown to be higher with those young people who used chat rooms and communicated with unknown contacts. Unfortunately, there were limited findings in relation to the influence of social networking on young people being perpetrators of sexual risk behaviours and due to the majority of studies being cross sectional in design, causality was unable to be determined. It is recommended that this review be conducted again when more longitudinal research is available and

further research has been conducted on youth's engagement in social networking and engagement in harmful online sexual behaviour.

Chapter three aimed to formulate a single case of TA-HSB and determine the impact of treatment for the individual known as X. There is currently limited and inconclusive research on psychologically informed interventions available for young people displaying HSB. Despite developing a short-term intervention based on the recommendations from available research, positive change was unable to be determined by psychometric assessment. The appropriateness of the psychometric measures used and psychometric assessment in general was questioned. Furthermore, not all presenting problems were able to be addressed and it was questioned whether the areas covered were in enough detail to provide positive change. A longer-term intervention was recommended in order to allow time to initially focus on the fundamental needs of the young person, while factoring in substantial time to develop a therapeutic alliance and build trust. Additionally, it would be beneficial for future research to provide more conclusive evidence on the effectiveness of current interventions in order to understand this behaviour further and to support those young people displaying TA- HSB.

Chapter four aimed to explore the relationship between disinhibition and online sexual behaviours. There is currently no research that has investigated this relationship; therefore, an empirical study was the first to explore whether disinhibition influenced online sexual behaviour. An online survey captured the responses of a

representative adult sample of the general population. Gender differences were ascertained, results indicated that males identified engaging in more sexual activities online, which is in line with previous research. Significant positive relationships were found between the total scores for the disinhibition measures and the self-reported engagement in OSA. Nevertheless, this association was weak to moderate which could be explained by the lack of psychologically robust scales to measure online disinhibition. The strongest association with OSA for the males was the measure of online disinhibition, whereas the strongest association for the females with OSA was trait disinhibition. Significant strong positive correlations were found between the BIS-11 and DIS-11, however the correlation with the OIDs was weaker and not significant within the male sample. The results provided evidence to suggest that online disinhibition provided greater support for increased engagement in OSA. Limitations of the research were that using self-report measures relies on respondents reporting their behaviours honestly, also difficulties in the conceptualisation of online disinhibition and the lack of psychometrically robust measures cannot be ignored. Future research was directed to focus on producing and validating a scale that can be used to measure and further explore online disinhibition, while also considering the individual differences of those individuals who engage in OSA.

Chapter five aimed to critically evaluate the BIS-11 as a measure of impulsivity within a forensic population. As the BIS-11 continues to be the most widely used tool to measure impulsivity and due to their being no other psychometric critique published to examine the

reliability and validity of the BIS-11 within a forensic population, this critique was deemed to be of importance. Despite research evidencing good internal consistency for the use of the BIS-11 within a forensic population, there were a number of issues highlighted, specifically that the majority of studies have solely reported the total score failing to recognise the multi-dimensional aspect of the construct. Furthermore, the use of self-reported data relies on respondents providing a subjective view of their thoughts and behaviours, however, there is a lack of normative data available for behavioural measures of impulsivity in forensic settings. It was recommended that future research should explore the psychometric properties of the BIS-11 with a diverse range of forensic populations while collecting longitudinal data to measure the BIS-11's ability to predict offending behaviour. Use of the BIS-11 within forensic populations would be supported in conjunction with other tools and consideration of behavioural observations and clinical judgements.

Considering the thesis as a whole, the findings have highlighted how increasing accessibility to the internet has impacted on online sexual behaviours. Social networking sites have been shown to allow individuals to interact with unknown people, which can increase risks of sexual solicitation. Ongoing teaching to children and young people about healthy relationships would be supported to help develop the awareness and skills needed to keep safe online. Furthermore, despite multiple regulators, processes and legislations in place to protect children online by filters and parental controls, and removing or blocking child sexual exploitation content, it is argued that there is more to do. Since the publication of the studies included within the

systematic review, legislation in the UK to protect young people from sexual solicitation online has been reviewed with the enforcement of Section 67 of the Serious Crime Act (2015). This prohibits adults from knowingly communicating in a sexual manner with children under the age of 16. In order for this act to be effective and adults to "knowingly" communicate then online users are required to present their age correctly. Additional legislation in the UK would be encouraged for it to be an offence for people to misrepresent their age when engaging in sexualised communication online. Furthermore, those convicted of communicating in a sexual manner with a child, or convicted of low risk online sexual offences, are reported to be managed in the community (Beech et al., 2008). At present there is limited available evidence to show support for the benefits of existing programs for the treatment of online sexual offenders. This thesis supports existing recommendations for more attention on community-based interventions for online sexual offenders (Gillespie et al., 2018).

The increase in young people displaying TA-HSB, as evidenced in chapter three, supports the rationale for also exploring what treatment would be most effective for this population to reduce further risk of offending. Under the Protection of Children Act (1978), the UK has a strict prohibition on the taking, making, circulation, and possession, with a view to distribution, of any indecent photograph or pseudo photograph of a child. However, in order for legislation to prevent as oppose to prosecute, then young people need to understand the law and what is illegal. The Department for Education (2019) has advised that schools ensure their pupils understand how

to stay safe and behave online as the existing curriculum requirements. Furthermore in England, guidance is provided on HSB among children and young people (NICE, 2016) for professionals to ensure these behaviours do not escalate leading to criminal convictions. Legislation highlights the need to prioritise safeguarding issues rather than criminalising young people. Sexual Harm Prevention Orders (SHPO) and Sexual Risk Orders (SRO) can be enforced to ensure the early consultation and participation of the Youth Offending Team, that appropriate interventions are offered to reduce the HSB, support is based on the needs of the individual and imminent risk, and that the welfare of the young person is the paramount consideration in line with local safeguarding procedures (Sexual Offences Act, 2003). However, as discussed there remains limited professional discussion or training on practice-based approaches in the assessment, intervention and management of TA-HSB demonstrated by young people (Lewis, 2018). Within this thesis the reasons why people engage more frequently in sexual risk behaviours online has been explored with a consideration of the individual's historical influences and personality traits, such as levels of disinhibition/impulsivity, while also considering the attributes of the internet. This needs to be considered in ongoing research in this area and in the development of interventions to reduce risk behaviours.

Going forward, a number of recommendations for future research have arisen during the course of this thesis and as technology evolves, research needs to evolve in concurrence to increase knowledge of what influences online sexual behaviours. At present,

effective interventions and preventative measures cannot be devised to reduce HSB without clarity on the causes of this behaviour, and due to the gaps in the research, implications for practice are cautious at present. In closing this thesis, it can be concluded that a variety of information has been provided which has been helpful in contributing to the research available in this field and improved our knowledge of online sexual behaviours from a forensic perspective. However, this thesis has demonstrated that there remains further work to be completed in understanding this research area.

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Appendices

Appendix A- Scoring for the Newcastle-Ottawa Quality Assessment Scale (for Cohort Studies) used within the systematic review

Selection: (maximum 3 asterisks)

1) ***Representativeness of the sample (maximum of 1 *):***
   a) Truly representative of the average in the target population. * (all subjects or random sampling)
   b) Somewhat representative of the average in the target population. * (non-random sampling)
   c) Selected group of users.
   d) No description of the sampling strategy.

2) ***Ascertainment of the exposure (maximum of 2 *):***
   a) Validated measurement tool. **
   b) Non-validated measurement tool, but the tool is available or described.*
   c) No description of the measurement tool.

Comparability: (maximum 2 asterisks)

1) ***Comparability of cohorts***
   a) regarding age, sex. *
   b) regarding any other additional factor *

Outcome: (maximum 3 asterisks)

1) ***Assessment of the outcome (maximum of 2 *):***
   a) Independent blind assessment. **
   b) Record linkage. **
   c) Self report. *
   d) No description.

2) ***Follow-up long enough (maximum of 1 *)***
   a) One year or more *
   b) Less than a year

3) ***Adequacy of follow-up cohorts (maximum of 1 *)***
   a) complete follow-up (all patients) ⁎
   b) subjects lost unlikely to introduce bias (< 10%) ⁎
   c) description suggests no difference of those not followed ⁎
   d) follow-up rate < 90% and no description of those lost
   e) no statement

Analysis: (maximum of 1 *)

1) ***Appropriate statistical methods***
   a) The statistical test is clearly described and appropriate, with measurement of the association is presented, including confidence intervals and the probability level (p value). *
   b) The statistical test is not appropriate, not described or incomplete.

Appendix B- Scoring for the Newcastle-Ottawa Quality Assessment Scale *(Adapted for cross sectional studies)* used within the systematic review

Selection: (maximum 5 asterisks)

1) ***Representativeness of the sample (maximum of 1 *):***
   a) Truly representative of the average in the target population. * (all subjects or random sampling)
   b) Somewhat representative of the average in the target population. * (non-random sampling)
   c) Selected group of users.
   d) No description of the sampling strategy.

2) ***Sample size (maximum of 1 *):***
   a) Satisfactory sample (sample size 1000 or greater). *
   b) Justified. *
   c) Not justified.

3) ***Non-respondents (maximum of 1 *):***
   a) Comparability between respondents and non-respondents characteristics is established, and the response rate is satisfactory. *
   b) The response rate is unsatisfactory, or the comparability between respondents and non-respondents is unsatisfactory.
   c) No description of the response rate or the characteristics of the responders and the non-responders.

4) ***Ascertainment of the exposure (maximum of 2 *):***
   a) Validated measurement tool. **
   b) Non-validated measurement tool, but the tool is available or described.*
   c) No description of the measurement tool.

Study adjustments: (maximum 2 asterisks)

1) ***Confounding factors are controlled.***
   a) The study controls for participant sex. *
   b) The study control for any additional factor. *

Outcome: (maximum 3 asterisks)

1) ***Assessment of the outcome (maximum of 2 *):***
   a) Independent blind assessment. **
   b) Record linkage. **
   c) Self report. *
   d) No description.

2) **Statistical test (maximum of 1 *)**:
   a) The statistical test is clearly described and appropriate, with measurement of the association is presented, including confidence intervals and the probability level (p value). *
   b) The statistical test is not appropriate, not described or incomplete.

Appendix C- Data extraction tool

General Information

Date of data extraction:

Author:

Article Title:

Year of publication:

Source:

Study Characteristics

Study Design:

Focus of study:

Population characteristics

Age:

Gender:

Ethnicity:

Occupation:

Number of participants:

Recruitment procedures:

Other information:

Exposure

Social networking sites used:

Type of activities engaged in on social networking sites:

Frequency of exposure to social networking:

Outcomes

What was measured?:

Main findings:

Confounding variables:

Notes:

Analysis

Analysis used:

Statistics used:

Notes:

Reviewer:

Additional notes:

Appendix D- The Disinhibition Inventory (DIS-I; Dindo, Mcdade- Montez, Sharma, Watson & Clark, 2009)

Listed below are a series of statements a person might use to describe his/her attitudes, feelings, interests, and other characteristics. Read each statement and decide how well it describes you. There are no right or wrong answers, and no trick questions.

Use the following scale to record your responses:
1 = *strongly disagree*; the statement is definitely false
2 = *disagree*; the statement is mostly false
3 = *neutral* or *cannot decide*; the statement is about equally true and false
4 = *agree*; the statement is mostly true
5 = *strongly agree*; the statement is definitely true

1. When I set a goal, I follow through to achieve it.
2. I hate to see others in pain.
3. It is easy for me to take advantage of others.
4. I have a hard time staying focused for long periods of time.
5. I always meet my deadlines.
6. I do what it takes to get my way.
7. I enjoy taking risks.
8. I like to keep my home neat and tidy
9. I am willing to put in extra hours to make projects successful.
10. I am attentive to other people's feelings.
11. I manipulate other people.
12. I am easily distracted.
13. I usually play it safe instead of taking a chance.
14. My living space tends to be a bit messy.
15. I like to be the best in everything I do.
16. I try to see things from others perspectives.
17. I enjoy pointing out other people's mistakes.
18. I tend to get distracted while working on projects.
19. I seek out thrilling experience.
20. I like to keep things organized.
21. It is important for me to succeed in my work.
22. I am careful not to hurt other people's feelings.
23. I lose my train of thought easily.
24. I avoid dangerous situations.
25. I am bothered by messiness and clutter.
26. I have high standards of achievement for myself.
27. I would not hurt another person on purpose.
28. I will beat the system to get what I want.
29. I enjoy telling a joke at someone's expense.
30. The smallest distraction will throw off my concentration.
31. I like to be spontaneous.
32. I have a short attention span.
33. I clean things on a regular basis.
34. I sometimes lie to get what I want.
35. It is acceptable to take credit for what others did.
36. I am easy-going person.
37. I am willing to use other people to accomplish my goals.
38. I can focus my attention easily.
39. I like situations that involve a little danger.
40. I procrastinate a lot.
41. Sometimes I take teasing other people a bit too far.
42. I organize my things in a systematic way (for example, alphabetize my books or recipes, colour organize my clothes).
43. I like making decisions on the spur of the moment.
44. It is difficult to distract me while I am working on something.

45. I often act selfishly
46. I don’t give up easily.
47. I often play around when I should be working.
48. It isn’t cheating if you don’t get caught.
49. I prefer to do things that are safe.
50. I can concentrate on something for a long time.
51. I am a considerate person.
52. I carefully plan most of my daily activities.
53. I get bored easily.
54. I like to make “to do” lists.
55. I often forget things that I need to do.
56. I am able to focus when I need to get something done.
57. I am willing to make excuses to get someone else to do my job for me.
58. I care about other people’s problems.
59. I have trouble sitting still for any length of time.
60. It is okay if my happiness comes at the expense of others.
61. I often get people to do me favours.
62. I make a list before shopping.
63. I can easily control my urges.
64. I would like gambling for high stakes.
65. I can tune out everything around me.

Appendix E- The Online Induced Disinhibition Scale (OIDS) adapted from the Drinking Induced Disinhibition Scale (DIDS; Leeman, Toll & Volpicelli, 2007)

Please indicate on the scale below how likely you are to experience each of the following occurrences either while online or as a direct result of being online? As a point of reference, items rated as "5" or "6" should be things that you often experience during the course of being online or as a consequence of being online, items rated "3" or "4" should happen from time to time and those marked with a "1" or "2" should be things either never or have very rarely experienced in conjunction with being online.

How likely are you to experience each of these occurrences either when online or as a result of being online?

Please rate each occurrence according to a typical online experience for you.

Items rated on a six-point scale ranging from 1 ("highly unlikely") to 6 ("highly likely")

1. Feelings of greater personal freedom than when not online.
2. Expressing more disappointment in yourself or others than when not online.
3. Hooking up with someone who you are not dating.
4. Acting more friendly or outgoing around others than when not online.
5. Expressing stronger feelings of sadness than when not online.
6. Engaging in sexual activities that you would be less likely to take part in when not online.
7. Expressing more optimism than when not online.
8. Feeling more depressed than when not online.
9. Engaging in casual, consensual online sex with someone who you are not dating.

Appendix F- Additional questions measuring online disinhibition related Suler's conceptualisation

When I am online…

1. I feel my acts are unidentifiable from others.
2. I feel that I am invisible.
3. I can control the pace of communication.
4. I interpret others' messages based on my own expectation.
5. I feel that my online life is separate from the offline world.
6. I feel less fear of authorities.

Appendix G- The Barratt Impulsiveness Scale (BIS-11, Patton, Stanford & Barratt, 1995)

DIRECTIONS: People differ in the ways they act and think in different situations. This is a test to measure some of the ways in which you act and think. Read each statement and put an X on the appropriate circle on the right side of this page. Do not spend too much time on any statement. Answer quickly and honestly.

① Rarely/Never ② Occasionally ③ Often ④ Almost Always/Always

1	I plan tasks carefully.	①	②	③	④
2	I do things without thinking.	①	②	③	④
3	I make-up my mind quickly.	①	②	③	④
4	I am happy-go-lucky.	①	②	③	④
5	I don't "pay attention."	①	②	③	④
6	I have "racing" thoughts.	①	②	③	④
7	I plan trips well ahead of time.	①	②	③	④
8	I am self controlled.	①	②	③	④
9	I concentrate easily.	①	②	③	④
10	I save regularly.	①	②	③	④
11	I "squirm" at plays or lectures.	①	②	③	④
12	I am a careful thinker.	①	②	③	④
13	I plan for job security.	①	②	③	④
14	I say things without thinking.	①	②	③	④
15	I like to think about complex problems.	①	②	③	④
16	I change jobs.	①	②	③	④
17	I act "on impulse."	①	②	③	④
18	I get easily bored when solving thought problems.	①	②	③	④
19	I act on the spur of the moment.	①	②	③	④
20	I am a steady thinker.	①	②	③	④
21	I change residences.	①	②	③	④
22	I buy things on impulse.	①	②	③	④
23	I can only think about one thing at a time.	①	②	③	④
24	I change hobbies.	①	②	③	④
25	I spend or charge more than I earn.	①	②	③	④
26	I often have extraneous thoughts when thinking.	①	②	③	④
27	I am more interested in the present than the future.	①	②	③	④
28	I am restless at the theater or lectures.	①	②	③	④
29	I like puzzles.	①	②	③	④
30	I am future oriented.	①	②	③	④

Appendix H- Online Sexual Activities Questionnaire

Read each statement carefully. If the statement is mostly true, please indicate TRUE. If the item is mostly false, please indicate FALSE.

1. I have searched for sexual material through an internet search tool.

2. I have participated in sexually related chats with strangers.

3. I have used the internet to access pornography.

4. I use sexual humour and innuendos with others while online.

5. I have masturbated while on the internet.

6. I have accessed sexual sites from other computers besides my home computer.

7. I use the internet to experiment with different aspects of sexuality (e.g. bondage, homosexuality, anal sex etc.).

8. I have a sexualized username or nickname that I use on the internet.

9. I have increased the risks I take online (given out name and phone number, met people offline, etc.).

10. I have met face-to face with someone I met online for romantic purposes.

11. I have come across illegal sexual material while on the internet.

12. I have shared a sexual image of an individual online without their consent.

13. I have posted/ traded sexual material on or through the internet (e.g. self-photos, photos of others, videos).

14. I have stayed up after midnight to access sexual material online.

15. I have come across images of individuals who appeared to be less than 18 years old.

16. I have tried to conceal myself or the places I have been online (e.g. clear history, delete downloaded files, use anonymous services).

17. I have noticed a progression in my sexual risk taking behaviours (either online or offline) as a result of my cybersex behaviour.

18. I have gotten into trouble due to my online sexual behaviours.

Appendix I- Participant Information Sheet

This is an invitation to take part in a research study about online sexual behaviours.

Before you decide whether to take part, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully.

What is the project about?

The study is an online questionnaire about online sexual behaviours. The aims of the study are to understand what influences people's engagement in online sexual behaviours in the hope to understand some of the risks associated with online behaviours.

Who is being asked to take part, and why?

The study aims to collect data from the general public. You are being invited to take part because you were given information about the study and have followed the link to the research. Your participation is voluntary, and you may change your mind about being involved, or decline to answer a particular question. You are free to withdraw at any point before or during the study. To withdraw from participation, you simply close the internet browser window.

What will I be asked to do?

The study uses an online questionnaire which should take between 20-25 minutes to complete. You will be asked to sign an electronic consent form and provide some general demographic information. However, you will NOT be asked for any information that may identify you (e.g. your name) and you will remain anonymous throughout the study. You will be asked to complete a series of questionnaires in relation to your online sexual behaviours and more generally the way you act and think (Examples of some of the questions asked are as follows: I use the internet to access pornography (TRUE/FALSE), I use the internet to experiment with different aspects of sexuality (TRUE/FALSE), I have come across illegal sexual material while on the internet (TRUE/FALSE)). Remember that your responses will remain anonymous. After you have completed the questionnaires, a page containing further information will be presented to you.

Sexual behaviour is a sensitive topic and some participants may feel uncomfortable and/or may have been affected by the subject matter. Remember that you are able to withdraw at any time without a need to give a reason. To withdraw from participation, you simply close the internet browser window.

You are able to contact the researcher at any point during the study on the above email address if you have any concerns. If you

continue to remain concerned, you can contact the researcher's supervisor on the above email address.

Will the research be of any personal benefit to me?

The information gathered for this study may help us to gain a better understanding about online sexual behaviours however it is unlikely that the research will be of any personal benefit to you.

What will happen to the information I provide?

All information that is collected throughout the study will remain anonymous and confidential. No information such as your name or address will be requested and your responses will remain unidentifiable. The information you provide will be seen by the researcher and the researcher's supervisor.

There are no known risks associated with this research study; however, as with any online related activity the risk of a breach is always possible. We will do everything possible to ensure your answers in this study will remain anonymous. We will minimize any risks by using an encrypted secure https website to host the questionnaire and be reassured that the researchers will not be able to see, access or store your IP address.

What will you do with the data?

The results of this data will be stored electronically and securely by the researcher on password protected personal computer and on a university drive that is accessible only by the researcher and the researcher's supervisor. The data will be analysed using a statistical package and used within a Doctorate level research thesis. No data identifying any participant will be included in the thesis or publication.

If you would like to know the findings, you can request a summary of the findings once the thesis has been completed. At the end of the project, all raw data will be kept securely by the University under the terms of the Data Protection Act. The data will not be kept elsewhere. All data will be kept securely for seven years, after which time the data will be destroyed securely.

If you have any questions or concerns, please don't hesitate to ask. We can be contacted before and after your participation at the above email addresses.

Who has reviewed the study?

The Faculty of Medicine and Health Sciences Research Ethics Committee (FMHS) of The University of Nottingham. (Ref no: FMHS 191-1712).

THANK YOU FOR YOUR PARTICIPATION

If you have any queries or complaints about this study, please contact the student's supervisor in the first instance. If you remain unhappy and wish to complain formally, you should then contact the FMHS Research Ethics Committee Administrator, c/o The University of Nottingham, Faculty PVC Office, B Floor, Medical School, Queen's Medical Centre Campus, Nottingham University Hospitals, Nottingham, NG7 2UH or via E-mail: FMHS-ResearchEthics@nottingham.ac.uk.

Useful links

If you feel you are affected by this subject you can contact:

- *Victim Support* (www.victimsupport.org.uk)
  Victim support offers support in relation to a number of different crimes including sexual harassment, cyber-crime, stalking etc.

- *Samaritans (*http://www.samaritans.org.uk)
  Offers support by phone, email, letter or in person to anyone who is struggling to cope. Provides time and space to talk things through and find a way through problems.

- *Sex Addiction Help (sexaddictionhelp.co.uk)*
  Sex Addiction Help is a free self-help recovery resource for people struggling with sex or pornography.

- *ATSAC – Association for the Treatment of Sexual Addiction & Compulsivity (atsac.co.uk)*
  We are a non-profit organisation that provides information and support on sex addiction and compulsivity to those with this problem.

Appendix J- Participant Consent Form

I have read and understood the Participant Information Sheet.

I agree to answer an online questionnaire.

I confirm I am over 18 years old.

I know how to contact the researcher if I have questions about this study.

I understand that I am free to withdraw from the study without giving a reason.

I understand that for anonymous questionnaire studies, once I have completed the study and submitted my questionnaire, the data cannot be withdrawn.

I give permission for my data from this study to be shared with other researchers in the future provided that my anonymity is protected.

I understand that non-identifiable data from this study might be used in academic research reports or publications.

By selecting 'Yes', I am giving consent for my data to be used for the present study and I am agreeing to participate.

Yes No