Electronic exchange of sexually suggestive, nude, semi-nude or erotic images within adolescent and adult populations.

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For every victim of image based sexual abuse, and those that have lost their lives as a result. This is for you. You drive my determination to research, educate and reform nude-image sharing.

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Bella, Charlee, Bobbee, Ashon, Ellsie, this is for us.

Abstract

This thesis explores the electronic exchange of nude, semi-nude or erotic videos, images, and/or messages, also known as sexting. It seeks to further the understanding of this behaviour and provide further evidence to help answer the question circulating academia and media on whether this is a normative behaviour, occurring within the general population or indicative of something more deviant.

A systematic review (N = 17) considered existing research investigating the forensic and mental health implications of adolescent sexting. Although the definition of sexting varied throughout (i.e., exchange of images, videos, and messages), and with most studies subject to methodological limitations, both forensic and mental health implications of adolescent sexting were identified with most included studies scoring high on the quality assessment tool used.

Following this, an empirical research study investigated the sexting behaviours of a UK based general population sample of adults aged between 18 and 89 (N = 211). This study found that 67% of participants reported having sent an image-based sext and 77% of participants reported having received an image-based sext. The mean age for sending and receiving their first image-based sext was 20 years old. Most participants reported sexting intimate partners (74% and 69% respectively), with a mean of four relationships per person.

Psychological factors including Theory of Mind (ToM), self-esteem and revenge porn proclivity were examined in relation to their predictability of sending and receiving image-based sexts. A logistic binary regression found that self-esteem was the only significant predictor of sending image-based sexts following Bonferroni correction on the adjusted model. These findings raised important questions as to whether image-based sexting was better explained by demographic factors opposed to the psychological factors initially examined. Therefore, a second study examining age, gender, and sexuality

in relation to image-based sexting was conducted. An initial model found that sexuality was predictive of sending and receiving image-based sexting such that those identifying as non-heterosexual were at increased odds of image-based sexting. However, an adjusted model including the use of Bonferroni correction found no significant demographic predictors of image-based sexting.

Finally, a critique of the Reading the Mind in the Eyes Task - Revised (RMET-R; Baron-Cohen et al., 2001) examining its psychometric properties and clinical utility is presented, the results of which justify its use within this thesis.

In summary, this thesis identifies that image-based sexting appears to be a normative behaviour in a UK sample. Yet suggestions of deviancy indicative of image-based violence such as cyber-flashing and revenge porn are prevalent, and the forensic and mental health risks associated with sexting are concerning. Providing evidence for both the deviancy and normalcy argument, this thesis concludes that further research is warranted, and that better education and support should be made available to sexters of all ages, particularly for those most at risk of the ill-effects of sexting.

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Chapter One: Introduction

Mobile cellular and technological advances over the past two decades have created more opportunities for communication and connection and have provided the means of electronically exchanging sexually suggestive, semi-nude, nude or erotic images, videos, or messages; otherwise referred to as sexts or sexting (Benotsch et al., 2013). In the United Kingdom, the consensual exchange of sexual images is legal for individuals aged 18 years old and above, yet the age for consensual sexual contact is 16 years old. For a two-year period, individuals can legally have sexual intercourse, but they cannot exchange sexually suggestive, nude, or erotic photographs or videos as under Section 1 of the Protection of Children Act 1978 it is an offence to make, distribute, possess, or show any indecent images of anyone aged under 18, even if consent is obtained. However, Academica queries whether consensual sexting is a modern manifestation of flirting and foreplay (Roberts & Ravn, 2020). Yet this is dangerous territory for those in the 16 – 18 year old age bracket (who can legally have sexual contact but cannot share sexual imagery), as for any under 18 year old, the act of sexting is considered to be child pornography (Protection of Children Act, 1978) and therefore sexting is a cause for concern for academics, law enforcers, parents/caregivers and other stakeholders responsible for adolescents welfare (Dodaj et al., 2020).

Despite this concern and the possible legal ramifications, sexting has been established as a global phenomenon (Agustina & Gómez-Durán, 2012) and there is growing evidence to suggest that sexting occurs in adolescence and throughout the life course (Bianchi et al., 2021; Currin et al., 2016; Gámez-Guadix et al., 2015), therefore demonstrating that this behaviour may be more normative than first understood. Yet there is a dearth of studies examining the sexting practices of those residing in the UK, who are governed by UK Law.

Academics have sought to answer the question (whether sexting is indicative of deviancy or a commonplace behaviour in today's society) by investigating both the predictors and implications of

sexting in a variety of different samples. Benotsch et al. (2013) examined the public health implications of sexting and found that sexting was linked to multiple sexual partners within one year and the occurrence of unprotected sex. Others have linked sexting to risky sexual behaviour including the use of alcohol and drugs before sex (Currin et al., 2017) and unprotected sex (Kosenko et al., 2017). Links to substance misuse (Dake et al., 2012), depression (Gámez-Guadix & de Santisteban, 2018), and other negative mental health outcomes have also been identified (Gasso et al., 2020; Klettke et al., 2014). In some cases, sending sexts has been linked to self-harm and suicide (e.g., Courtice & Shaughnessy, 2021; Ng & Odeen-Isbister, 2022; Wachs et al., 2021). These findings highlight that sexting is a public health issue and one that is pertinent to sociological, psychological, and medical domains and establish its importance in further research. Although not all evidence is negative. Notwithstanding the aforementioned areas of concern, sexting has been found to enhance and maintain romantic relationships (McDaniel & Drouin, 2015) and has been observed in different relationship types (e.g. committed, casual sexual, and those cheating on partners; Drouin et al., 2013). Dir et al. (2013) suggest that sexting is an example of the intersection between computer-mediated and human interaction and therefore acts as a modern manifestation of flirting (Fido & Harper, 2020; Lippman & Campbell, 2014).

Whilst the positives of sexting are acknowledged, sexting creates opportunities for sexual solicitation (Gamez-Gaudix & Mateos-Perez, 2019), online grooming (Machimbarrena et al., 2018), cyberbullying (Ehman & Gross, 2019), revenge-porn (McGlynn & Rackley, 2018) and other forms of image-based sexual violence (Fido & Harper, 2020). Whilst some adolescents have been legally sanctioned for sexting (Comartin et al., 2013; Wolak & Finkelhor, 2011), little is known about the link between sexting and contact sexual offending and this is concerning given the growing evidence relating to online or image-based violence.

To further the narrative and understanding of sexting this thesis will examine three psychological phenomena as predictors of image-based sexting. The first construct, Theory of Mind

(ToM) also known as mind-reading is a measure of emotional intelligence and social cognition. It is the ability to recognise the mental states of others and adapt one's behaviour accordingly (Baron-Cohen, 1996). It is proposed that offenders (Shamay-Tsoory et al., 2010) and specifically sexual offenders have deficits in their ability to understand the mental states and emotions of others (Castellino et al., 2011; Elsegood & Duff, 2010; Kennan & Ward, 2000). Intimacy deficits, problems empathising with victims, and cognitive distortions are all associated with the perpetration and maintenance of sexual offending and relate to one's ToM abilities (Keenan & Ward, 2000) and may be involved in the decision-making processes when deciding to sext. Yet to date, ToM and sexting have not been examined together.

The second construct explored within this thesis is the sharing of sexts without consent, also known as Revenge Porn (RP; Pina et al., 2017). This phenomenon has gained media interest since its criminalisation in the UK (McGlynn & Rackley, 2018) and academics have begun to investigate the motivations and predictors of this behaviour (e.g., Englander & Mccoy, 2017; Pina et al., 2017). Dynamics that once started as consensual sexting that ended in acts of RP have had fatal consequences (Courtice & Shaughnessy, 2021) and so it is imperative that investigations into the links between these two behaviours continue. This thesis will examine RP proclivity as a predictor of image-based sexting.

The final construct under examination is self-esteem (SE). This is the extent to which individuals value and perceive themselves. It has been linked to sexting (Scholes-Balog et al., 2016) and is a common construct investigated in offending samples (Fisher et al., 1999). Research has identified that those with sexual convictions are more likely to have lower SE (e.g., Fisher et al., 1999). These findings are mirrored in adolescent sexual offending (Monto et al., 1998). Marshall (1997) evidenced that an increased SE was linked to reduced deviant sexual arousal. This is important given that sexual gratification has been recognised as a motivation for image-based sexual violence (e.g., Karasavva et al., 2023). However, Jang and Thornberry (1998) concluded that SE was not linked to delinquency. Nevertheless, Marshall et al. (1997) identified a correlation between victim empathy and SE and given

this thesis explores ToM (a construct involved in the emotion recognition of others and therefore empathy), SE is also another construct that is important to investigate.

Thesis Overview

Thus far, sexting has been defined as the electronic exchange of sexually suggestive, semi-nude, or nude images, videos, or messages (Benotsch et al., 2013). Despite the ongoing challenge across the literature base in defining sexting due to the broad and developing nature of the behaviour (Barrense-Dias et al., 2017), this is the definition that will be used within this thesis. In chapters three and four the term image-based sexting will be used. This includes both images and videos but excludes messages. This is due to images/videos being the most forensically relevant aspect of sexting due to its illegality for under 18-year-olds and its links with RP (a construct of interest in these chapters).

Chapter Two of this thesis contains a systematic literature review that explores the forensic and mental health implications of adolescent sexting (nude, semi-nude, or sexually suggestive texts, images, and videos). This review systematically searches over 17000 research articles, critically appraising a final sample of 17 empirical qualitative studies. Experiences of depression, anxiety, and other negative affect are identified as negative mental health implications of adolescent sexting. Victimisation and perpetration of delinquency such as dating violence is also linked to sexting. However, findings differed across genders and in sexting type (i.e., consensual, non-consensual, and pressured sexting).

The first empirical research study included within this thesis explores the image-based sexting behaviours (including nude, semi-nude and sexually suggestive images or videos), ToM, SE, and RP proclivity scores of 211 adults living in the United Kingdom. Findings show a positive significant link between ToM scores and sending and receiving image-based sexts such that as scores on a ToM measure increase, the odds of reporting sending and receiving image-based sexts increase. Following Bonferroni correction on the adjusted logistic regression model SE was the only significant predictor of

sending image-based sexts such that as scores on a SE measure increased, the odds of sending image-based sexts decreased.

The data obtained from 201 of the participants that completed the anonymous online questionnaire was analysed further in Chapter Four. A logistic regression explored the extent to which sending and receiving image-based sexts (i.e. nude, semi-nude, and sexually suggestive images, or videos) can be explained by demographic factors such as age, gender, and sexuality (as opposed to the psychological factors explored within Chapter Three). Results indicated that sexuality was predictive of sending and receiving sexts such that those identifying as non-heterosexual were at increased odds of reporting the sending and receiving of image-based sexts compared to those identifying as heterosexual. Following Bonferroni correction on an adjusted model, significance was lost.

Finally, the Reading the Mind in the Eyes Task – Revised (RMET-R; Baron-Cohen et al., 2001) is subject to a critical analysis in the psychometric critique featured in Chapter Five. As this tool was used as the measure of ToM within Chapter Three (and significant effects were observed), this critique examines its validity and reliability to determine whether its inclusion within this thesis was justified. This critique concluded that whilst its use in the current study was defensible, the tool could benefit from an upgrade to strengthen its internal consistency and heterogeneity of items. The thesis concludes with a discussion of the themes and findings identified throughout the chapters, highlighting the contributions this thesis adds to the nascent literature base.

This thesis aims to identify factors that may influence engagement in image-based sexting in a UK general population sample and seeks to answer the following research question:

1. Is sexting indicative of deviancy or is it a normative and established behaviour in a UK general population sample?

More specifically, the aims of this thesis are as follows:

1. To systematically summarise the forensic and mental health implications of adolescent sexting
2. To assess the relationship between Theory of Mind, Revenge Porn Proclivity, Self-esteem, and image-based sexting in a UK general population adult sample.
3. To assess the role of age, gender, and sexuality in image-based sexting in a UK general population adult sample.
4. To critically review the Reading the Mind in the Eyes task and its value in assessing Theory of Mind.

Chapter Two: The Forensic and Mental Health Implications of Sexting in Adolescents: A Systematic Literature Review

Abstract

With the rise of social media and smart phones has come an increase in sexting, defined by many as the electronic exchange of sexually suggestive, nude, or semi-nude images, videos, or text messages (Bianchi et al., 2021). To help address the ongoing debate as to whether sexting is a normative or deviant behaviour in adolescence, this review is the first to systematically review existent literature, focusing specifically on the forensic and mental health implications of adolescent sexting.

A systematic search of electronic databases was conducted. Followed by a hand search of reference lists and contact with experts in the field. This review provides a summary of the findings of identified papers published on this topic. Inclusion criteria for the eligibility of reported studies were defined as a population of adolescents aged between 10 – 19 years old who have engaged in the sending and receiving of sexts (defined as the exchange of sexually suggestive, nude or semi-nude texts, images or videos) where any forensic or mental health outcome is measured.

17 studies involving 21027 participants met the inclusion criteria. Results highlighted the presence of forensic and mental health implications of sexting. Specifically, consensual sexting was associated with symptoms of depression, anxiety, and cyber-victimisation. Non-consensual or pressured sexting was linked to outcomes such as dating violence perpetration and victimisation and non-suicidal self-injury.

Overall, the identified studies demonstrate the presence of several forensic and mental health implications of adolescent sexting. The studies indicate the difference between implications observed from consensual and non-consensual or pressured sexting. Implications for practice and areas of future research are discussed.

Introduction

With the emergence of the internet and the ever-increasing development of smart phones, instant messaging and social media, interest into sexting behaviours is growing exponentially, both in academia and in the general media (Klettke et al., 2014; Rodriguez-Garcia et al., 2023). Particularly of concern are those most vulnerable to the effects of online behaviour, yet the ones who most frequent the internet, adolescents, as defined by the World Health Organization (WHO) as individuals aged 10 – 19 (El Asam et al., 2019; Houck et al., 2014; WHO, 2022). However, little empirical research exists examining the mental health or forensic correlates of sexting in this age group. This review addresses this gap by systematically reviewing the literature regarding adolescent sexting, specifically focusing on its forensic and mental health implications. By identifying the possible implications of sexting, it is hoped that this research can help to answer the growing discussion as to whether sexting is a cause for concern and follows a deviance narrative, or whether it is more normative in nature and an established part of teen behaviour concomitant with the use of mobile phone technology and the internet, despite it constituting child pornography laws in the United Kingdom.

Prevalence

Published data on adolescent sexting is scant compared to literature regarding adults, this makes it difficult to determine prevalence rates (Houck et al., 2014). A 2014 systematic review by Klettke et al. (2014) was not able to accurately establish prevalence rates due to variance in definition and sampling techniques. However, from the studies they identified they estimated adult prevalence at approximately 53.31%. They identified gender differences amongst adults, in that females were more likely to send sexts (Englander, 2012) whereas males were more likely to receive sexts (Dir et al., 2013). Contrarily, Hudson (2011) found that males were more likely to engage in sending and receiving sexts than females. Yet, others have reported no gender differences amongst those who sext (Benotsch et al., 2013; Drouin & Landgraff, 2012). The same review estimated adolescent prevalence rates to be much

lower (10-15%; Klettke et al., 2014). Similar gender differences to that observed in adults were replicated in teen samples (Bianchi et al., 2021; Casas et al., 2019). Again, some studies found no gender differences (Lenhart, 2009; Rice et al., 2012). Despite the inconsistent findings, these studies provide some evidence that the adolescent population is sexting, and is worthy of further exploration, particularly as several adverse outcomes have been identified as a result of this behaviour.

Sexual Risks

Common themes observed in the sexting literature relate to sexual risk behaviour. Many studies have identified associations between sexting and consumption of alcohol and/or drugs prior to sex (Benotsch et al., 2013; Temple et al., 2012), higher likelihood of having unprotected sex (Benotsch et al., 2013), higher number sexual partners (Benotsch et al., 2013), higher number romantic partners (Henderson, 2011), sexual disinhibition, sexual enhancement and sexual risk taking (Dir et al., 2013) and sexually transmitted infections (Benotsch et al., 2013). Specifically for adolescents Houck et al. (2014) found that sexting of any kind was associated with higher rates of engaging in a variety of sexual behaviours. Cause and effect are difficult to establish but the literature does indicate that sexting is a behavioural marker of sexual risk taking (Klettke et al., 2014) and thus worthy of continued clinical and academic enquiry.

Forensic Risks

Sexual risks are not the only implication to be linked with sexting. Wolak and Finkelhor, (2011) highlight that sexting can lead to non-consensual dissemination, blackmail, arrest and even sex offender registration. Dir et al. (2013) found that sending and receiving sexts was positively related to impulsive behaviour, a common feature of criminality and anti-social behaviour (Azevedo et al., 2020; Dir et al., 2013). In a Mexican high school, many participants reported to have received coercion, blackmail and teasing after having sexted (Rodríguez Otero, 2020). However, it does not appear that those engaging in sexting are aware of its potentially harmful effects. Weisskirch and Delevi, (2011) examined sending

sexts and participant's perceptions of associated risks in young adults and found that having engaged in sexting was not associated with differences in perceptions of the risks involved, suggesting that whether one sexts or not, there is no difference in individual's awareness of the potential risks. The majority of this sample was female, yet Henderson (2011) found that females were most likely to perceive sending sexts as serious and causing severe negative consequences, indicating the presence of possible gender differences in individual's perceptions of sexting. Moreover, Wei (2012) found that engaging in sexting was viewed as having a significant greater negative impact on participants who identified risks such as images being posted online or potential legal consequences, indicating that greater insight into the risks associated with sexting is linked to greater experience of these risks.

However, not all adolescents who sext are aware of the risks. In a sample of Australian based youth, over half of participants were not aware that sending a sext to someone under the age of 18 is considered illegal (Boulet et al., 2012). Whilst some forensic implications have been identified, literature regarding these within an adolescent population is sparce and so this review aims to systematically identify and draw together available findings within this under-researched population.

Mental Health Risks

Though forensic implications may impact an individual's mental health, some studies have directly examined the mental health implications of exchanging sexts. Hudson (2011) found no significant correlations between sexting behaviour, intent or attitudes towards sexting and measures of self-esteem. However, a stronger perception that sexting leads to 'hook ups' was associated with increased self-esteem (Hudson, 2011). Similarly, Gordon-Messer et al., (2013) found no significant differences in depression, anxiety, or self-esteem in those that send, receive, or engage in two-way sexting. However, Englander (2012) found that those who sexted under pressure were more likely to report experiencing anxiety and dating violence than those who were not sexting under pressure. In addition, Houck et al. (2014) found that adolescents who sent sexts reported more difficulties with

emotional competence including emotional awareness and self-efficacy. Thus, research indicates mixed effects of sexting on mental health, with some studies showing no significant correlations with self-esteem or symptoms of depression and anxiety, whilst others highlight that pressured sexting may lead to increased anxiety and emotional difficulties. Therefore, it is important to systematically review extant literature in light of these findings, to safeguard sexters from the possible adverse effects of sexting.

Aims and Objectives

The aim of this systematic review is to identify, quality assess and synthesise the findings of empirical research studies that explore the forensic and/or mental health implications of adolescent sexting. Given that a scoping search indicated a varying degree of consequences for teen sexting ranging from no impact to poor mental health outcomes and increased victimisation rates, the following objective is set out:

- To investigate what the mental health or forensic implications are for adolescents aged 10-19 who engage in sexting.

Method

A systematic approach to this review was undertaken to identify literature related to the forensic and mental health implications of adolescent sexting. This involved following the guidance of PRISMA (Moher et al., 2015) which included the systematic identification and development of a search strategy. A PRISMA checklist was used to guide the sections of this systematic review report (Appendix VIII) (Page et al., 2020).

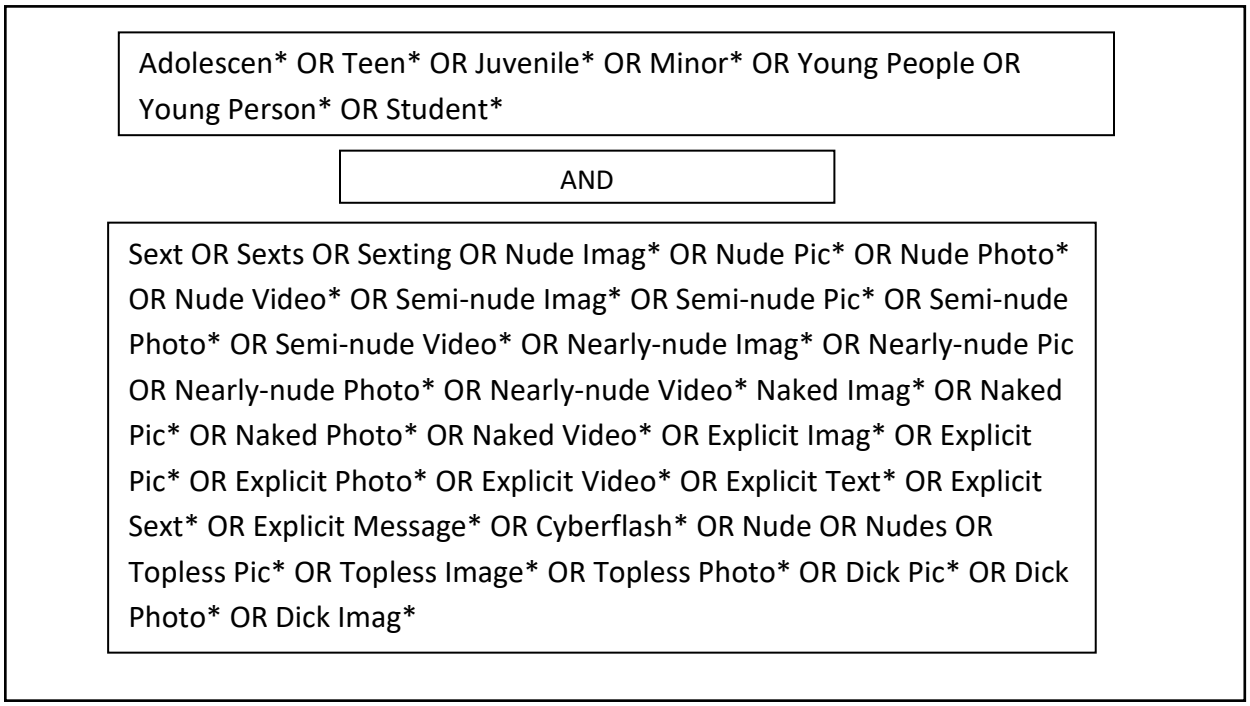
Search Strategy

Search Terms. To ensure that an exhaustive list of relevant search terms was developed, the key concepts of the review were identified, namely “sexting” and “adolescents”. Synonyms were then identified for these concepts. During the initial scoping exercise, additional search terms were identified to minimise the risk of missing literature that focused on elements of sexting that included lexicon not

previously considered such as “dick pic”. Figure 1 presents the list of terms used for electronic database searches.

Figure 1

Search Terms for Electronic Database Searches



Data Sources. Electronic databases were chosen based on their relevance to the research question and chosen thesis topic. Four electronic libraries (Ovid SP, Web of Science, ProQuest and PubMed) were used to search the following databases: PsycInfo; PsycArticles; ProQuest Central including Criminal Justice, Psychology, Public Health, Social Sciences, Sociology; Dissertation & Thesis; Social Sciences Premium Collection including Criminology, Social Science and Sociological Collection including ASSIA; Web of Science Core Collection. Open Grey, Nottingham eThesis and the electronic NSPCC library were also searched. References were managed through the EndNote management software.

Search Process

There were three stages to the searching process of this systematic review. The first stage was using the search terms identified to search the aforementioned electronic databases. The initial searches did not restrict article type (i.e. journal article/ book chapter etc). No date limit was employed as literature cannot pinpoint the start of exchanging sexual messages, one could guess that it would be in line with technological advances in mobile cellular technology, but it is possible, as identified in later chapters of this thesis, that sexting can be done by email which was utilised before the creation of camera phones. Therefore, not restricting date meant that all research pertinent to the search terms would be considered. Further, searches were not limited to English language only. This ensured that relevant international papers were explored. However, in the final stages of the inclusion process if a paper was unable to be translated into English, it was excluded from results. Secondly, manual searches of the reference lists of all full-text articles were screened for inclusion. The final stage involved contacting experts in the field who had conducted research relevant to the review question. 11 authors were contacted, six responded, but no additional references were identified.

Inclusion and Exclusion Criteria

A Population, Intervention, Comparison, Outcomes and Study (PICOS) framework was used to formulate this review's inclusion and exclusion criteria (Methley et al., 2014). The rationale along with the inclusion and exclusion criteria are presented in Table 1.

Table 1

Inclusion and Exclusion Criteria

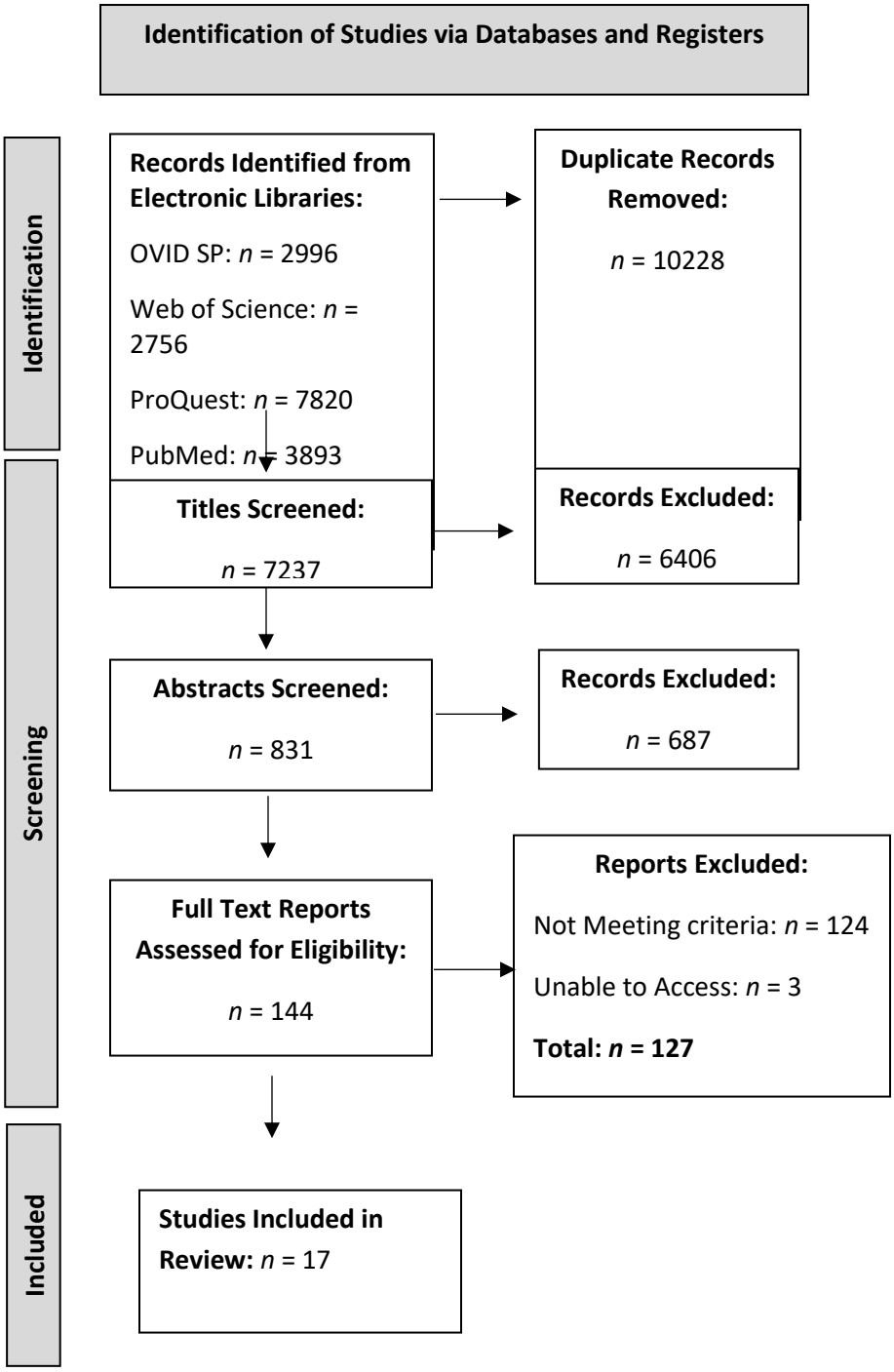
	Inclusion	Exclusion	Rationale
Population	Aged between 10-19 Organisation) Any sex/gender Any sexual orientation Any race or religion From any setting	Individuals under the age of 10 or above the age of 19	According to the World Health Organisation adolescents are defined as those aged between 10 and 19 years old. As this study solely focuses on the implications of sexting in adolescents, these age parameters were employed. This review is concerned about the general adolescent population, so any adolescent of any sex, gender, orientation, culture, or background are included
Exposure	Those who have engaged in the sending or receiving of sexting, defined as the exchange of electronic nude/semi-nude images or texts	Where sexting is not the exposure variable/ independent variable. Studies that examine the predictors of sexting.	The main focus of this review is the phenomenon of 'sexting'. As mentioned in the introduction, definitions of sexting do differ, so for the purpose of this review, the exchange of sexual images and messages will be included to increase access to research on the implications of this behaviour. Studies that look at the predictors of sexting, or where sexting is the dependent variable, or the outcome measure will be excluded.
Outcome	Any identified mental health, psychological wellbeing, psychosocial functioning or forensic implication, consequence, effect.	Where sexting is the outcome	This review focuses on the mental health or forensic implications of sexting in adolescents, so studies will be excluded if their outcome measure does not pertain to one or both of these areas.
Study Type/ Design	Quantitative studies. Empirical research Full text available in English	Qualitative studies Systematic reviews, meta-analysis, non-empirical research, editorials, letters, response pieces, biographies	Quantitative studies will be included to maximise validity and reliability and replicability of data collection. Findings will be restricted to empirical research studies only to ensure maximum validity and reliability and due to the large number of references expected from non-empirical studies.

Screening and Selection

17465 references were retrieved from the electronic database searches. Grey literature was not considered. After duplicates were removed, 7237 references remained. The titles of these were then screened for relevance against the inclusion criteria and 6406 records were removed. The abstracts of the remaining 831 references were then screened for relevance and a further 687 were removed. A remaining 144 full-text references were reviewed by the primary author by reading the full-text article. No additional articles were identified as a result of contact with experts in the field. A review of the full-text papers reference lists provided no further articles for consideration. 127 full text articles were excluded for not meeting the inclusion criteria. This left 17 articles remaining. The articles excluded and the reason for exclusion can be found in Appendix I. A PRISMA flow diagram of the full selection and screening process is presented in Figure 2.

Figure 2

PRISMA (2020) Flowchart for Screening and Selection Process



Quality Assessment

Each full text paper included in this review was subject to a quality assessment process. This involved systematically reviewing each study's recruitment strategy, sample, the validity and reliability of results and any possible biases. An adapted version of the Critical Appraisal Skills Programme Cohort Checklist (Critical Appraisal Skills Programme, 2018) and the Axis Appraisal Tool for Cross-sectional studies (AXIS; Downes et al., 2016) was utilised in this review. This was due to the final sample consisting of mixed study designs (cross-sectional, longitudinal, etc). The final checklist consisted of 19 questions that were applicable to all studies except for one question (item 12) which referred specifically to longitudinal studies. A copy of this form can be found in Appendix II.

A scoring system was used whereby Yes = 2 (criteria met), Partial = 1 (criteria partially met), No = 0 (criteria not met). For any items where information was missing or not clear, a score of 0 was given. The maximum score for cross sectional studies was 36 and for longitudinal studies it was 38. Item 19 was reverse scored. Overall scores were converted into percentages. A table consisting of all 17 included studies quality assessment data can be found in Appendix III.

No studies were excluded on the basis of quality, as regardless of quality, they had something to contribute to the review. However, their findings will be reviewed in light of their quality assessment to determine how reliable, valid, and replicable their results are. A secondary reviewer was not employed to check the quality assessment of a proportion of the included studies. This is not considered to be best practice for systematic reviews. This is acknowledged as a limitation of this review and highlights the subjective nature of the quality assessment process. However, research by Waffenschmidt et al. (2019) acknowledge that despite some papers being missed in a single author review, overall, this does not impact on review findings. In addition, there has also been an increase in single author reviews indexed in PubMed (Pacheco et al., 2023). This demonstrates that although double screening is considered best

practice, it is still ethical and of a publishable standard to conduct a systematic literature review with a single reviewer.

Data Extraction

Following quality assessment, data were extracted from the 17 included studies using a predefined form developed specifically for this review (see Appendix IV). Information relevant to the research question was extracted and are later presented in 29.

Methods of Synthesis

A narrative synthesis approach was employed on the final 17 studies. This approach was deemed most suitable for the current review due to the heterogeneity of studies.

Results

Quality Assessment

Overall, methodological quality of included studies was good. All studies clearly reported data on the age of included respondents and the majority recruited their sample such that results could be generalised to the general adolescent population (except for one, which focused solely on privately schooled adolescents). However, there were some discrepancies amongst the included studies in terms of the definition of sexting and thus influenced their reporting of results. Despite this, all studies adequately assessed outcomes of sexting in terms of mental health or forensic implications. Refer to Appendix III for a tabulated quality assessment of all 17 studies.

The 17 articles synthesised are listed in Table 2 and throughout the following section will be referred to by their numerical assignment. Table 3 summarises the relevant study aims, characteristics, findings, and quality of each included reference.

Table 2

Author and Titles of Included Articles

Study Number	Author(s)	Title
1	Alonso and Romero (2019)	Sexting behaviour in adolescents: Personality predictors and psychosocial consequences in a one-year follow up.
2	Burić et al. (2020)	Is sexting bad for adolescent girls' psychological wellbeing? A longitudinal assessment in middle to late adolescence.
3	Chaudry et al. (2017)	Sexting and mental health: A school-based longitudinal study among youth in Southeast Texas.
4	Del Ray et al. (2019)	Sexting among adolescents: The emotional impact and influenced of the need for popularity.
5	Gamez-Gaudix and Mateos-Perez (2019)	Longitudinal and reciprocal relationships between sexting, online sexual solicitations and cyberbullying among minors.
6	Kurup et al. (2022)	A longitudinal investigation of observed adolescent text-based sexting and adjustment.
7	Lu et al. (2021)	Multiple forms of sexting and associations with psychosocial health in early adolescents.
8	Mori et al. 2021)	Patterns of sexting and sexual behaviours in youth: A latent class analysis.
9	Ng et al. (2022)	Sexting and behavioural health in first-time justice-involved adolescents.
10	Rice (2016)	Distributing sexually explicit images: Teens, text messages and self-esteem.
11	Rodriguez-Castro et al. (2021)	Validation of the sexting behaviour scale in adolescents: Prevalence and associated consequences.
12	Temple et al. (2014)	Brief report: Teen sexting and psychosocial health.
13	Van Ouytsel et al. (2019)	Longitudinal associations between sexting, cyberbullying, and bullying among adolescents: Cross-lagged panel analysis.
14	Van Ouytsel et al. (2021)	Sexting, pressured sexting and associations with dating violence among early adolescents.
15	Villacampa (2017)	Teen sexting: Prevalence, characteristics and legal treatment.
16	Wachs et al. (2021)	How are consensual, non-consensual, and pressured sexting linked to depression and self-harm? The moderating effects of demographic variables.
17	Ybarra and Mitchell (2014)	"Sexting" and its relation to sexual activity and sexual risk behavior in a national survey of adolescents.

Table 3

Summary of Extracted Data

Study No	Study Characteristics		Sample	Findings and Conclusion in Relation to Review Question		Quality Rating
	Aims, Design & Study Location	Definitions, Measures, and Reliability/ Validity of Key Concepts	Participant Characteristics	Analysis and Relevant Findings	Conclusions, Strengths, Limitations	
1	Aims: To examine the potential consequences of sexting both in terms of externalising and internalising dimensions of adolescent behaviour, specifically aggression-victimisation behaviour (both in-person and online) and emotional wellbeing. Design: Cohort/Longitudinal Locations: Spain: Secondary schools	Sexting: Active and consensual (voluntary) sexting behaviour including the sending of sexually explicit photos, videos, and text messages. Frequency of Sexting Questionnaire Timepoint 1 (T1; 2015): = .84 Timepoint 2 (T2; 2016): .84 Bullying: Hitting, insulting, threatening, robbing, using offensive language, excluding, or spreading rumours. Spanish version of European Bullying	Age: 12 – 19 *M* = 14.35 (*SD* = 1.55) No ethnicity breakdown provided. Sample: T1: *N* = 910 T2: *N* = 624 Retention rate of 69%	Analysis: Correlation analyses carried out between sexting and potential consequences measured in both time periods Hierarchal regression Findings: T1 and T2 sexting are significantly related to all criteria assessed at both time points (except T1 sexting and T2 victimisation and negative emotions & T2 sexting and positive emotions in T1 and T2)	Conclusion: At 1 year follow up, sexting predicts decrease in traditional levels of victimisation and positive emotions. Sexting is associated with decreased levels of emotional wellbeing of youth. Sexting is associated with subsequent reductions in the level of positive emotions. Strengths: -Empirical longitudinal study examining	31/36 86.11%

	Intervention Project Questionnaire (EBIPQ) Victimisation domain: T1: α = .90 T2: α = .84 Aggression domain: T1: α = .91 T2: α = .82 <u>Cyberbullying:</u> Using offensive language, excluding, or spreading rumours, supplanting one's identity, etc. Spanish version of European Cyberbullying Intervention Project Questionnaire (ECIPQ) Cybervictimisation: T1: α = .87 T2: α = .85 Cyberaggression: T1: α = .85 T2: α = .86	No significant predictive effects from sexting were obtained for aggression, cybervictimisation, cyberaggression and negative emotions. T1 sexting significantly contributes to regression model, with negative coefficient in its prediction of T2 victimisation, indicating that a high score in T1 sexting predicts decrease in victimisation experiences between T1 and T2 Positive Emotions: Sexting has a significant and negative coefficient in its prediction of positive emotions in T2, having high score of sexting in T1 predicts decrease in positive emotions	antecedents and consequences of adolescent sexting. -Helped to examine psychosocial consequences not previously analysed from a longitudinal perspective <u>Limitations:</u> -Additional long-term studies are needed -Study does not establish cause and effect relationship between variables although it does suggest predictive effect which are compatible with the potential influence of personality on sexting and of sexting on victimisation and positive emotions. -Only self-report data

		Positive and Negative Affect: Positive and Negative Affect Scale (PANAS) Positive Affect: T1: α = .87 T2: α = .85 Negative Affect: T1: α = .88 T2: α = .88		experienced between T1 and T2 Results do not appear to vary by gender The effect of sexting on victimisation and on positive emotions remains significant even when controlling for the effect of personality Sexting behaviour has a significant and negative coefficient in its prediction of victimisation (-12, $p < .01$) and positive emotions (-10, $p < .05$)		
2	Aims: To assess the relationship between adolescent girls' sexting and psychological well-being indicated by self-esteem and the absence of internalising problems i.e., depression and anxiety symptoms) over a period of approximately 20 months	Sexting: Sexual message, sexy photograph, or sexy video clip of oneself to someone. Author developed summative scale consisting of 3 items Composite Indicator:	Age: *M*age at baseline = 15.8 (SD = .50) (High-school sophomores) Sample: Female Only *N =*	Analysis: Latent Growth Curve Findings: The frequency of sexting was consistently and positively associated with depression and anxiety symptoms.	Conclusion: An increase in sexting over a 20-month period during middle to late adolescence is unrelated to changes in psychological wellbeing.	37/38 97.4%

that mark the transition from middle to late adolescence. <u>Design:</u> Longitudinal <u>Location:</u> Croatia: School classrooms.	Good reliability α = .65 - .79 6-month stability zero-order correlation coefficient: *r* = .69 - .43 <u>Psychological Wellbeing:</u> <u>Self-esteem:</u> 4 items from longitudinal study of teenagers α =.81 - .83 6-month stability: *R* = .74 - .62 <u>Depression/Anxiety:</u> Patient health questionnaire for depression and anxiety (PHQ-4) Composite indicator: Good reliability α = .83 - .85	T1 (December 2015) = 763 T2 (April 2016) = 743 T3 (October 2016) = 742 T4 (April 2017) = 713 T5 (October 2017) = 582 <u>Other Characteristics:</u> -Living with parents (76.8%) -College educated father (33.2%) -College educated mother (33.8%) -Enrolled in high school preparing for tertiary education (30.7%) -No religious attendance (15.4%) -Monthly or more frequent attendance (28%) -Acknowledge experience of sexual intercourse (20.2%)	The relationship between sexting and self-esteem was mostly negative but did not reach statistical significance. Cumulative growth in sexting and linear growth in self-esteem were positive, indicating an increase in the two constructs over time. Cumulative growth in depression and anxiety was negative. Only one of eight associations between sexting and the indicators of psychological wellbeing were statistically significant: the link between frequency of sexting and internalising problem levels at baseline, *r* = .24, SE = .23, *p* < .001 Relationships between internalising	Controlling for parental and peer influence, found no significant association between changes in sexting and changes in self-esteem or depression and anxiety among Croatian adolescent females over 20 months. <u>Strengths:</u> -5 wave longitudinal assessment spanning 20 months -Large panel sample -Use of a robust analytical approach <u>Limitations:</u> -Observed attrition bias (underrepresentation of adolescent girls with lower academic achievement) -Only measures two important measures of psychological wellbeing

		6-month test-retest reliability reasonable *R* = .64 - .47		problems and self-esteem were consistently significant and mostly negative. The LGC model was repeated with only Ps that were present in all five data collection waves. Pattern of non-significant paths remained identical to the original model with one exception: covariance connecting sexting at baseline with latent growth in depression/anxiety symptoms reached statistical significance $p < .001$. Associations were moderate and negative $r = -.31$, SE = .31) indicating higher baseline pornography use was related to lower growth in negative mood symptoms over time.	-Did not examine whether experience of having one's sext shared without consent or if having been shamed or bullied for sexting are relevant mediators of the key association. -Reported findings maybe culture specific.	
3	Aims:	Sexting:	Age:	Analysis:	Conclusion:	34/38

	To examine longitudinal association of sexting with anxiety and depression symptoms among early adolescents Design: Cohort, longitudinal using data from a retrospective analysis using data from a 3-year randomised two arm nested evaluation study Location: USA; 10 Middle schools in a large urban school district in southeast Texas.	The practice of sending or posting sexually suggestive text messages, videos and images including nude or semi-nude photographs or videos via cellular telephones or over the internet (such as email or social networking sites like Facebook) Author developed 5 questions: no comment on validity/reliability. Anxiety: Generalised Anxiety Disorder-7 (GAD-7) - Well validated screening tool for detecting GAD among youth. Depression: Modified Depression Scale (MDS) - No comment on reliability or validity.	6th grade (range: 11-12) *M*age 12.2 (SD = 0.57) Sample: Baseline: *N* = 826 Follow up: *N* = 500	Univariate logistic regression to estimate unadjusted odds ratios for relationship between sexting and anxiety symptoms. Multivariate logistic regression to examine relationship between sexting and anxiety symptoms controlling for potential confounds Assessed fit of assumptions of model using goodness-of-fit tests and regression diagnostics. Similar approach for sexting and depression then multi-level modelling for analysis to adjust for any intraclass (ICC) among students within same school. Findings: Univariate analysis: Youth who reported	Sexting was associated with anxiety and depression symptoms after adjusting for important confounds. Strengths: -One of the first longitudinal studies to report that sexting is associated with poor mental health outcomes Limitations: -Did not assess sexual behaviour so could not control for this in the analysis -Self-report data only -Perceived social desirability influence responses -Convenience sample design including a single urban district in south-east Texas, so generalisability may be limited -Did not assess frequency of sexting	89.5%

		sexting had significantly greater odds of anxiety symptoms than those who did not report sexting (OR = 2.48, 95% CI [1.43, 4.32]) Adjusted OR (adjusting for covariates): Sexting remained significantly associated with anxiety symptoms (OR = 1.87, 95% CI [1.05, 3.61]) Youth who reported sexting had greater odds of depressive symptoms compared to those who did not report sexting (OR = 2.50, 95% CI [1.25, 5.02]) Adjusted model: Sexting in the 6th grade significantly associated with depressive symptoms during 7th grade (OR = 2.52, 95% CI [1.12 - 5.67])	-Selection bias due to missing data

4	Aims: To analyse the potential emotional impact of sexting Whether different types of sexting (primary and secondary) affect those involved in it emotionally Whether the need for popularity is related to both types of sexting and its emotional impact Whether the aforementioned relationships vary by gender Design: Within-subjects design Location: Spain: 12 secondary education (ESO) schools, 3 of which publicly funded private institutions (Concertados) from the south of Spain	Sexting: Primary sexting: When minors send sexts between two people and do not share any further Secondary sexting: Someone shares sexts, and they are forwarded beyond the intended recipient Assessed by four direct questions relating to primary and secondary sexting involvement Emotional Impact: Adaptation of Cybervictimization Emotional Impact Scale (CVEIS) Active: Animated, energetic, lively, satisfied, proud, ready, clear headed, determined, daring, active, alert Depressed: Tense, nervous, guilty, scared, afraid, lonely, ashamed, defenceless,	Age: 11 – 18 years old (*M* = 13.72, *SD* = 1.31) Primary: *M* = 14.34, *SD* = 1.24 Secondary: *M* = 14.16, *SD* = 1.26 Sample: Primary Sexting: *N* = 263 44.5% Girls 55.5% Boys Who had or having had a dating partner in last 3 months and had sent and/or received sexts at least once. Secondary Sexting: *N* = 621 41% Girls 59% Boys Having Forwarded and/or To Have Been Forwarded	Analysis: Two structural equation models, one for each type of sexting and the emotional impact dimensions. Gender invariance of the models was also tested. Models were estimated via Robust Maximum Likelihood Method, adjusted to the ordinal nature of the study variable. Fit of the models were tested using the following indexes: Satorra-Bentler Scale Chi Square, Robust Comparative Fit Index, Non-Normality Fit Index, The Root Mean Square Error of Approximation, and Standardised Root Mean Square Residual. Hierarchal Strategy Used.	Conclusion: Sexting does have an emotional impact on those involved, which does not differ by type of sexting or gender. This emotional impact is not obviously negative, impact is instead linked to active emotions such as lively, energetic, satisfied, ready, determined, active. Emotions considered negative, related to sadness and depression, or angered annoyance were not associated with sexting. Emotional impact behind both types of sexting is similar in boys and girls Strength: -No previous instrument applied to assess emotional	77.7% 28/36

	helpless, depressed, sad, fed up, jittery, worried Annoyed: Angry, annoyed, irritable, in a bad mood, choleric, enraged Primary Sexting: *r* = 0.97 Secondary Sexting: *r* = 0.97 CFA adequate	Sexts At Least Once.	<u>Findings:</u> Neither model showed adequate statistical adjustment in two structural equation models with emotional impact. Contribution of depressed and annoyed emotional impact to the models was minimum. Annoyed Impact: R^2 was 0.005 primary sexting and 0.009 secondary sexting Depressed impact: R^2 was 0.013 primary sexting, 0.003 secondary sexting The models were tested again exclusively to active impact factor, which demonstrated clear relationship to both types of sexting. All models achieved optimal fit.	impact in sexting episodes <u>Limitation:</u> -Measures applied in this study have shown some restrictions. -Did not assess whether content sent had been distributed to 3rd parties without sender's prior consent or about different motivations which could be behind sexting

				Invariance analysis to verify the extent to which these two models were valid for boys and girls found that both models showed gender invariance with the only exception of the most restrictive model structural model in secondary sexting. The RLMT identified equality in sexting as the to-be-released constraint.		
5	Aims: To analyse the bidirectional and longitudinal relationships between sexting, online sexual solicitation, and cyberbullying Design: Repeated measures longitudinal cohort study Location: Spain: 11 secondary schools	Sexting: The creation and exchange of text messages, photos, or videos with sexual or erotic content via the internet or smartphone The Sexting Questionnaire T1: α = 0.70 T2: α = 0.72 (one year apart) Cyberbullying: Intentional and	Age: 12 – 14 *M* = 13.65, *SD* = 0.79 Sample: *N* = 1924 Other Characteristics: 53.2% Girls 45.9% boys 93.6% Spanish 4.3% South American 0.8% European	Analysis: Structured Equation Modelling Findings: At cross-sectional level (T1), the relationship between sexting, cyber-bullying and sexual solicitation were significant, ranging from 0.21 - 0.26 At longitudinal level, the autoregressive	Conclusion: Sexting predicted receiving sexual solicitations by an adult after one year. Sexting was found to increase the probability of being a victim of cyberbullying at the follow-up. Results indicate a bidirectional relationship between	35/38 92.11%

		repeated aggression carried out in an electronic context against people who cannot defend themselves Short version of the victimisation subscale of Cyberbullying Questionnaire T1: α = 0.63 T2: α = 0.61 <u>Online sexual solicitation:</u> Adults online request for a minor to participate in sexual activities or conversations or to provide sexual information of a personal nature Sexual solicitations and interactions of minors with adults T1: α = 0.86 T2: α = 0.86	0.8% Asian 0.3% African 0.2% North American	relationship between given variable at T1 and the same at T2 were also significant ranging from 0.26 - 0.39 Participating in sexting at T1 was found to significantly increase the probability of reporting T2 sexual solicitation T1 sexting was found to increase the probability of T2 cybervictimisation. No significant differences in gender for these relationships were found.	sexting and both sexual solicitations and cyberbullying among minors <u>Limitations:</u> -Self-report data -Internal consistency of cyberbullying scale as only modest (0.60) lower than the standard considered adequate 0.70 -Spanish minors, so generalisability to other cultures -Only focused on reciprocal relationships among three risks of the internet	
6	<u>Aims:</u>	<u>Sexting:</u>	<u>Age:</u> 14 – 18	<u>Analysis:</u>	<u>Conclusion:</u>	24/38

To investigate adolescents observed text-based sexting in relation to both negative and positive aspects of psychosocial adjustment. <u>Design:</u> Longitudinal and within-year between-pp and within-pp <u>Location:</u> USA: Multiple high schools	Text based messages about sexual behaviour that occurred within-dyad (I.e., involving the sender and receiver rather than anyone outside the conversation) Observational methods of text-based sext messages over a 4-year period. Selecting a 4-day period over each 4 years. <u>Negative Adjustment:</u> -Internalising Symptoms -Externalising Symptoms - Social Problems - Borderline Personality Features 112-item Achenbach System of Empirically Based Assessment Youth Self-Report Internalizing Scale: α = 0.87 - 0.91	*M* = 13.93 <u>Sample:</u> *N* = 197 <u>Other Characteristics:</u> 53% White 22% Black 18% Hispanic 7% Other/mixed race	To test within-year and longitudinal associations between sexting and adjustment series of multilevel models conducted in Mplus8 Multi-group analysis <u>Findings:</u> Engaging in sexting more on average than one's peers was not associated with any measure of adjustment after false discovery rate correction ($p > 0.03$) After correction engaging in sexting more at one assessment point than one's average was negatively related to group belonginess. ($p > 0.07$) After accounting for family-wise error rate correction, text-based sexting more than one's own average in one year did not	Text based sexting was not significantly related to adjustment outcomes with the exception of group belongness. Girls, but not boys, who engaged in more text-based sexting than their peers also reported significantly poorer adjustment for several outcomes. Girls who engage in more text-based sexting than their peers may be experiencing greater psychosocial difficulties. Text based sexting relates to lower belongingness <u>Strengths:</u> -Longitudinal design -Observational methods	89.5%

	Externalising Scale: α = 0.85 - 0.91 Social Problems Syndrome Scale: α = 0.72 - 0.83 Mclean Screening Instrument for BPD (MSI-BPD): α = 0.74 - 0.80 <u>Positive Adjustment:</u> -Life satisfaction -Group belongingness -3 Relevant dimensions of positive self-perceptions; social competence, behavioural conduct, global self-worth Life satisfaction: α = 0.79- 0.84 Feelings of belonginess within their friend group 14-item group belonging scale: α = 0.83 - 0.85 45-item self-Perception Profile for adolescents.	predict adjustment in the following year (p > 0.006) For girls, sexting more than others was related to increased internalising problems, externalising problems, BPD features and decreased life satisfaction, group belongingness, self-perceived social competence, and global self-worth For boys, sexting more at one time point than one did on average was related to decreased social problems, but not stronger than girls.	-Inclusion of within and between participants -Examination of gender difference <u>Limitations:</u> -Only examined amount of sexting, not context or content specific -Data collected from 2008 – 2012, digital communication has evolved since then -Impossible to code 27 million text messages, so sample days (a-priori) selected, may not wholly reflect sexting practices across four years of the study -Ps were allowed to use other devices, could not control their use elsewhere -Limited to text-based sexting -Only considered binary gender identity

		- measuring various facets of self-concept. Assessed scales of social competence (α = 0.82 - 0.83) Behavioural conduct (α = 0.77 - 0.83) Global self-worth (α = 0.83 - 0.85)				
7	Aims: To explore multiple forms of sexting including sending sexts under pressure vs without pressure/consensual, receiving unsolicited sexts, forwarding sexts without permission, asking someone for sexts and being asked to send sexts and examined their associations with a range of psychosocial health problems (symptoms of depression, anxiety, impulsivity, hostility, emotion dysregulation and aggressive temperament) Design: Cross-sectional	Sexting: Sending, receiving, forwarding of sexually explicit messages, images, or videos through electronic means Report yes/no to a series of questions developed by the authors Psychosocial Implications: -Depressive symptoms -Anxiety -Impulsivity -Hostility -Emotion dysregulation -Aggressive temperament	Age: 12- 14 *M* age13.53, *SD* = 0.50 Sample: *N* = 2199 Other Characteristics: 35.4% Hispanic 7.9% Non-Hispanic White 26.2% Non-Hispanic Black 18.6% Asian 5.6% Other 6.3% Unknown/Not Reported	Analysis: Multilevel multivariate regression analysis to examine associations between sexting and psychosocial health controlling for age, gender, race, and exposure to intervention Findings: Sending sexts under pressure positively associated with hostility b = 0.04, $p < 0.05$ and aggressive temperament b = 0.06, $p < 0.05$	Conclusion: Pressured sexting is associated with poor psychosocial health (Hostility and Aggressive Temperament) Receiving unsolicited sexts is linked to psychosocial health Early adolescents who have been asked to send a sext were at particularly high risk of reporting symptoms of Depression, Anxiety, Impulsivity, Hostility, Emotion Dysregulation and	31/38 81.6%

Location: 24 Schools in Texas, USA.	Centre for Epidemiologic Studies Short Depression Scale: α = 0.75 Generalised Anxiety Disorder Subscale of the Screen for Child Anxiety Related Emotional Disorders: α = 0.88 4-item Impulsiveness Scale from Teen Conflict Survey: α = 0.79 Symptom Checklist –90: α = .87 11-items from BP Features Scale for Children: α = 0.92 Aggression Subscale of Early Adolescent Temperament Scale: α = .85	Receiving unsolicited sexts was associated with Depression b = 0.09, $p < 0.001$, Impulsivity b = .10, $p < 0.001$, Hostility b = 0.14, $p < 0.001$, Emotional Dysregulation b = 0.14, $p < 0.001$ and Aggressive Temperament b = 0.14, $p < 0.001$ Forwarding sexts without permission associated with Hostility b = 0.05, $p < 0.05$ Asking someone for sexts associated with Impulsivity b = 0.07, $p < 0.05$ and Aggressive Temperament b = 0.07, $p < 0.05$ Being asked to send sexts associated with Depression b = 0.12, $p < 0.001$, Anxiety = 0.09, p < 0.01, Impulsivity b = 0.11, $p < 0.001$, Hostility b =	Aggressive Temperament. Forwarding sexts without permission linked to Hostility Consensual sexts were unrelated to poor psychological health Limitations: -Cross-sectional associations between sexting and psychosocial health, no causal inferences can be made. -Number of Ps reported having sent sexts, asked for sexts, or forwarded sexts without consent was relatively small 2.6 - 4.5% of sample -Included variables were not exhaustive -Survey did not include mental health treatment histories

				0.11, $p < 0.001$, Emotion Dysregulation b = 0.11, $p < 0.001$ Aggressive Temperament b = 0.08, $p < 0.01$ After controlling for age, gender, race, intervention exposure and other forms of sexting, sending consensual sexts not associated with poor psychosocial health of any kind.	-Associations between sexting psychosocial health may differ by gender, race, ethnicity, socioeconomic status, sexuality, and other demographic factors, but not measured here. Strengths: One of first studies to examine multiple forms of sexting and psychosocial health	
8	Aim: To determine whether certain latent classes (e.g., high sexting behaviours class) are more or less likely than other classes (e.g., low sexting behaviour class) to experience symptoms of depression. Design: Longitudinal. Study was repeated annually for seven waves 2010 – 2017) Location:	Sexting: Sending, receiving, asking for sexts (naked pictures) 3-items developed by the authors Depressive symptoms: Centre for Epidemiologic Studies Depression Scale (CES-D-10) Wave 3 α = 0.77 Wave 4 α = 0.71	Age: *M*age = 17.4 (*SD* = 0.77) Sample: *N* = 894 Other Characteristics: 32% Hispanic, 29.9% white 26.5% African America 11.6%Other 55.8% female	Analysis: Latent Class Analysis 4 classes: 1: No Sexting - Low Sex 2: Sexting - Low Sex 3: No sexting – Moderately Risky Sex 4: Sexting – Moderately Risky Sex (High Probability Sexting, High Probability Sexual Intercourse, Moderate Probability	Conclusion: Symptoms of depression were significantly higher among youth who occupied class characterised by higher probability of sexting and sexual activity, only in comparison to no-sexting low-sex latent class. Youth engaging in a range of potentially	32/38 84.2%

7 public high schools in Texas, USA	71% Grade 11 24.6% Grade 12	Engaging Risky Sexual Behaviours) <u>Findings:</u> Significant difference between no-sexting low-sex class and sexting –moderately risky sex at wave 3 (X^2 (1) = 8.16, p = 0.004) No-sexting low-sex class reported significantly fewer depressive symptoms (M = 18.10, SE = 0.30) than the sexting-moderately risky sex class (M = 19.55, SE = 0.42) After correcting for multiple contrasts, no significant differences in depressive symptoms were found between classes at Wave 4.	risky behaviours such as sexting and sexual activity are more likely to experience mental health difficulties or vice versa. No differences were observed between sexting low-sex class and either of the no-sexting classes, indicating that symptoms of depression are more pronounced or present when considering a range of risky sexual behaviour, rather than only when observing sexting behaviour in isolation. Assessing depressive symptoms one year later revealed no significant differences between classes.

							Sexting and depression displayed a concurrent but not long-term association. <u>Strength:</u> -First study to employ person-centred approach to detect adolescents sexting profiles and their relation to depressive symptoms <u>Limitations:</u> -Ps recruited from same region in Texas - Mean age 17 (older adolescents) - Data collection in 2012-2013, accessibility to tech devices have changed rapidly over last decade -Self-report measures -Sexting was measured based on images only, not text or videos

					-Receiving sexts measured only by asking about unwanted sexual images.	
9	Aims: To examine concurrent associations of past-year sexting and recent behavioural health problems (delinquency and mental health problems including trauma symptoms, internalising problems, and adaptive functioning). Design: Cross sectional Location: Family court in a large north-eastern state of USA	Sexting: Electronic transmission of sexually explicit messages via text, pictures, or videos. Modified measure of tech use and sexting Delinquency: National youth Survey of Self-Reported Delinquency (NYS-SRD) Mental health: National stressful events survey PTSD Short scale (NSESSS) Behavioural Assessment Scale for Children, 2nd ed (BASC-2) (including items on Mental Health and Adaptive Functioning) IC: 0.84 - 0.95 Internalising problems and personal	Age: 12 - 18 *M*age = 14.5 (*SD* = 1.58) Sample: *N* = 307 Other Characteristics: Female 44.6% White 50% Other Race 22% Latino 43.2% American Indian 9.5% Asian 1.4% Black/ African/ Haitian 14.5% Mixed Race 17.6% (Ps could select more than one race so ethnicity does not equal 100%)	Analysis: Binary logistic regression analysis: past year sexting as predictor Each logistic regression analysis followed up with Hosmer-Lemeshow Goodness-of-Fit Test and the Box-Tidwell Approach to test the linearity of the logit assumption Findings: Past year sexting significantly associated with all 4 measures of delinquency. Compared to non-sexters, past year sexters had higher odds of engaging in any Delinquent behaviour (*n* = 268,	Conclusion: Sexting co-occurred with multiple behavioural health problems Sexting may be one of many co-occurring risky behaviours among justice involved adolescents. Past year sexters were more likely to engage in health risk behaviours and experience clinical-level internalising problems. Past year sexters more likely to engage in recent delinquent acts including property related acts and violent acts. Past year sexters more likely to	32/38 84.2%

	adjustment composite scale	OR = 3.61, 95% CI [1.96, 6.64]) as well as specifically in Property-related Acts (*n* = 261, OR = 2.95, 95% CI [1.28, 6.85]) and in Violent Acts (*n* = 266, OR = 3.00, 95%CI [1.42, 6.31]) in past 4 months. Past year sexters had a higher general delinquency score (i.e., higher incidence rate of categories of delinquent behaviour (*n* = 268, IRR = 0.87 [0.40, 1.89]) Past year sexting was significantly associated with some mental health outcomes. Compared to non-sexters, past-year sexters had higher odds of experiencing Trauma Symptoms at the Moderate level or Higher (*n* = 22, OR = 2.45, 95% CI [1.04,	experience elevated trauma symptoms Findings provide evidence that past year sexting functions as a risk marker of multiple co-occurring health risk behaviours and mental health problems even within an adolescent population with elevated rates of such behaviours and problems. <u>Strengths:</u> One of very few studies examining sexting in vulnerable youth population and first to do with community supervised youth with first time offense, as well as with justice involved girls. <u>Limitations:</u> -Cannot establish whether sexting is

		5.78]) and clinical-range Internalizing Problems (*n* = 228, OR = 2.53, 95% CI [1.09,5.89]). Past year sexting was not associated with adaptive functioning (*n* = 231, OR = 1.18, 95% CI [0.47 - 2.95])	risk factor for behavioural health problems as the cross-sectional design precludes examining the temporal order of whether sexting is preceded or followed behavioural health problems -Past year timeframe of sexting measure was not contemporaneous with measures of psychopathology and other risk behaviours -Results may not generalise to youth with repeated offenses, those who are detained, or those from other jurisdictions, -Missing data may limit validity of findings -Results may be biased due to some difference between participants -Dichotomized lifetime and past-

					year sexting variables did not offer insight into frequency at which youth sexting -Sexting and other risky behaviours may be underreported	
10	Aims: To investigate the difference in self-esteem for those who send and receive images of sexual body parts and those who do not. Does being caught and suffering consequences for sending and receiving images of sexual body parts impact self-esteem? Design: Cross sectional Location: Online data collection in USA	Sexting: Text messaging nude or semi-nude photographs of sexual body parts Asked series of yes/no questions relating to sexting behaviour Self-esteem: Persons overall valuation of his or her worth and value Rosenberg Self-Esteem Scale (RSES).	Age: 18 – 19 4% 18 years old 96% 19-year-olds Sample: *N* = 75 Other Characteristics: Males (*n* = 29, 38.7%) Females (*n* = 46, 61.3%) White/ Caucasian: 80% Hispanic/ Latino: 8% Asian: 5.3% Black/African American: 4% Native American/ Native Alaskan: 1.3% Other: 1.3%	Analysis: Chi square used to allow for level of self-esteem to be predicted for sexters and non-sexters, those formally charged with sexting and those who were not. Findings: More sexters were found to have Low Self-Esteem. 11/39 Sexters (28.2%) had Low Self-Esteem 6/36 non-sexters (16.7%) had Low Self-Esteem 23/39 Sexters (69.2%) and 27/36 non-sexters (75%) had Normal Self-Esteem	Conclusion: Self-esteem did not appear to have a relationship to sexting. Both sexters and non-sexters varied in self-esteem levels (low, normal, high) along the proportions seen in the general population used to validate the RSES. Although this study did not find statistically significant connection between self-esteem and sexting, it is important to recognise that sexting could impact various aspects of a	23/38 63.9%

	5/39 Sexters (12.8%) and 3/36 non-sexters (8.3%) High Self-Esteem No statistically significant differences between engaging in sexting and self-esteem Of the 4 Ps who had been caught sexting, 3 suffered a consequence: parental discipline, relationship ending, jail. Self-esteem among those caught and suffered consequences was low (*n* = 2) and normal (*n* = 1) The relationship between self-esteem and being caught and suffering as a consequence demonstrated no statistical significance.	teen's life, which could decrease self-esteem. Just 2.5% of sexters suffered a consequence that involved the criminal justice system. Self-esteem level did not appear to have a relationship to being caught or suffering a consequence of sexting. Although there was no statistical significance found between self-esteem and those caught and/or suffered consequence, it is important to recognise these individuals did suffer a negative consequence. Others who were caught reports consequences ranging from social

				No statistically significant correlation between sexting and level of self-esteem among 18- and 19-year-olds.	isolation to self-harming. Limitations: -Small sample size -Homogenous sample -Online nature; participants could have been anywhere in the world, and this excluded those without internet access -Information gathered could have been more thorough -More females than males -Ps were not asked if sexting experiences were positive or negative -Quantitative format limited responses	
11	Aims: To identify the consequences associated with sexting behaviour Design: Within-subjects design Location:	Sexting: Send photos and/or videos with erotic/sexual content and sending text messages with sexual content	Age: 14 – 19 *M* age = 15.60 (*SD* = 1.13) Sample: Students: *n* = 1271	Analysis: Descriptive statistics and Frequencies Findings: *N* = 666 sexters. 11.6% identified (*n* = 76; 23 boys, 53 girls)	Conclusion: In relation to people who had carried out sexting behaviour the following consequences were identified; 11.6% of adolescents stated that they were	19/36 52.8%

	16 public secondary education schools in Spain	Sexting Behaviours Scale Adaptation (Spanish Translation) α = .86 <u>Issues related to coercion and blackmail:</u> Author developed direct questioning with yes/no answers	Sexters: *N* = 666 <u>Other Characteristics:</u> 50.8% girls (*n* = 646) 49.2% boys (*n* = 625) 91% Spanish 9% Latin American and European	they had been forced or coerced to send erotic/sexual content 5.5% (*n* = 36, 14 boys, 22 girls) admitted that they had been blackmailed after sending erotic/sexual content via mobile phone and/or computer	forced/coerced into sending erotic/sexual content and 5.5% admitted that they were blackmailed after sending erotic/sexual content via mobile phone and/or computer <u>Limitations:</u> -Covers specific age group -Only public educational centres have been included -Strictly quantitative design	
12	<u>Aims:</u> To examine whether adolescents who report sexting are more likely to be impulsive, use alcohol or drugs and exhibit symptoms of depression or anxiety compared to adolescents who have not sexted. <u>Design:</u> Cross sectional <u>Location:</u>	<u>Sexting:</u> Electronically sending sexually explicit images from one adolescent to another Yes/no questions developed by the authors (not validated) <u>Depression:</u> 10-item Centre for Epidemiologic Studies' Depression Scale <u>Anxiety:</u>	<u>Age:</u> 14 – 18, *M*age = 16.05 <u>Sample:</u> *N* = 937 <u>Other Characteristics:</u> Females: 57% African American: 27% Caucasian: 31%	<u>Analysis:</u> Logistic regression assessed relationship between sexting and psychosocial health <u>Findings:</u> Sexting was significantly associated with symptoms of Depression (OR = 1.38, 95% CI [1.03, 1.98])*, Impulsivity (OR = 1.08, 95% CI	<u>Conclusions:</u> Teen sexting was associated with impulsivity and substance use but not mental health. A modest association observed between teen sexting and depression symptoms in unadjusted model was reduced to non-significance once	31/36 86.11%

7 Public High Schools in Southeast Texas, USA	9-item Generalized Anxiety Disorder subscale of the Screen for Child Anxiety Related Emotional Disorders <u>Impulsivity:</u> 4-item Impulsiveness scale from the Teen Conflict Survey <u>Substance Use:</u> Yes/No questions Validated and reliable, but no specifics provided	Hispanic: 31%	[1.03, 1.12])*** and Substance Use (OR = 2.94, 95% CI [2.10, 4.12])***. However, when adjusted for prior Sexual behaviour, Age, Gender, Race/ Ethnicity and Parent Education, Sexting was no longer related to Depression (OR = 1.44, 95% CI [.99, 2.11]) and the association to Impulsivity (OR = 1.07, 95% CI [1.01, 1.13])* and Substance Use was slightly attenuated (OR = 2.14, 95% CI [1.38, 3.31])***. *p < .05 **p < .01 ***p < .001 In the adjusted model: adolescents who reported sending a sext had over 2 times the odds of having used substances as	accounted for prior sexual behaviour and important demographic variables. Sexting, the relatively new phenomenon may be conceptualised as modern-day risky behaviour expected to correlate with established risky behaviours (e.g., substance use). However, we did not find evidence that teen sexting was a marker of mental health. <u>Limitations:</u> -No event level data or qualitive approach -Use of self-report -Use of unvalidated measure of sexting -Reliance on youth residing in same geographic region of us (generalisability) <u>Strengths:</u>

				those who had not sexted.	-Among first to examine relationship between teen sexting and psychosocial health in a racially and ethnically diverse school-based sample and to demonstrate a link between sexting, impulsivity, and substance use.	
13	Aims: To investigate longitudinal relationships between sexting, traditional bullying, and cyberbullying among an older age group and over a longer period of time. Design: Cohort Longitudinal. Repeated annually over four years Location: Public High Schools in South-East Texas, USA	Sexting: Sending of sexually explicit images only. 3 items developed by authors to assess sexting: T2 (Spring 2011): α = 0.72 T3 (Spring 2012): α = 0.72 T4 (Spring 2013): α = 0.76 Cyberbullying Victimisation: 2 items from adapted Youth Internet Safety Survey to measure cyberbullying	Age: 13 – 18 *M*age = 16.1 (SD = 0.79) Sample: T2: *N* = 964 T3: *N* = 894 T4: *N* = 776 Other Characteristics: 31.7% Hispanic 30.3% White 26.6% African American 3.4% Asian 8.0% Other	Analysis: Cross-Legged Panel Analysis 2 separate Cross-legged panel models were assessed, one between sexting and traditional bullying victimisation and the other between sexting and cyber bullying victimisation. Findings: Autoregressive effects were significant for both sexting and traditional bullying victimisation. Sexting at T2 was significantly	Conclusions: Sexting was cross-sectionally associated with cyberbullying victimisation at each time point, as well as longitudinally associated with subsequent cyberbullying victimisation between time points. This study provides empirical evidence that youth engaged in sexting are at heightened risk of cyberbullying victimisation.	34/38 89.5%

	victimisation in past year: T2: α = 0.73 T3: α = 0.72 T4: α = 0.69 <u>Traditional Bullying Victimisation:</u> 1 question that asked if they had been bullied in past 12 months	associated with T3 sexting and T3 sexting and T4 sexting, the same pattern was shown for traditional bullying victimisation. Cross-lagged effect was found between T3 sexting and T4 traditional bullying victimisation T2 sexting was not directly linked to subsequent traditional bullying victimisation. A significant mediation effect was identified such that T3 sexting mediated the effects of T2 sexting on T4 traditional bullying victimisation, (*b* = 0.05, 95% CI: 0.02, 0.09) Significant autoregressive effects were identified for both sexting and	There was a weaker association between sexting and traditional bullying victimisation (compared to cyberbullying victimisation). A relationship was found between T3 sexting and T4 Traditional Bullying Victimisation and an indirect effect of T2 Sexting to T4 Traditional Bullying Victimisation through T3 Sexting. Sexting is associated with higher risk for cyberbullying victimisation both cross sectionally and longitudinally. There was a weaker but significant relationship between sexting and subsequent offline bullying victimisation.

				cyber-bullying victimisation. T2 sexting was associated with T3 cyberbullying victimisation, T3 sexting was associated with T4 cyberbullying victimisation.	Limitations: -Use of self-report measures -Use of regional-based convenience sample -One year separating waves -Cyberbullying victimisation measure excluded victimisation by boyfriends or girlfriends - Identifying term 'bullying' in the measure of traditional bullying likely impacted findings rather than asking participants about specific behaviours. Strengths: The first to longitudinally investigate sexting behaviour.	
14	Aims: To investigate the relationships between sexting with a romantic	Sexting: Sending a naked photo or video of yourself through text	Age: 10-17 *M* age = 13 (*SD* = 1.15)	Analysis: Four Multiple Linear Regression Analyses	Conclusion: Sending a sext and asking for a sext within romantic	30/36 83.3%

partner, pressure to sext and dating violence perpetuation and victimisation among a large sample of early adolescent's and to examine if sexting experiences and the associations between sexting and dating violence differed by gender Design: Cross-sectional Location: 9 geopolitical departments (non-governmental schools) in Nicaragua.	(WhatsApp), email or apps like Facebook. Questions developed by authors. Dating Violence Perpetration & Victimisation: Dating violence Conflict in Adolescent Dating Relationships Inventory (CADRI) Perpetration Scale: α = 0.70 Victimisation Scale: α = 0.72	97.8% aged 15 or younger Sample: *N* = 694 Other Characteristics: Females: *n* = 328 (47.3%) Males: *n* = 336 (48.4%) Latino/American: *n* = 633 (91.2%) 7th Grade: *n* = 278 (40.1%) 8th Grade: *n = 266* (38.85%) 9th Grade: *n = 116* (16.7%)	Findings: Having sent a sext (b = .16, $p < .001$ for perpetration, $b = .10$, $p < .05$ for victimisation) and experiencing pressure to send a sext ($b = 0.09$, $p < .05$ for perpetration, $b = 0.13$, $p < .01$ victimisation) was positively associated with dating violence perpetration ($r^2 = 0.07$) and victimisation ($r^2 = 0.07$) after controlling for age and race. Being asked to send a sext and experiencing pressure to ask for a sext were positively associated with dating violence perpetration and victimisation. In females: Sending a sext was positively associated with dating violence perpetration (b = 0.22, $p < .001$, $r^2 =$	relationships were associated with dating violence victimisation among girls but not boys. Sending and asking for a sext image within romantic relationships was significantly associated with dating violence perpetration for both boys and girls. Limitations: -Ps recruited from private schools in Nicaragua – makes it difficult to generalise results among all Nicaraguan youth. -Cross sectional nature of data does not allow to establish trends over time -Survey asked whether respondents experience pressure to engage in sexting but did not differentiate whether pressure came from

			0.10) and victim (b = 0.15, $p < .05$, $r^2 = 0.08$) Asking for a sext was positively associated with dating violence perpetration (b = 0.33, $p < .001$, $r^2 = 0.15$) and victimisation ($b = .20$, $p < .01$, $r^2 = 0.08$) Both asking for a sext image (b = 0.14, $p < .05$) and experiencing pressure to ask for a sext ($b = 0.14$, $p < .05$) positively associated with dating violence perpetration ($r^2 = 0.07$). For dating violence victimisation, only experiencing pressure to ask for a sext showed a significant relationship ($b = 0.18$, $p < .01$, $r^2 = 0.08$). The same results pattern was found for sending a sexting	peers or romantic partners - Self-report data only -The examined regression models explained a small portion of variance of dating violence (r^2 ranged from 0.07 - 0.08) <u>Strengths:</u> -First to investigate associations between sexting and dating violence victimisation and perpetration among a sample of early adolescents. -Provides important insights into associations between sexting and dating violence among adolescents

				image such that both sending a sext (b = 0.12, p < .05) and experiencing pressure to send a sext (b = .12, p < .05) were positively associated with dating violence perpetration (r^{2} = .005)		
15	Aims: This research seeks to establish the potential effect on the individual involved in sexting Design: Cross sectional Location: Spain	Sexting: Participation in the production or dissemination of photographic and video material. (Not about texts, as the aim was to analyse prevalence of youth involvement in those conducts most closely related to child pornography). Questionnaire consisting of 30 questions. Some of which were modelled from 3rd edition, Youth Internet Safety Survey Implications: Respondents asked whether their participation in sexting	Age: 14 – 18 Sample: *N* = 489 Other Characteristics: 50.1% Female (*n* = 245)	Analysis: Descriptive frequencies Findings: Most responded chose 'Other' option (56%) because they did not feel affected by any of the negative emotions specifically included in the questions wording. Respondents chose 'Other' to indicate they felt indifferent towards the situation, that they had experienced it as something entirely normal or that the incident made them	Conclusion: Sexting has low emotional impact on individuals who participate in it. Young people view involvement in sexting with indifference or even possibly as behaviours in which they engage naturally and for fun but also of those that highly the major negative impact of sexting on girls than on boys and confirm results of previous research done in Spain suggesting a low emotional impact	47.2% 17/36

	made them feel upset/offended, anxious, afraid, embarrassed, or other.	feel happy, surprised, or even amused. Respondents were clearly more likely to feel positive emotions as a result of their involvement in sexting than negative ones, even though no positive ones were explicitly included in the questions wording. The only difference was observed in involvement in photographing/filming other nude/nearly nude minors where Ps were more likely to feel upset, anxious, or afraid. 16% of cases Ps reported feeling upset or offended, 15% anxious, 8% afraid. Bivariate analysis on sex of Ps and feelings experienced did not yield statistically	No strengths or limitations noted in the article

				significant results, girls were more likely than boys to feel anxious (60% respondent's girls), or afraid (80% respondent's girls).		
16	Aims: To investigate the associations between three types of sexting behaviours (i.e., consensual, non-consensual, pressured sexting) and depressive symptoms and non-suicidal self-harm To examine the potential moderating role of demographic variables (i.e., gender, ethnicity, disability, sexual minority) in the relationships among various types of sexting behaviours and depressive symptoms and non-suicidal self-harm. Design: Within groups, cross sectional Location:	Sexting: Sharing sexually suggestive text messages or self-produced sexually explicit images like photos or videos (sexts) via social media or smart phone apps Consensual sexting: Sexting is performed voluntarily in the absence of pressure and blackmailing, and the sexts are not forwarded without the consent of the person who produced the sexts 3 items (author derived): α = .86 Non-consensual sexting: Sharing of sexts without permission	Age: 13 – 16 *M*age = 15.17 (*SD* = 0.89) Sample: *N* = 2506 Other Characteristics: 50% Female 57% Caucasian 26% Latinx 15% Black African/ American 2%Asian	Analysis: Structural Regression Model (Estimator = MLR) Paths added from all sexting behaviours to depressive symptoms and non-suicidal self-harm. Bivariate correlations were conducted among all studies variables. Findings: Correlations revealed that consensual sexting was positively related to non-consensual sexting and pressured sexting, but not to depressive symptoms or non-suicidal self-harm.	Conclusions: Consensual sexting was not associated with depressive symptoms, but non-consensual and pressured sexting were each positively related. While consensual sexting can be regarded as a statistically and developmentally normal expression of adolescent sexuality unrelated to negative effects such as depression or self-harm, aggravated sexting can be regarded as a new digital type of aggressive and harmful behaviour that is linked to	32/36 88.9%

8 High Schools situated in suburbs of large midwestern city in the USA	6 items from the Non-consensual Sexting Subscale of the Sexting Questionnaire: α = .90 <u>Pressured sexting:</u> Sexting is the result of pressure by a partner or friend to send sexts. 2 items (author developed). Correlation between 2 items: 0.69 <u>Depressive symptoms:</u> The centre for epidemiological studies depression scale (α = .88) <u>Non-Suicidal Self-Harm:</u> Self-Harm Inventory (Kuder-Richardson reliability 0.87)	Non-consensual sexting was associated positively with pressured sexting, depressive symptoms, and non-suicidal self-harm. Pressured sexting was related positively to depressive symptoms and non-suicidal self-harm. Consensual sexting was not significantly related to either depressive symptoms (B = 0.03, *p* = 0.886) or non-suicidal self-harm (*b* = 0.08, *p* = 0.763). Non–consensual sexting was positively associated with depressive symptoms (*b* = 0.27, *p* < 0.006) and non-suicidal self-harm (*b* = 0.23, *p* < 0.024). Pressured sexting was also positively related	negative psychological outcomes in victims. <u>Limitations:</u> -Data was cross sectional, temporal inferences cannot be made, no possibility to examine temporal or casual ordering among variables -Used scales for measuring sexting types differed regarding the wording and response options which may limit comparison -Pressured sexting measured only by 2 items which is problematic in terms of reliability and validity -Ethnic minority variable was dichotomized into non-ethnic minority and ethnic minority -All sexual minority and disability status

				to depressive symptoms (b = 0.30, p < 0.001) and non-suicidal self-harm (b = 0.27, p < 0.003) Girls, white adolescents, and straight adolescents who experienced pressured sexting reported greater depressive symptoms and non-suicidal self-harm.	combined into one group -Dichotomized gender as well.	
17	Aims: To examine how sexting is related to sexual behaviour and how it relates to psychosocial functioning. Design: Cross-sectional Location: USA	Sexting: Sending or showing someone sexual pictures of yourself where you were nude or nearly nude through any mode Questions developed by authors based on other research. Psychosocial Implications: Centre for Epidemiologic Studies Depression Scale-	Age: 13 – 18 years old Sample: *N* = 3715	Analysis: F statistics for categorical data, Linear Regression for continuous data. Findings: Psychosocial problems were indicated more frequently for youth who sent or showed sexual photos of themselves, compared with youth who did not. For all youth, high self-esteem was	Conclusion: Sexting appears to be related to a more general cluster of behaviours indicative of psychosocial challenge and risky sexual behaviour in some youth. Youth who send and show sexual photos of themselves are much more likely to be using substances and less likely to have high self-esteem.	86.1% 31/36

	Revised 10-item version for adolescents. No information provided on reliability/validity	negatively associated with having sent or showed sexual pictures. For female youth, depressive symptomology was additionally associated with elevated odds of having sent or showed sexual pictures of themselves	<u>Strength:</u> -First national study to examine these adolescent health outcomes <u>Limitations:</u> -Cross-sectional data, directionality cannot be determined -Degree of sexual explicitness in the photos may possibly relate to different odds of negative consequences or harmful impact -Youth may under-report their engagement in these behaviours

Descriptive Overview of Results

Study Characteristics

All 17 studies included in this review met the inclusion criteria. Whilst the aims of each study differed slightly, only relevant findings and information are presented in Table 3, any other information not pertinent to this review's research questions were omitted. Despite this, all of the included studies explored either forensic and/or mental health related implications of sexting.

In relation to design, eight studies were longitudinal in nature (1, 2, 3, 5, 6, 8, 9 & 13). A mixture of cross-sectional and cohort data was used with either within-participants and/or between-participants design for remaining studies.

Most studies defined sexting as the exchange of sexual images, videos, and text messages. However, one study focused on the exchange of sexual messages only (6), whilst others focused on images only (8, 10, 12, 13 & 17). Studies 14 and 15 included images and videos but excluded text messages. Sexting was generally assessed by questions developed by the authors; however, two studies did use pre-existing measures; The Sexting Questionnaire (5; Gámez-Guadix et al., 2017) and The Sexting Behaviour Scale (11; Weisskirch & Delevi, 2011). Two studies (9 & 7) adapted questions used by other researchers. One study used observational methods to assess sext messages (6).

In terms of the assessment of implications, this differed between studies. This review focused on the forensic and mental health implications of sexting behaviours and within this was variability in the measures assessed. Some studies measured single indicators such as the emotional impact (4) or self-esteem (10), whilst others included multiple implications. Depressive symptoms were the most common indicator of mental health assessed (3, 7, 8, 12, 16 & 17). Other indicators included anxiety, impulsivity, non-suicidal self-harm, and the experience of positive and negative adjustment. Forensic implications varied from bullying and cyberbullying perpetration and victimisation, to delinquency, dating violence and the experience of blackmail.

Whilst some studies used validated and reliable tools such as the Centre for Epidemiologic Studies' Depression Scale (7, 8, 12, 16 & 17; Lewinsohn et al., 1997), others created questions for respondents (11 & 15), and some used a combination (12). Reliability of the tools used ranged from α = .63 - .92. Some studies did not comment on the validity of measures used (3, 10, 11, 12, 15 & 17), although in some instances this can be inferred by the use of validated and well-established tools such as the GAD-7 (3; Spitzer et al., 2006) and Rosenberg Self Esteem Scale (10; Rosenberg, 1965).

Methods of statistical analysis varied depending on study design and data type, however regressions were used in most studies (3, 6, 7, 9, 12, 14, 16 & 17). Latent Growth Curve Modelling (2), correlations (1), structured equation models (4 & 5) and 3-Step latent class analysis (8) along with chi-square (10) and frequencies (11) were also used to analyse data.

Studies was based in four locations: Croatia (one study), Nicaragua (one study), Spain (five studies) and the USA (10 studies). All studies were available in the English language and were journal articles, except one which was a brief report of a journal article (12). Authors were contacted for the full report; however, this was not available. Studies were published between 2014 and 2022.

Participant Characteristics

A total of 21027 participants were included across the 17 studies: 763 in Croatia, 694 in Nicaragua, 6950 in Spain and 12620 in USA. The sample sizes of each study showed noticeable variation ranging from 75 (10) to 3715 (17). Fitting with the inclusion criteria respondents across studies were aged between 10-19 years old. Other characteristics of respondents such as gender, sexual orientation, sexual experience, race/ethnicity were intermittently reported amongst studies (see Table 3).

Overview of Findings

A narrative synthesis approach to included studies identified a variety of mental health and forensic implications of adolescent sexting, these have been condensed into themes and are

presented below. Mental health implications include themes of depression, anxiety, self-esteem and affect. Whilst forensic implications are separated into perpetration and victimisation themes.

Mental Health Implications

Depression. Seven studies explored depressive symptoms and sexting (2, 3, 7, 8, 12, 16 & 17). One study (17) also included the examination of non-suicidal self-harm. Longitudinal research found that sexting in adolescents was consistently and positively associated with depression (2, 3 & 8). Gender differences were observed linking female adolescents to greater depressive symptomology compared to male respondents (16 & 17). Whilst these studies examined consensual sexting, two studies found that receiving non-consensual sexts, also known as unsolicited sexts, was also associated with depressive symptoms (7 & 17). (17) extended these findings to include non-suicidal self-injury. The same study also found that pressure to sext was positively related to depressive symptoms and non-suicidal self-harm. However, after controlling for confounds, three studies (7, 12 & 16) concluded that consensual sexting was not associated with poor psychosocial health of any kind.

Anxiety. Anxiety was measured in four studies (2, 3, 7 & 12) with varying results. (2) found that sexting was consistently and positively associated with anxiety in their longitudinal research and (3) found those that reported sexting had significantly greater odds of anxiety symptoms than non-sexters, even when controlling for confounds. (7) found that being asked to send sexts was associated with anxiety, but significance was lost when controlling for confounds. Conversely, (12) found that non-sexters were more likely to experience anxiety than sexters but this was non-significant.

Self-Esteem. Only two studies examined self-esteem of adolescent sexters (2 & 10). Whilst cumulative growth in sexting and linear growth in self-esteem were positive, this relationship was mostly negative, and did not reach statistical significance (2). Similarly, no statistical significance was observed in a sample of older adolescents (10). However, this study only examined a small sample

size of 75 respondents, disproportionately smaller when compared to other studies included in this review.

Affect. Seven studies measured varying degrees of emotional affect and adjustment (1, 4, 6, 7, 9, 12 & 15). There was a great amount of variability between the constructs measured within this theme, so an exhaustive list is presented below:

- Positive and Negative Affect (1)
- Emotional Impact (4 & 15)
- Negative Adjustment; Internalising and Externalising Symptoms, social problems, Borderline Personality Features (6)
- Positive Adjustment; Life Satisfaction, Group Belonginess, Self-perception (6)
- Impulsivity (7 & 12)
- Hostility (7)
- Emotional Dysregulation (7)
- Aggressive Temperament (7)
- General Mental Health (9)

Four studies found that consensual sexting was not associated with negative affect (1, 6, 7 & 15). Within these studies, a battery of constructs was assessed and in study (15) sexters were more likely to report positive emotions. In fact, for boys (6) found that sexing was related to decreased social problems. Conversely, (15) identified that girls were more likely to feel negative affect (anxious or afraid) when sexting, but these results did not reach statistical significance. Further, (6) found that for girls, sexting more than the average was related to increased internalising and externalising problems, BPD features, group belonginess, self-perceived social competence and measures of global self-worth. Sexting was significantly associated with Impulsivity in (12) however when controlling for confounds, significance was slightly attenuated. Adolescent sexters were also found to have higher odds of experiencing trauma symptoms and internalising problems within the

clinical range in (9). However, this was in a relatively small sample size (*n* = 307). Whilst the results of consensual sexting are mixed for boys and girls, consistent findings are observed for both genders within non-consensual and pressured sexting (7). (7) indicate that these sexting behaviours are positively associated with emotional dysregulation, hostility, and aggressive temperament.

Forensic Implications

Despite the variation of forensic implications assessed by the included studies, it was appropriate to separate these into two themes relating to both the perpetration and victimisation risks of adolescent sexting. Where some studies measured both victimisation and perpetration rates, results have been separated in the below themes.

Perpetration. Only three studies examined perpetration of on/offline behaviours that could be considered forensically implicated (1, 9 & 14). Traditional bullying aggression, cyber-aggression, delinquency and dating violence perpetration were the constructs measured across the studies. (1) found that sexting at both time points was significantly related to in-person aggression. However, following hierarchal regression, no significant predictive effects from sexting were obtained for on or offline aggression. Offline, (9) assessed delinquent acts in a small sample of American youth. They found that past year sexting was significantly associated with delinquency which included property-related acts and violent acts. Finally, sending sexts and experiencing pressure to send a sext was positively associated with dating violence perpetration in both males and females, after controlling for age and race in a sample of 10-17-year-olds (14). This study also found that males who asked for sexts were more likely to perpetrate dating violence.

Victimisation. The studies included in this review assessed victimisation rates both off and online. This theme has been separated into cyber (online) and traditional (offline) implications.

Cyber-Victimisation. Four studies examined online victimisation rates of sexters (1, 5, 11 & 13). This included cyber-bullying victimisation, sexual solicitations (where an adult had requested a minor for personal sexual information or to participate in sexual activities/conversation online), and blackmail. Results were mixed, with (13) identifying a clear link between sexting and later

cyberbullying victimisation at multiple time points in their longitudinal research. Similarly, (5) found that at the Cross-sectional level T1 sexting was related to cyberbullying victimisation and online sexual solicitations. Longitudinally, sexting significantly predicted later sexual solicitation and risk of cybervictimisation (5). No significant differences in gender were observed (5). (11) found that 5.5% of their sample (*n* = 36, 14 boys, 22 girls) had been blackmailed after sending sexts via phone or online. Yet, (1)'s findings were less consistent. In their regression model, no significant predictive effects from sexting were obtained for cybervictimisation.

Traditional Victimisation. Only three studies examined offline victimisation, including what they coined 'traditional' bullying victimisation (1 & 13) and dating violence (14). Both (13) and (14) found that sexting predicted offline victimisation. (13) found a direct relationship between time point 3 (T3) sexting and T4 victimisation in their longitudinal research, and an indirect effect of T2 sexting to T4 victimisation through T3 sexting, indicating the effects of offline victimisation could appear over an extended period of time. Likewise, (14) found that sending sexts and being asked to send a sext was positively associated with dating violence victimisation even when controlling for confounds. Gender differences were observed in that females were more likely to report dating violence victimisation if they had sent a sext or been asked to send a sext. But for males only experiencing pressure to send sexts was associated with dating violence victimisation. Opposingly, (1)'s longitudinal research found that as sexting increased, offline victimisation significantly decreased.

Limitations Of Included Studies

The majority of studies reported both strengths and limitations of their research. All but one study used self-report data to measure sexting behaviours and implications which could be influenced by social-desirability bias (Rickwood & Coleman-Rose, 2023). The one study that utilised observational methods, limited their analysis to 4 days of messages over a four-year period, so important data may have been missed. Most studies used a sample representative of the wider adolescent population; however, one study limited their data collection to a sample of private

schooled only teens in Nicaragua which may limit generalisability of these results. The studies included in this review were mostly cross sectional or longitudinal in design. All but one study used within-subjects design, where one study (6) used both within and between subjects' analysis. Whilst each design has its own strengths and limitations, the main limitation identified throughout the sample of studies included in this review relate to the implications of establishing cause and effect between variables and the inability to control for every confounding variable that may influence both the exposure and outcome variables.

Discussion

This review aimed to investigate what the mental health and forensic implications are for adolescents aged 10 – 19 who engage in sexting. By systematically reviewing over 17000 search results, this review synthesised a final sample of 17 studies published between 2014 and 2022. These studies involved over 21000 participants, across four countries involving the Americas and Europe. This demonstrates that most participants were taken from westernised culture. Here, the legal age of sexual consent differs between 15 – 18 years old. The norms and behaviours observed in these countries may differ to other parts of the world, and so caution must be executed when generalising results to countries outside of those included in this review. Future research would benefit from exploring, the scantly explored sexting behaviours of eastern cultures.

The multiple mental health constructs examined within this review (anxiety, depression, self-esteem, and emotional affect), provides a comprehensive perspective on the potential impact of sexting on adolescent's mental wellbeing. Of these constructs, depression was found to be linked to adolescent sexting in six studies (2, 3, 8, 16, 17 & 7), all of which scored over 81.6% in this review's quality assessment (see appendix III). The repetition of this finding across six studies strengthens the evidence supporting an association between sexting behaviour and depressive symptoms in adolescents. However, a higher number of studies reporting evidence on a given outcome (e.g. depression) does not necessarily signify that adolescent sexting is more strongly associated with that

outcome than another (e.g. anxiety), rather it demonstrates that six studies included in this review reported evidence on depression as an outcome of sexting.

Specifically, (7) and (17) distinguish between consensual (dyadic) and non-consensual (unsolicited) or pressured sexting and found that these types of sexting were linked to higher rates of depression. Differentiating between consensual and non-consensual sexting is important to the normalcy vs deviancy argument as it recognises that not all sexting experiences have the same forensic or mental health implications. Gender differences were observed in two studies examining depression, in that female sexters were more likely than male sexters to self-report depression (16 & 17), indicating how sexting may affect individuals differently based on their gender. Although further exploration of the reasons behind these gender differences would enhance the interpretation of these findings. Despite this, three studies concluded that after controlling for confounds, consensual sexting was not linked to poor psychosocial outcomes (7, 12 & 16), a finding replicated in adult sexting literature (Gordon-Messer et al., 2013), suggesting that the impact of consensual sexting on psychosocial outcomes may share similarities across different age groups. This also infers that the additional factors that may accompany pressured and non-consensual sexting influence one's psychosocial functioning and wellbeing and when these factors are considered, consensual sexting may not be inherently harmful to psychosocial wellbeing of adolescents. However, understanding these contributing factors warrants further investigation and is crucial for developing targeted interventions to help prevent the negative outcomes of sexting.

Four studies (2, 3, 7 & 12) examined anxiety, three of which used the Generalised Anxiety Disorder Assessment (GAD-7; Spitzer et al., 2006), a well validated and reliable tool in the measurement of anxiety. However, results across these four studies varied. Statistical significance was only achieved in the two longitudinal studies (2 & 3), which demonstrated a positive association between adolescent sexting and anxiety even when controlling for confounds, suggesting the observed association is not solely due to external factors. However, the studies controlled for different confounding variables, which introduces a potential source of variability in the findings.

Despite previous research identifying that individuals who sexted under pressure were more likely to report anxiety (Englander, 2012), (7) found that adolescents being asked to send sexts was associated with anxiety, aligning with the findings of 2 & 3, however significance was lost after controlling for confounds (7). Notably, the context under examination in study 7 (being asked to send sexts) may involve unique dynamics such as peer pressure, consent and other age-relevant developmental factors that could influence the relationship between sexting and anxiety.

Only two studies examined self-esteem as a construct and neither found a statistically significant relationship between sexting and self-reported measures of self-esteem (2 & 10), echoing earlier findings of Hudson (2011). However, these studies examined only a small sample size of participants, and their definitions of sexting differed (e.g. including photos, videos, and texts vs photos only). Hudson (2011) identified that individuals who perceived sexting to lead to sexual hook ups had higher levels of self-esteem, indicating that self-esteem may be linked to one's motivations to sext and thus intent to sext and sexter's self-esteem warrant further investigation.

Several measures of emotional affect were investigated across seven studies. Contrary to Houck et al. (2014)'s findings, four studies concluded that consensual sexting was not associated with negative affect (1, 6, 7 & 15). However, two studies did identify that girls were more likely to experience negative psychosocial outcomes compared to boys (6 & 15). In fact, boys were more likely to experience a decrease in social problems as a result of sexting (6). These findings provide further support for the possible gender differences observed within sexting and understanding these differences further, warrants continued exploration. In addition, the differences observed amongst gender for affect experiences and social consequence may link to peer influence or popularity (Casas et al., 2019; Liong & Cheng, 2017; Suleiman & Deardorff, 2015) and contribute to the reasons why sexting is becoming commonplace in adolescence.

(12) found that sexting was significantly associated with impulsivity, a relationship also observed in adult sexters (Dir et al., 2013). Whilst the results of consensual sexting are mixed for boys and girls, more consistent findings across genders are observed within non-consensual or

pressured sexting (7). (7) indicate that these sexting behaviours are positively associated with emotional dysregulation, hostility, and aggressive temperament, suggesting that those engaging in non-consensual sexting may benefit from targeted interventions addressing these factors. Likewise, educational programmes may benefit from focusing on increasing emotional wellbeing and interpersonal skills of adolescent sexters. Furthermore, the suggested associations between non-consensual sexting and aggressive temperament implies that certain personality traits may influence how individuals navigate online interactions/ sexting and may help to inform theoretical understanding of the interaction between personality and online behaviour (e.g., Kokkinos, 2023). In addition, future research needs to account for the heterogeneity in sexting behaviours and individual differences in sexters, recognising the emotional and psychological factors involved in someone's decision to sext in a particular way.

Unlike data published by Wolak et al. (2011), none of the synthesised studies included in this review mentioned arrest rates or formal criminality as a result of adolescent sexting. As such, Wolak et al. (2011)'s findings are one of the only papers to comment on adolescent arrest rates arising from sexting. Notwithstanding this, three studies did examine the perpetration of on/offline behaviours that could lead to legal sanctions. (9) found that sexting was significantly associated with later delinquency including violence and (14) found sexting to be positively associated with dating violence perpetration for both boys and girls aged 10 – 17, however boys who asked for sexts were more likely to perpetrate dating violence (14). Sexting has also been linked to anxious and avoidant attachment styles (Drouin & Landgraff, 2012; Drouin & Tobin, 2014; Weisskirch & Delevi, 2011). It is possible that individuals who sext and perpetrate intimate partner violence have different personality feature (e.g., antisociality) or distorted views and/or attitudes towards partners, which may then play out within these dynamics. More research is required to further explore any potential relationship between sexting and perpetration of violence particularly within a domestic setting. These findings indicate that adolescent sexting may be linked to later criminality and thus the

motivations and mechanisms involved in the act of sexting must be investigated to enable stakeholders to understand the behaviour and prevent harmful implications from occurring.

Aside from perpetration, this review also revealed that adolescent sexting is linked to victimisation both on and offline (13, 5, 11 & 14). Similar to findings observed in a Mexican sample (Rodriquez-Otero, 2020), this review found that those that sexted were more likely to experience cyber-bullying victimisation, sexual solicitations (from adults), dating violence victimisation and blackmail, signifying that sexting can be an unsafe phenomenon despite its popularity amongst youths, and so should remain a priority for education, health and law enforcement sectors.

Interestingly, (13) found weaker associations for offline victimisation opposed to cybervictimisation. As sexting is an online behaviour it makes sense that negative consequences are thus experienced online. However, it is surprising that these behaviours manage to remain outside of the classroom. The online disinhibition effect (Suler, 2004) has been used to explain the differences in individuals online and offline behaviour. Suler (2004) distinguishes two forms of disinhibition: benign and toxic. The latter can offer an explanation for increased rates in online victimisation opposed to offline victimisation. Suler (2004) suggests that there are six components contributing to online disinhibition (Dissociative anonymity, invisibility, asynchronicity, solipsistic introjection, dissociative imagination, and minimisation of authority). When these components interact with a person's individual personality differences, a deviation from one's offline behaviour may occur, which may offer an explanation for some of the online perpetration reported. Online communication creates distance between individuals, meaning perpetrators may be less inclined to modulate their behaviour (Walrave et al., 2018) as they may do offline. This theory of understanding online behaviour has been applied specifically to adolescent sexting and Hernández et al. (2021) found that disinhibition led to an increase in sexual erotic online behaviour for both girls and boys, demonstrating that online disinhibition may not be limited to specific genders.

It is observable that those who frequent the internet are more likely to engage in behaviours such as sexting, particularly for those interested in hooks up or within romantic relationships (Van

Ouytsel et al., 2020). But once content is exchanged, risks are apparent, and little can be done to mediate them. Thus, the attention of future research should seek to examine the factors associated with sexters, their motivations and intentions with the hopes that further understanding this behaviour can help to educate and subsequently prevent users from future perpetration or victimisation.

Limitations

This review focused on empirical research and limited included studies to quantitative data only, this was to control for validity of results, but this is acknowledged as a limitation as fruitful data may have been missed in the exclusion of qualitative research. Grey literature was not considered and may have resulted in relevant findings being excluded from this review. Further, in the full-text review stage of data screening, some studies were excluded as they were not available, either online or direct from the author in the English language, this may have omitted meaningful data. The design, sample and methodology of the included studies varies, thus limiting the extent to which their respective findings can be compared and generalised. Despite these limitations, this systematic review is the first to systematically review empirical research relating to the forensic and mental health implications of sexting adolescents as specified by the World Health Organisation (10–19-year-olds), utilising a sample of participants from four different countries.

Implications for Practice and Future Research

This review has contributed to the understanding of the mental health and forensic implications of sexting in adolescents. Sexting has in some cases resulted in fatalities (Courtice & Shaughnessy, 2021), as such, research on this behaviour, particularly for vulnerable groups such as adolescents continues to be vital. Future research should continue to examine the consequences of adolescent sexting, evaluate the interventions and support packages and programmes in place designed to mitigate the risks of online victimisation and enhance online safety. Future literature reviews may benefit from including qualitative research to enhance the breadth of study inclusion.

Many implications for sexter's mental health and wellbeing were identified in this review, with predominant focus on anxiety and depression. This may arise from the social and psychological impact of sexting (stigma, judgement, pressure to sext, negative reactions to shared content, unwanted sexting, etc). Sexting as a contributing factor to anxiety and depression may have previously gone unexplored in treatment and therapy and could be something healthcare practitioners explore with adolescent patients, so that specialist support can be provided.

Forensic implications relating to the perpetration of on and offline abuse arising from sexting were also identified. This is important in terms of providing useful information to help cease current perpetration and prevent future problematic or risky behaviour resulting from sexting. Not only can an increased understanding into the risk associated with sexting help to inform sexters to make informed decisions about the content they are sharing but it can also help to educate parents and caregivers, education and health care providers, law enforcers and other stakeholders on the expected cultural norms of adolescent sexting and where deviance and thus risky behaviour may arise (e.g., pressured sexting, non-consensual sharing). Of particular forensic relevance are child pornography laws and the age of consent. These vary according to country, but individuals should be aware of what laws apply in their country and the country of whom they are sexting, as this could lead to arrests, criminal records, and sex-offender registration.

The forensic implications of adolescent sexting identified throughout this review could help to inform psychological risk assessment and formulation of those convicted of online image-based abuse. Further, where there are forensic links identified with sexting, it is important to consider the insight and capacity of the sexter, thus making this research and any future research involving sexting important for informing policies such as the Mental Health Act, and Deprivation of Liberty Safeguards (DoLS) and any other relevant literature, guidance and law that may be of relevance to those vulnerable to the impact of sexting. Sexting and the risks associated with it could also help to inform offending behaviour programmes in Youth Offending Institutes (Y.O.I) Secure Children's Homes (SCH), other services within the Youth Justice System, Child and Adolescent Mental Health

Service (CAMHS) delivery and other educational packages delivered throughout Criminal Justice System and national curriculum.

As with sexting of any age, this review highlights the occurrence of non-consensual and pressured sexting. Privacy concerns should be paramount for all sexters, as there is a potential for unauthorized sharing which as identified in this review can increase the experience of negative affect, anxiety, and depression. Further, once an image is shared, particularly online, it can be extremely difficult to erase. This is an important consideration for all sexters, but also to web-developers, social media platforms and alike to consider the ways in which they handle unauthorized online sharing of sexual content.

The findings of this review may also help to enhance relational dynamics of sexters. Being informed about the risks to one another's wellbeing as well as the ways that it may impact self-esteem may help individuals to open the dialogue about sexting and make more informed, consenting decisions about personal sexual content.

Promoting digital literacy and awareness of the risks associated with sexting can help protect sexters from the adverse effects identified within this review. Educational institutions, health care providers and family/care settings would benefit from furthering their sexual education to children and adolescents to involve sexting, the law and the risks associated with sharing sexual content. Education on consent, boundaries and respectful communication within sexting interactions is also warranted, to help prevent mental health and forensic risks and to promote healthier, intimacy enhancing sexting and a safer online environment for all. Additional reviews would benefit from considering specific populations identified in this review as more at-risk of negative consequences (i.e., females) or the scantly researched LGBTQ+ community.

Conclusion

This systematic literature review identified a body of research exploring the forensic and mental health implications of adolescent sexting. It synthesised findings from research across four different countries including over 21000 participants. This review indicates that whilst some studies

have identified implications of sexting spanning both mental health and forensic realms, it appears that non-consensual sexting and pressured sexting are more likely to produce negative implications compared to consensual dyadic sexting among youth. Therefore, it may be a vital area of exploration in formulation, psychoeducation and ongoing psychological treatment when working with adolescents. Subsequent chapters of this thesis aim to further explore sexting from an alternate lens to that examined here, situating sexting as the outcome rather than the predictor. The next chapter presents an exploration of image-based sexting behaviours and its psychological predictors in an adult sample.

Chapter Three: An Exploration of Adult Image-based Sexting Behaviours and Psychological Predictors in the UK.

Abstract

In the UK, the exchange of sexual images or videos amongst individuals aged under 18 contravenes child pornography laws. However, research has identified that a form of this exchange, commonly referred to as "sexting", is a frequent occurrence amongst teenagers and young adults. This study set out to explore the current and retrospective image-based sexting behaviours and experiences of a general population sample of adults residing in the UK. The psychological constructs Revenge Porn (RP) proclivity, Self-esteem (SE)and Theory of Mind (ToM) were also examined in relation to sending and receiving image-based sexts.

A sample of 211 participants aged between 18 and 89 years old completed an online questionnaire that included the Revenge Porn Proclivity Scale, Rosenberg Self-Esteem Scale and the adult Reading the Mind in the Eyes Task - Revised. Findings demonstrate that adults living in the UK are sexting, and that for many this behaviour began before the legal age of sexual consent. 67% of participants reported having sent an image-based sext, and 77% reported having received an image-based sext, with the mean age of 20 years-old for when they first engaged in these behaviours. Most (74% and 69% respectively) were sexting with intimate partners with a mean of 4 relationships per person.

A logistic regression found that higher ToM scores predicted increased odds of sending and receiving image-based sexts. RP proclivity scores did not predict image-based sexting of any kind. As scores on a SE scale increased the odds of sending and receiving image-based sexts decreased. The negative relationship between SE scores and sending image-based sexts was the only relationship to maintain significance after adjustment and Bonferroni correction. Limitations and implications for practice are discussed.

Introduction

Advances in technology over recent years have changed the way that we communicate (Reyns et al., 2013). Technology has facilitated online communication, giving rise to online behaviours such as sexting. Sexting is defined as the electronic exchange of sexually explicit or suggestive content (Bianchi et al., 2021). This includes sexual messages, sexually suggestive, nude, or semi-nude images or videos (Bianchi et al., 2021; Chalfen, 2009; Drouin et al., 2013; Klettke et al., 2014; Lenhart, 2009; Ringrose et al., 2013; Weisskirch & Delevi, 2011; Wilson et al., 2021).

According to Section 1 of the Protection of Children Act (1978) it is an offence to: make, distribute, possess or show any indecent images of anyone aged under 18, even if the individual consents to the photograph. This includes individuals over the age of sexual consent in the UK (16 years old). However, sexting for those aged 18 and over is not bound by the same legislation and so the exchange of sexual images containing consenting adults from one adult to another is not an offence unless it contains illegal material or is unwanted by the recipient.

Research has identified that adults are sexting and engagement in this behaviour is on the rise (Brodie et al., 2019; Currin et al., 2020; Gámez-Guadix et al., 2015; Hudson & Fetro, 2015; Klettke et al., 2014). Yet sexting appears to be gaining attention in both the academic and media realms, with research increasingly identifying a link between sexting and risky sexual behaviours, negative psychological, and social consequences. Risky sexual behaviours include unprotected sex (Kosenko et al., 2017), multiple sexual partners within one year (Benotsch et al., 2013), and the use of alcohol and drugs before sex (Currin et al., 2017). A link to substance abuse (Dake et al., 2012) and negative mental health has also been identified (Klettke et al., 2014). Whilst negative consequences may discourage individuals from sexting, the evidence is limited and friend imitation has been found to encourage sexting in adults (Brodie et al., 2019). Even though links to risky behaviours have been established in younger populations, Currin et al. (2017) highlight how this is not necessarily true for non-university based older adult samples. Similarly, Gordon-Messer et al. (2013) found that whilst

sexting in adults is culturally stigmatized, it does not indicate negative mental health outcomes.

Emerging research has begun to demonstrate the positive aspects of sexting, particularly within the context of committed relationships (Brodie et al., 2019; Currin et al., 2017; Morey et al., 2013; Parker et al., 2013; Wiederhold, 2015). McDaniel and Drouin (2015) found that for women with high levels of attachment anxiety and men in general, sexting can have a positive impact on relationship satisfaction. Similar results were replicated amongst men in general, non-heterosexual and heterosexual women (Currin et al., 2016). Therefore suggesting sexting is a positive behaviour in adult relationships and can be used to maintain or enhance these behaviours (Benotsch et al., 2013; Henderson, 2011; Van Ouytsel et al., 2017; Wilson et al., 2021). Sexting is also used as a method of flirtation or to facilitate 'hook ups' or dates, indicating that sexting is also common amongst individuals not in committed relationships (Benotsch et al., 2013; Castro et al., 2017; Henderson, 2011; Wiederhold, 2015; Wilson et al., 2021). Yet research into the prevalence rates of those identifying as single or in relationships does not appear to be consistent (Drouin et al., 2013; Weisskirch & Delevi, 2011; Wilson et al., 2021). Nevertheless, gender differences do appear to be more stable across the literature, with research indicating that women are more likely to send a sext than men, yet men more frequently request sexts from women (Currin et al., 2016; Drouin & Tobin, 2014; Englander, 2012; Wysocki & Childers, 2011). These findings may be indicative of differences in motivations towards sexting in that men are more likely to use sexting as a means of seeking material for their sexual gratification/arousal. This is supported by Springston (2017) who found gender differences in pressure to sext with men feeling that they have more freedom than women. Further, Perkins et al. (2014) found that men reacted more positively to receiving unrequested sexts than women. This was supported by Dir et al. (2013) who highlighted that women have more negative expectancies of sexting.

Notwithstanding the identified benefits of sexting, this form of 'sensation-seeking' has been identified as a co-morbid risk factor to other internet-based risks such as cyberbullying, online

victimisation, and grooming (Dir et al., 2013; Machimbarrena et al., 2018; Reyns, 2013; Weisskirch & Delevi, 2011). Despite the paucity in research amongst sexting adults, Gámez-Guadix et al. (2015) found that one third of a sample of 18 – 60 year-olds had experienced online sexual victimisation as a result of sexting which they define as pressure to obtain unwanted sexual cooperation or contact, to do something against the victims wishes, and/or the dissemination of a victim's sexual content through the internet or mobile phones.

Revenge Pornography (RP)

Once a sext is sent control over the content is relinquished to the receiver. This potentially leaves the sender vulnerable to further distribution without their consent or other forms of online-victimisation, bullying, or harassment (Strassberg et al., 2012; Wilson et al., 2021). Non-consensual sharing of someone's private sexual materials (photographs or videos) with the intent and purpose of causing embarrassment or distress is known colloquially as 'revenge pornography' (RP; GOV.UK, 2015). This includes sharing photographs electronically via email or text, showing another individual a physical or electronic image, or uploading images to the internet. The legislation in England and Wales means that those who perpetrate RP could face prosecution and can be sentenced to a maximum of two years in prison (GOV.UK, 2015). The term 'revenge porn' is seen as problematic by eminent scholars in the field of image-based sexual abuse as it fails to convey the scope and severity of the harm caused (Maddocks, 2018). Notwithstanding its recent criminalisation, research into RP is still in its infancy (e.g. Branch et al., 2017; Citron & Franks, 2014; Ehman & Gross, 2019; Thomas, 2018). Despite this, RP has been conceptualised as a form of image-based sexual abuse, acknowledging its severity alongside other forms of image-based sexual abuse such as 'deep-faking', 'up-skirting' or 'down-blousing' (McGlynn & Rackley, 2018).

It is a gendered crime with victims predominantly female and perpetrators usually male (Englander, 2012; Hall & Hearn, 2019; McGlynn & Rackley, 2018). However, men can also be victims of RP, and those who do not conform to conventional masculine norms or stereotypes are also at

greater risk of abuse and harassment (McGlynn & Rackley, 2018; Whitmarsh, 2015). One study that surveyed American college students found 10% of the sample had a private photograph shared beyond the intended recipient, the majority of whom were females aged 18 years old (Branch et al., 2017). Despite the majority of perpetrators being ex-partners peers, co-workers, and even family members have been found to distribute sexual images non-consensually (Henry et al., 2017).

Englander (2012) found that over a two-year period more students increasingly admitted to sexting. More than one third in the first year and almost half of the sample in the second year reported that their sexts had been released without their consent. This was mainly when they had declined to date someone, demonstrating that revenge is a motivating factor. Social desirability might mean that these self-reported prevalence rates are lower than actual rates and that the victimisation rates reported here only capture people who know that their images were shared without their consent. Research has also identified other motivating factors for the non-authorised distribution of intimate images including; financial gain, notoriety, and sexual gratification (Englander et al., 2012; McGlynn & Rackley, 2018; Yar & Drew, 2020).

RP poses serious consequences to victims that includes isolation, threats of violence, thoughts of suicide, shame, humiliation, anxiety, depression, and a fear for personal and physical safety (Beechay, 2019; Henry et al., 2017; McGlynn & Rackley, 2018). It is an invasive and embarrassing attack on the morality and sexuality of its victims and harms not only the individual but society as a whole (Beechay, 2019; Franks, 2019). The complexity of the internet makes permanently removing images that have been posted online extremely difficult, adding to the irreparable and long-lasting effects of RP (Franks, 2019; Laird, 2013; McGlynn & Rackley, 2018). RP has also been linked to younger aged sexters, those who sext multiple recipients, and individuals who felt pressured into sexting in the first instance (Englander et al., 2012).

Despite what is known about the impacts of RP, there is a dearth of research into the characteristics of its perpetrators. McGlynn and Rackley (2018) identify that perpetrators of RP are

predominately malicious ex-partners or individuals who use the threat of sharing intimate images as a measure of control and coercion in abusive relationships. In explorations of RP Proclivity (RPP) amongst community samples Thomason-Darch (2021) found sadism to independently predict RPP. Whilst Pina et al. (2017) found that higher levels of the dark triad personality traits (Psychopathy, Narcissism, and Machiavellianism) and ambivalent sexism (sexist ideology regarding women in society) positively correlated with RPP, but only psychopathy independently predicted proclivity.

Psychopathy is a well-documented predictor of rape proclivity (Süssenbach & Euteneuer, 2022) and traits of psychopathy (grandiose/manipulative, callous/unemotional, and impulsive/irresponsible) are predictive of cyber-bullying behaviours including spreading private images of another person online (Kokkinos et al., 2014). Whilst endorsement of the dark triad traits has predicted greater enjoyment in tormenting others online (Brewer et al., 2015), psychopathy was the only dark triad trait that independently predicted RPP in Pina et al. 2017 study. This indicates that psychopathic tendencies alone such as callousness, impulsivity, and thrill seeking may enable a greater inclination to objectify others in the way individuals who perpetrate RP do. It is thought that psychopathic callousness is exercised for immediate gratification (Jones & Paulhus, 2011), the desire for which is observed in the use of social networking sites, online self-disclosures (Ostendorf et al., 2020; Taddicken & Jers, 2011), and adolescent sexting (Mclaughlin, 2010).

Further research has identified that cognitive distortions (e.g. harm minimisation, children as sexual agents, and fantasies), difficulties with relationships, and psychological traits such as low self-worth, less empathetic concern, impulsivity, and sensation seeking are risk factors for online sex offending particularly offences involving child abuse images (Steene et al., 2023). These findings support the findings of Pina et al. (2017) as a marked absence of empathy and sensation seeking are characteristic of psychopathy (Paulhus and Williams, 2002). And so, difficulties with empathy and understanding the emotions of others (i.e. victims) may play an important role in sexting behaviours.

Theory of Mind (ToM)

ToM is the ability to infer the mental states of others by hypothesising what others might be thinking or feeling, make sense of that behaviour, predict others behaviour, and make decisions about one's own behaviour accordingly (Baron-Cohen, 2000; Byom & Mutlu, 2013). As the intent to cause harm or distress in an act of RP involves a disregard for the feelings or impact on the victim (McGlynn & Rackley, 2018) it is therefore hypothesised that those who perpetrate RP show lower ToM abilities. Yet to date, no research has explored the role of ToM in RPP or sexting. 'Mindblindness', or a poorer ToM creates barriers to communication and closeness and can result in cognitive distortions and empathy deficits (Keenan & Ward, 2000). For example, individuals who have committed sexual offences against a child display significantly poorer ToM when compared to non-offending controls (Elsegood & Duff, 2010). An absence of empathy (a feature of psychopathy) is a trait that has also been observed in both adult (e.g., Porter et al., 2000) and adolescent (Gretton et al., 2004) sex offenders. Therefore, ToM is an important concept to consider in relation to sexting and possible sexual deviancy.

Self-Esteem (SE)

Low self-esteem (SE) is also characteristic of those that engage in deviant sexual behaviour (e.g. Shine et al., 2008). SE is a psychological concept that refers to an individual's opinion of themselves (Debowska et al., 2017). Low SE (when one views themselves negatively) can manifest in different ways; an individual with low SE may experience psychological distress, depression, or display antisocial behaviour (Debowska et al., 2017). A plethora of research has documented that low SE is characteristic of sex offenders, particularly those who have offended against children (Fisher et al., 1999; Monto et al., 1998; Shine et al., 2008). Contrariwise, enhanced SE has been associated with a reduction in deviant arousal (Marshall, 1997; Marshall et al., 1997).

As SE emanates from social and cognitive processes including ToM (McCauley et al., 2017) it has been observed that youths with deficient ToM or Autism Spectrum Disorder (ASD) diagnoses report significantly lower SE ratings than neurotypical youths (McCauley et al., 2017). Conversely, research has shown that children with advanced ToM may be more sensitive to comments from

others, thus impacting their view of themselves (Lecce et al., 2011). However, due to the idiosyncratic and ephemeral nature of how individuals with a lower ToM view their self-worth, the reliability of SE measures within this population is questioned (McCauley et al., 2017). Bosacki (2014) highlights that empirical support for the links between ToM and feelings of self-worth or children's ability to understand the thoughts and emotions in self and others is sparce, and existent literature is variable (Bosacki, 2014).

SE has been considered in the context of sexting. Ybarra and Mitchell (2014) found that in adolescents aged 13-18 those who sext are more likely to have lower SE. However, differences have been observed depending on the type of sexting that was being investigated. Scholes-Balog et al. (2016) found that those with higher SE were less likely to send nude photographs, whilst those with high sensation seeking scores were more likely to send suggestive texts or proposition sex via text message. Research conducted by Sesar et al. (2019) found sexters scored lower on a SE measure and higher on a body attribution scale (i.e. feeling of ownership over their body and the judgements others make about their appearance). Their findings also concluded that preventative interventions aimed at reinforcing positive self-image could mitigate the negative outcomes associated with youth sexting (Sesar et al., 2019). Self-efficacy has also been found to be predict sexting and is associated with sexting intentions, suggesting that individuals are more likely to intend to sext if their confidence in doing so is higher (Liong & Cheng, 2017; Ševčíková, 2016; Wilson et al., 2021).

It is proposed that those with low SE turn to risky behaviours in order to escape the negative feelings associated with low SE (Wild et al., 2004). Whilst RP functions to downgrade and violate victim's SE and sexual autonomy (Hall & Hearn, 2019) there is no research that explores the SE of its perpetrators. Doing so, could help to identify those with a greater propensity to engage in this behaviour. McGlynn et al. (2017) propose that image-based sexual abuse is on a continuum with other forms of sexual violence and so RP should be explored with as much urgency as other forms of sexual abuse.

The ubiquity of smart phones has enabled an increase in sexting behaviour, thus creating more opportunities for RP which as identified can have serious negative consequences for its victims (Yar & Drew, 2020). Understanding why individuals engage in sexting and perpetrate RP could help towards identification of offenders and prevention of distress for victims. As aforementioned, sexting literature from UK respondents is scant, and as sexting is of increasing concern (Jorgensen et al., 2018) and has the potential to contribute to image-based sexual abuse and cause negative mental health and forensic implications (as per chapter two; systematic review), it is important to gain insight into the general sexting behaviours of individuals within the UK. Therefore, for purely descriptive purposes, this study first aims to explore the sexting behaviours of respondents. Secondly, psychological factors including ToM, RPP and SE will be examined in relation to their predictive abilities of sexting.

Aims:

i. To explore the image-based sexting behaviours of a general population sample of adults living in the UK.
ii. To assess their ToM, SE and RPP and examine the relationship between these factors and sending and receiving image-based sexts.

Hypothesis:

i. The extremities of SE (higher and lower) will be associated with greater engagement in image-based sexting (Shine et al., 2008; Marshall, 1997).
ii. Higher RPP scores will predict an increased likelihood of image-based sexting behaviour (Englander, 2012; McGlynn & Rackley, 2018)
iii. Lower ToM will predict an increased likelihood of image-based sexting behaviour (Elsegood & Duff, 2010; Kokkinos et al., 2014).

Method

Participants

A G*Power Analysis (Faul et al., 2007) revealed a minimum number of participants to be *N* = 77 to reach a power of 0.80 based on a desired moderate effect size (0.15) and a *p* = .05 significance level using logistic regression. A general population sample of adults living in the UK was chosen to explore image-based sexting by those who should abide by UK Law. As these data were exploratory, a general population sample would ensure findings were as valid as possible. Participants were recruited opportunistically using social media platforms (Facebook, Instagram, Reddit) and survey sites (Survey Circle and Survey Swap).

A total of 211 participants completed the survey. This accounts for 41.7% (*N* = 506) of those who initially accessed the study's information sheet. This is slightly below the average response rate for online studies (44.1%) reported by Wu et al. (2022). Participants were aged between 18 – 89 (*M* = 28.36, SD = 9.43). All other participant demographic information is presented in Table 4.

Table 4:

Participant Demographic Information

Characteristics	**Total**	
	N	**%**
Gender		
Male	64	30.3%
Female	146	69.2%
Non-Binary	1	0.5%
Ethnicity		
White	96	45.5%
Black	6	2.8%
Asian	31	14.7%
Mixed	10	4.7%
Other	68	32.2%
Sexuality		
Heterosexual	165	78.2%
Homosexual	17	8.1%
Bisexual	20	9.5%

Do not wish to disclose	8	3.8%
Unsure	1	0.5%

Design

A within-participants design was utilised in this cross-sectional study. This methodology allowed for data from a large number of variables to be collected and enabled the ability to investigate patterns of relationships amongst these variables. This study involved the online self-report of participants which can incur self-selection and response bias.

Procedure

Participants were asked to complete an online questionnaire accessed via an electronic link to JISC surveys (formerly known as Bristol Online Surveys; Appendix V). Data were collected from October 2020 – January 2021. All consent procedures were conducted online. The median completion time was 16 minutes 34 seconds. Upon completion of the survey, participants were presented with a debrief sheet (Appendix VI) which thanked them for their participation and explained the aims of the study.

Measures

Participants completed a self-administered anonymous survey that included questions assessing demographic information, image-based sexting behaviours and measures relating specifically to ToM, Self-esteem, and RPP (Appendix V). The questionnaire was split into nine sections, the first six of which included demographic and author derived sexting questions. These comprised different question types. Binary forced choice questions with either a 'yes' or a 'no' response, were assigned scores of one and zero respectively (Q5, 6, 12, 18, 2, 25, 27, 33, 34, 36, 37, 43, 49, see Appendix V). For tertiary forced choice questions (Q1, see Appendix V), responses were assigned scores of one, two or three. If a participant selected 'other', they were then provided with a free text option to provide further detail). For multiple choice forced questions which involved either selecting only one response (e.g. Ethnicity), or the option to select multiple responses (e.g. How did

you feel), participant responses were assigned scores of one, with the other non-selected options being assigned scores of zero. The remaining sections consisted of the Revenge Porn Proclivity scale (RPP; Pina et al., 2017), the Self-Esteem Scale (Rosenberg, 1965) and Reading the Mind in the Eyes task – revised (Adult Version; Baron-Cohen et al., 2001).The scoring of which is presented below.

Demographics. The first section of the questionnaire dealt with demographic information and asked six questions. This included one free text question (Age), one tertiary forced choice question (Gender) and four forced-choice questions (Ethnicity, sexuality, access to internet and payment of device).

Sexting Questions. The second section focused on general sexting questions. Participants were provided with the following definition of sexting before commencing this section of the questionnaire: “In this survey 'sexts' will be defined as the exchange of sexually suggestive, nude or semi-nude images or videos.” This definition is in line with current literature which defines sexting behaviour (e.g. Chalfen, 2009; Ringrose et al., 2013).

This section included; One binary forced choice (if they had ever been shown a sext that someone else had received), six multiple choice questions (where they received their sexual education, their understanding of terms, terms they used, how were they shown the sext, how it made them feel, who they have sexted the most) and four free-text questions (Number of relationships, age of first sexual relationship, total number of sexts they’ve received and sent).

The third section asked participants about sexts they had received. Focusing predominantly on the first sext they had received this section contained; one free-text question (relating to age), four binary forced-choice questions (if they’ve received a sext, if they felt under-pressure to send one back and if they showed anyone else, if consent was obtained) and five multiple-choice questions (medium received, who sent it, context of received sext and how they showed someone else, how it made them feel).

Section four contained questions relating to participants most recently received sexts. This section included three binary forced-choice questions (If they felt under-pressure to send one back, if they showed anyone else, if consent was obtained) and six multiple choice questions (when this was received, medium received, who sent it, context of received sext, how it made them feel and how they showed someone else).

Section five related to sexts participants had sent. This section contained; one free-text question (age), two binary forced choice question (if they've ever sent a sext, if they asked for one back) and four multiple-forced-choice questions (the medium in which it was sent, who was the recipient, the context of the sext and how they felt).

Section six related to participants most recently sent sexts. This included one binary forced choice question (if they asked for one back) and five multiple- forced-choice questions (when they sent it, how they sent it, who was the recipient, the context of the sext and how they felt).

Revenge Porn Proclivity. Pina et al.'s (2017) RPP scale was used in section seven of the questionnaire to assess participants' proclivity to engage in this behaviour. A series of five scenarios involving an intimate image of another person being shared without their consent were presented to which respondents were required to answer seven questions per scenario on a 5-point Likert-type scale. For the Proclivity question, participants were given response options ranging from 1 (definitely would not do the same) to 5 (definitely would do the same). For all other questions response options ranged from 1 (not at all) to 5 (very).

Participant's proclivity scores were measured by summing their ratings for all five scenarios when asked if they would do the same (proclivity question). The reliability for this scale demonstrates acceptable reliability (α = .76). In the present study this scale exhibited very good internal consistency (α = .85).

Two additional subscales exist within the RPP measure: RP Enjoyment and RP Approval (Pina et al., 2017). Scores on these scales were measured by accumulating participant ratings on three

questions concerning Excitement, Control, Amusement and Blame, Anger, Regret respectively across the five scenarios. The reliability of these subscales exhibited good internal consistency for both RP enjoyment (α= .87) and RP approval (α = .80). This study demonstrated acceptable internal consistency on the approval subscale (α = .77) and excellent internal consistency on the excitement subscale (α = .92).

Theory of Mind. The updated version of the Reading the Mind in the Eyes task (Adult Version) was included in section eight of the questionnaire, to assess participants' ToM, providing an indication of their emotional intelligence towards other adults (RME; Baron-Cohen et al., 2001). The RME requires participants to infer the mental states of other adults depicted by images of their eye region only. Participants were presented with 37 (including one practice) separate images of adult eye regions one at a time and four text-based options describing the individual's emotional state. This included a target mental state and three distractor/foil mental states. Baron-Cohen et al. (2001) report that the RME is a true measure of ToM as it places no demands on memory, central coherence or executive functioning and scores are independent of IQ. Each participant's ToM score was calculated by summing the number of correct (target) responses.

Self-Esteem. Section nine of the questionnaire comprised of Rosenberg's (1965) Self-Esteem scale (RSES). This was included to provide a measure of respondent's SE. Participants were asked 10 multiple option forced choice questions relating to how they feel about themselves and asked to provide an answer based on a 4-point Likert-type scale ranging from 0 (strongly disagree) to 3 (strongly agree). Five items were reverse scored. All ten items were then summed to provide an overall SE score. Higher scores indicate higher levels of SE. The RSES is a widely used and tested measure of SE and one which exhibits acceptable internal consistency (α = .77). Its use in the present study demonstrated excellent internal consistency (α = .91).

Ethical Considerations

This study was conducted in accordance with the guidelines specified by both the British Psychological Society's Code of Ethics and Conduct (2018) and Ethics (2014). Issues related to informed consent, confidentiality and anonymity of respondent's information, the sensitivity of topics addressed within the survey, voluntary withdrawal from the research and minimisation of psychological harm and distress to the participants and data handling were all considered. Ethical approval was granted by the University of Nottingham Faculty of Medicine and Health Sciences Research Ethics Committee (Ref: 33-0620; Appendix VII). Participants were informed that the study was voluntary and that they could exit the questionnaire at any point and their data would not be saved (see Appendix VI). Participants were also informed that due to the nature of the data collection, they would not be able to withdraw their data after they have submitted their responses (see Appendix VI, page 257). To minimise risk of harm and psychological distress to participants, information relating to appropriate services and organisations of support were included at the end of the study. Participants were also provided with the researchers contact information should they have any questions post-completion. Data were stored on a password-protected encrypted device, only accessible to the researchers. Anonymised data will be retained securely for 7 years in accordance with the University of Nottingham's Code of Research Conduct and Research Ethics.

Statistical Analysis

Data were analysed using the Statistical Packages for Social Sciences (SPSS version 27).

Results

Treatment of Data and Data Screening

Data were examined for inconsistencies and invalid responses. A missing data analysis concluded that less than 1% of data were missing from the Self-Esteem scale and 2.4% of data were missing from the RPE scale. As this represents less than 5%, this was considered to be inconsequential (Schafer, 1999) and missing cases were excluded pairwise.

Outliers were assessed via inspection of boxplots. Several potential outliers were detected on the TOM variable; however, these were not flagged as extreme outliers (± 3.00; Field, 2013) and so remained in subsequent analysis. Extreme outliers were identified on the RPPS variable, which was expected given the variables distribution (see below), so all cases remained in the model.

Tabachnick and Fidell, (2014) recommend that inspection of histograms provide a more accurate representation of normality than looking at the Kolmogorov-Smirnov test. Inspections of histograms indicated that the only variable that violated the assumption of normality was the RPE subscale, which was negatively skewed. However, this was to be expected given the low self-reported prevalence rates of RPP in the general population (Powell et al., 2019).

Outcome variables (sending and receiving sexts) were examined via histograms, this concluded that these variables were best considered as a binary outcome measure, and thus a logistic binary regression will later be employed.

There were only weak correlations between predictor variables (TOM, RPPS and SE). These ranged from r = -.275 - .060, therefore justifying their inclusion within the regression. A Variance Inflation Factor (VIF) value between 1 and 5 suggests moderate correlation between variables, though smaller values close to 1 are desirable to eliminate multicollinearity issues with VIF values above 5 indicating the presence of multicollinearity (Shrestha, 2020). The VIF values for the variables in this model range between 1.004 – 1.071 therefore indicating no evidence of multicollinearity between predictor variables in this model (Shrestha, 2020).

To answer hypothesis (i) relating to the extremities of self-esteem, additional analysis was employed. This involved categorising this continuous measure into fifths, to ascertain whether higher and lower scores on the SE measure were more likely to report sexting (see results section).

Descriptive/ Exploratory Analysis

The following results describe the exploratory analysis of participants responses to the sexting questionnaire.

General Image-based Sexting. Results of the General Image-based Sexting section of the questionnaire are presented in Table 5. The number of significant relationships participants reported ranged from 0 – 20 (M = 3.96, SD = 3.73), with the age of their first sexual relationship ranging from 7 – 33 years old (M = 17.5, SD = 3.25). 22.6% of participants (n = 45) reported their first sexual relationship under the age of 16. Whilst the most frequently selected source of sexual education was from friends (n = 121, 57.3%), analysis of participants descriptions of 'Other' included the internet, pornography, and their own sexual experiences. Of the 97.6% of participants (n = 206) that reported having access to an internet enabled device, 20.9% (n=43) reported not paying for this device themselves.

Table 5:

Number of Responses to General Image-based Sexting Questions

Question	Responses	
	N	**%***
Internet Enabled Camera Device (*n* = 211)		
Yes	206	97.6%
No	5	2.4%
Pays for the device themselves (*n* = 206)		
Yes	163	79.1%
No	43	20.9%
Sexual Education**		
School	114	54%
Home	55	26.1%
Friends	121	57.3%
Other	48	22.7%
Terms Understood**		
Sexting	200	94.8%
Sexually suggestive	170	80.6%
Consent	199	94.3%
Nude photographs	206	97.6%
Nearly nude photographs	191	90.5%
Revenge porn	156	73.9%
None	1	0.5%

Terms Used**		
Nudes	134	63.5%
Sexts	92	43.6%
Naked Photographs/ Images	61	28.9%
Tit Pic	38	18.0%
Dick Pic	112	53.1%
None of the above	43	20.4%
Other	4	1.9%
Shown a sext not intended for you (*n* = 211)		
Yes	107	50.7%
No	104	49.3%
How did this make you feel? **		
Funny	41	19.4%
Excited	11	5.2%
Horny	9	4.3%
Happy	4	1.9%
Scared	3	1.4%
Worried	10	4.7%
Important	4	1.9%
Uncomfortable	45	21.3%
Nothing	24	11.4%

*Note.**All % are representative of the number of respondents to that question, unless specified differently (e.g. how did this make you feel?), whereby the % represents the proportion of respondents compared to the overall sample (*n* = 211) as participants could select multiple responses to these questions.

** respondents could select multiple responses.

Sending Image-based Sexts. 142 (67.3%) of participants reported ever having sent an image-based sext. The age at which participants sent their first image-based sext ranged from 11 – 50 years old (*M* = 19.88, SD = 6.16). The total number of image-based sexts sent varied from 1 – 5000 (*M* = 128.52, SD = 448.46). Whom participants reported having sent image-based sexts to the most are shown in Table 6.

Table 6:

Number of Responses for Sending Image-based Sexts.

Question	Responses	
	N	%*
Who do you mostly send sexts to (*n* = 142)		
Spouse	14	9.9%
Boyfriend/Girlfriend	91	64.1%
Someone I hope to be with	26	18.3%
Friend	3	2.1%
Acquaintance	2	1.4%
Stranger	6	4.2%

Note. *All % are representative of the number of respondents to that question

First Sent Image-based Sexts. Of those who reported having ever sent an image-based sext, responses relating to the first image-based sext participants ever sent are shown in Table 7. Whilst the method of sending their first image-based sext was most commonly reported as via Text Message (n = 59, 41.5%), analysis of the 'Other' option identified the use of forums, chatrooms and messaging sites such as AOL messenger, Kik, Skype, Viber and the anonymous social media Whisper.

Table 7:

Number of Responses for First Sent Image-based Sext

Question	Responses	
	N	***%****
Medium (*n* = 142)		
Text Message	59	41.5%
WhatsApp	30	21.1%
SnapChat	21	14.8%
Instagram	2	1.4%
Facebook	13	9.2%
Email	2	1.4%
Other	15	10.6%
Who Did You Send First Sext To (*n* = 142)		
Spouse	5	3.5%
Boyfriend/Girlfriend	78	54.9%
Hope to be with	37	26.1%
Friend	7	4.9%
Acquaintance	4	2.8%
Stranger	11	7.7%
Context of First Sent (*n* = 142)		
Receiver asked for it	44	31.0%
Receiver sent one first	60	42.3%
Joke	3	2.1%
Wanted one back	11	7.7%
They were not expecting it	5	3.5%
I felt like it	19	13.4%
Felt When First Sent Sext**		
Positive Affect		
Funny	20	9.5%
Horny	74	35.1%
Excited	96	45.5%
Happy	33	15.6%
Important	18	8.5%
Negative Affect		
Worried	29	13.7%
Scared	18	8.5%
Uncomfortable	23	10.9%
Nothing	4	1.9%
Did You Ask Them to Send a Sext Back? (*n* = 142)		
Yes	41	28.9%
No	101	71.1%

Note. *All % are representative of the number of respondents to that question, unless specified otherwise.

**Participants could select multiple responses, here the % represents the proportion of respondents compared to the overall sample (*n* = 211) as participants could select multiple responses to these questions.

Most Recent Sent Image-based Sext. Responses relating to participants most recently sent image-based sext is shown in Table 8. WhatsApp was most commonly used to send participants most recent image-based sext (*n* = 58, 40.8%). Analysis of the 'Other' option included the dating app Grindr and the anonymous social media site Whisper.

Table 8:

Number of Responses Regarding Most Recently Sent Image-based Sext

Question	Responses	
	N	***%****
Who did you send Most Recent Sext to (*n* = 142)		
Spouse	11	7.7%
Boyfriend/ Girlfriend	88	62.0%
Someone I Hoped to be with	28	19.7%
Friend	10	7.0%
Acquaintance	1	0.7%
Stranger	4	2.8%
Medium (*n* = 142)		
Text Message	30	21.1%
iMessage	4	2.8%
WhatsApp	58	40.8%
SnapChat	24	16.9%
Instagram	6	4.2%
Facebook	13	9.2%
Email	1	0.7%
Other	6	4.2%
When did you send this (*n* = 142)		
Within last week	35	24.6%
Within last month	21	14.8%
Within last 3 months	20	14.1%
Within last 6 months	14	9.9%
Within last 12 months	15	10.6%
Over 1 year ago	37	21.6%
Context of Recent Sent (*n* = 142)		
Receiver asked for it	39	27.5%
Receiver sent one first	50	35.2%
Joke	6	4.2%
Wanted one back	13	9.2%
Receiver Not Expecting it	3	2.1%
I felt like it	31	21.8%
Feel When Sent Recent Sext**		
Positive Affect		
Funny	31	14.7%
Horny	83	39.3%
Excited	95	45.0%
Happy	48	22.7%
Important	20	9.5%
Negative Affect		
Scared	5	2.4%
Worried	9	4.3%
Uncomfortable	8	3.8%
Nothing	7	3.3%
Did you ask them to sext you back? (*n* = 142)		
Yes	37	26.1%
No	105	73.9%

Note. *All % are representative of the number of respondents to that question, unless specified otherwise.

**Participants could select multiple responses, here the % represents the proportion of respondents compared to the overall sample (*n* = 211) as participants could select multiple responses to these questions.

Received Image-based Sexts. 162 (76.8%) participants reported having ever received an image-based sext. The age participants received their first image-based sext ranged from 13 – 50 years old (*M* = 19.72, SD = 6.6). The total number of image-based sexts participants reported receiving ranged from 1 – 5000 (*M* = 143.88, SD = 444.19).

First Sext Received. Responses relating to the first image-based sext that participants received are shown in Table 9. Text Message (n = 65, 40.1%) was the most frequently reported method by which they received this image-based sext. Analysis of the 'Other' option identified online chat rooms, the dating app Grindr and messaging sites MSN messenger and KiK.

Table 9:

Number of Responses for First Received Image-based Sext

Question	Responses	
	N	***%****
Received from (*n* = 162)		
Spouse	3	1.9%
Boyfriend/ Girlfriend	66	40.7%
Hoped to be with	42	25.9%
Friend	11	6.8%
Acquaintance	11	6.8%
Stranger	29	17.9%
Medium (*n* = 162)		
Text Message	65	40.1%
WhatsApp	30	18.5%
SnapChat	22	13.6%
Instagram	3	1.9%
Facebook	21	13.0%
Email	2	1.2%
Other	19	11.7%
Context (*n* = 162)		
I asked for it	15	9.3%

Question	Responses	
	N	***%****
I wanted it	35	21.6%
I sent one first	16	9.9%
I was not expecting it	96	59.3%
Feel First Received**		
Positive Affect		
Funny	39	18.5%
Horny	74	35.1%
Excited	94	44.5%
Happy	47	22.3%
Important	27	12.8%
Negative Affect		
Worried	20	9.5%
Scared	17	8.1%
Uncomfortable	48	22.7%
Nothing	6	2.8%
Pressure to sext back (*n* = 162)		
Yes	70	43.2%
No	92	56.8%
Did you show this to someone else? (*n* = 162)		
Yes	9	4.3%
No	153	72.5%
How? (*n* = 9)		
In person	6	66.7%
Forward	3	33.3%
Consent? (*n* = 9)		
No	9	100%

Note. *All % are representative of the number of respondents to that question, unless specified otherwise.

**Participants could select multiple responses, here the % represents the proportion of respondents compared to the overall sample (*n* = 211) as participants could select multiple responses to these questions.

Most Recent Received Image-based Sext. Responses relating to participants most recently received image-based sext are shown in Table 10. WhatsApp was recorded as the most common medium by which this was received, yet analysis of the 'Other' option revealed other methods such as dating app Tinder, the anonymous social media Whisper, an avatar chat room IMVU, and encrypted instant messaging service Wickr.

Table 10:

Number of Responses for Recently Received Image-based Sexts

Question	Responses	
	N	**%***
Who Sext Recent Received (*n* = 162)		
Spouse	10	4.7%
Boyfriend/ Girlfriend	89	42.2%
Hoped to be with	30	14.2%
Friend	12	5.7%
Acquaintance	9	4.3%
Stranger	12	5.7%
Medium (*n* = 162)		
Text Message	39	18.5%
WhatsApp	57	27.0%
SnapChat	29	13.7%
Instagram	9	4.3%
Facebook	14	6.6%
Email	3	1.4%
Other	11	5.2%
Context of Recent Received (*n* = 162)		
I asked for it	16	9.9%
I wanted one back	52	32.1%
I had sent one first	24	14.8%
I was not expecting it	70	43.2%
When did you send this (*n* = 162)		
Within last week	39	24.1%
Within last month	20	12.3%
Within last 3 months	22	13.6%
Within last 6 months	8	4.9%
Within last 12 months	16	9.9%
Over 1 year ago	57	35.2%
Feel Recent Received**		
Positive Affect		
Funny	31	14.7%
Horny	94	44.5%
Excited	96	45.5%
Happy	63	29.9%
Important	26	12.3%
Negative Affect		

Question	Responses	
	N	**%***
Scared	6	2.8%
Worried	8	3.8%
Uncomfortable	23	10.9%
Nothing	8	3.8%
Pressure to Send Back (*n* = 162)		
Yes	41	25.3%
No	121	74.7%
Did you show this to someone else? (*n* = 162)		
Yes	4	2.5%
No	158	97.5%
How? (*n* = 4)		
In person	2	50%
Forward	1	25%
Posted online	1	25%
Consent? (*n* = 4)		
No	4	100%

Confirmatory Analysis Results

The spread of participant responses on the ToM, SE, RPP, RPE and RPA scales are presented in Table 11.

Table 11

Participant Scores per Outcome Variables

Outcome Variable	Participant Scores		
	***N* (%)**	***M* (SD)**	**Range**
ToM Score	211	25.7 (4.8)	9 – 35
Self-Esteem Score	209*	14.9 (1.9)	10 – 20
RPP Score	211	5.9 (2.6)	5 – 25
RP Acceptance Score	211	43.3 (10.0)	15– 75
RP Enjoyment Score	206*	27.1 (11.7)	15 – 69

Note. *Missing data analysis concluded that less than 1% of data were missing from the Self-Esteem scale and 2.4% of data were missing from the Revenge Porn Enjoyment scale.

Revenge Porn Proclivity. In line with Pina et al. (2017) only participants who categorically disagreed with the questions were considered not to endorse the RPP, enjoyment or approval scales. Therefore, 21.8% of participants (*n* = 46) reported some proclivity to perpetrating RP (scored > 5 on proclivity scale overall). 99.1% of participants (*n* = 209) presented some endorsement of RP approval (scored > 15 on the approval subscale overall), and 74.9% of participants (*n* = 158) expressed some enjoyment of RP (scored > 15 on the enjoyment subscale overall).

Theory of Mind. Baron-Cohen et al. (2001) conclude that lower scores on the Mind in the Eyes test indicate difficulties reading the mental states of others. Across general population samples, the mean ToM score varies from 22 – 28 (Vellante et al., 2013). In this sample, 19.2% of participants (*n* = 42) scored < 22 on this scale.

Self-Esteem. According to Rosenberg (1965) a score on the self-esteem scale < 15 indicates low self-esteem. In this sample, 44.5% (*n* = 93) of participants scored < 15.

Logistic Regression. Table 12 presents the unadjusted and adjusted results of the logistic binary regression model including predictor variables (ToM, RPP and SE scores) and receiving image-based sexts.

The first model indicates that increases on the ToM scale predicts membership of participants receiving image-based sexts. For every one increase in scores on the ToM scale, the likelihood of reporting receiving image-based sexts increased by 10%. This was significant in the first unadjusted model, when controlling for possible confounds and when all other variables were fitted to the model. Scores on the RPPS did not predict receiving image-based sexts. SE scores did not predict likelihood of receiving image-based sexts. However, when accounting for possible confounds (age, gender, and sexuality) this was significant (p = .021) and when accounting for all other variables in the final model, significance remained (p = .019).

Following Bonferroni correction on the initial model, ToM remained significant for receiving image-based sexts and ToM and SE were significant predictors for sending image-based sexts. However, following Bonferroni correction on the adjusted model, only SE remained a significant predictor of sending image-based sexts (p=.001).

Table 12

Unadjusted and Adjusted Associations between ToM, RPP and SE Scores and Receiving Image-based Sexts

Variable	Unadjusted OR (95% CI)	*p*-value	Pseudo-R^2 Cox & Snell (Nagelkerke)	Adjusted** OR (95% CI)	Adjusted *p*-value	Mutually Adjusted ***OR (95% CI)	Mutually Adjusted *p*-value
ToM	1.10 (1.03 – 1.17)	.005*	.037 (.056)	1.11 (1.03 – 1.19)	.009*	1.10 (1.02 – 1.19)	.017*
RPPS	.98 (.87 – 1.10)	.735	.001 (.001)	1.00 (.86 – 1.17)	1.00	1.09 (.91 – 1.31)	.363
SE	.85 (.72 – 1.00)	.052	.018 (.028)	.81 (.67 - .97)	.021*	.80 (.67 - .97)	.019*

Significant (p = <.05) **Adjusted for possible confounds (age, gender, sexuality) * Adjusted for everything in the model.*

Table 13

Unadjusted and Adjusted Associations between ToM, RPP and SE Scores and Sending Image-based Sexts

Variable	Unadjusted OR (95% CI)	*p*-value	Pseudo-R^2 Cox & Snell (Nagelkerke)	Adjusted** OR (95% CI)	Adjusted *p*-value	Mutually Adjusted*** OR (95% CI)	Mutually Adjusted *p*-value
ToM	1.10 (1.02 – 1.16)	.004*	.040 (.056)	1.09 (1.02 – 1.17)	.008*	1.08 (1.01 – 1.16)	.027*
RPPS	.90 (.81 – 1.00)	.059	.018 (.024)	.90 (.79 – 1.01)	.076	.94 (.83 – 107)	.351
SE	.79 (.68 - .93)	.003 *	.042 (.059)	.75 (.63 - .89)	<.001*	.75 (.63 - .89)	.001*

Significant (p = <.05) **Adjusted for possible confounds (age, gender, sexuality) * Adjusted for everything in the model.*

Table 13 presents the unadjusted and adjusted results of the logistic binary regression between predictor variables (ToM, RPP and SE scores) and sending image-based sexts.

In the initial model, ToM scores predicted the sending and receiving of image-based sexts following Bonferroni correction. For every one increase in score on the ToM scale, the odds of sending image-based sexts increased by 10%. However, after implementing a Bonferroni correction on the adjusted p-values ToM was no longer significant. RPPS scores did not predict likelihood of sending image-based sexts. SE was the only variable that significantly predicted the sending of image-based sexts following Bonferroni correction on either models such that as scores on the SE scale increased, the odds of sending image-based sexts decreased.

Additional Analysis. Additional analysis was employed on the SE variable, to answer the hypothesis that higher and lower self-esteem predicted image-based sexting. SE scores were squared and re-entered into a logistic regression to examine whether there was any evidence of a non-linear relationship (as evidenced by the presence of a significant result). The SE squared variable was significant for both sending and receiving image-based sexts (p = .004 and p = .047 respectively), indicating a possible non-linear relationship. SE scores were then categorised into five groups and entered into a logistic regression. Results showed there was no significant differences between SE groups for receiving image-based sexts. Odds ratios and confidence intervals have been plotted in Figure 3. Therefore, in conclusion SE scores do predict receiving image-based sexts, but there is a downward trend such that as SE scores increase, the odds of reporting receiving image-based sexts decrease.

There was a significant difference between SE groups and sending image-based sexts (p = 0.017). Examination of the data and graphs (See Figures 4) show that this is strongest in the first SE group and lowest in the higher SE group indicating a downward trend for SE and image-based sexting.

Figure 3:

Odds Ratios of Categorised SE Scores and Receiving Image-based Sexts

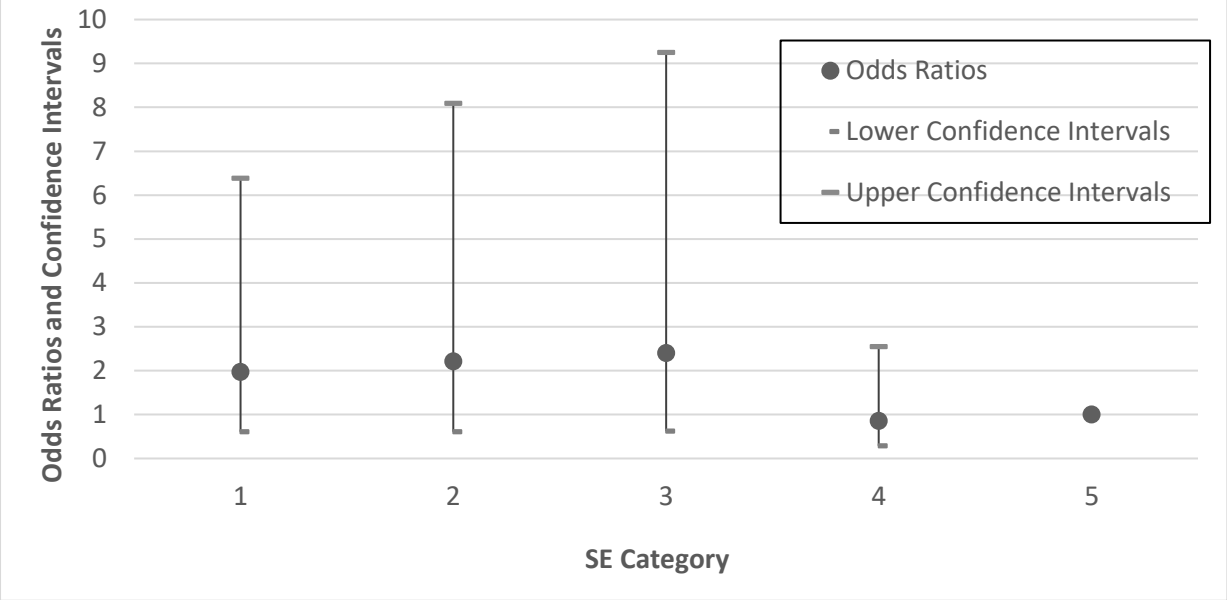
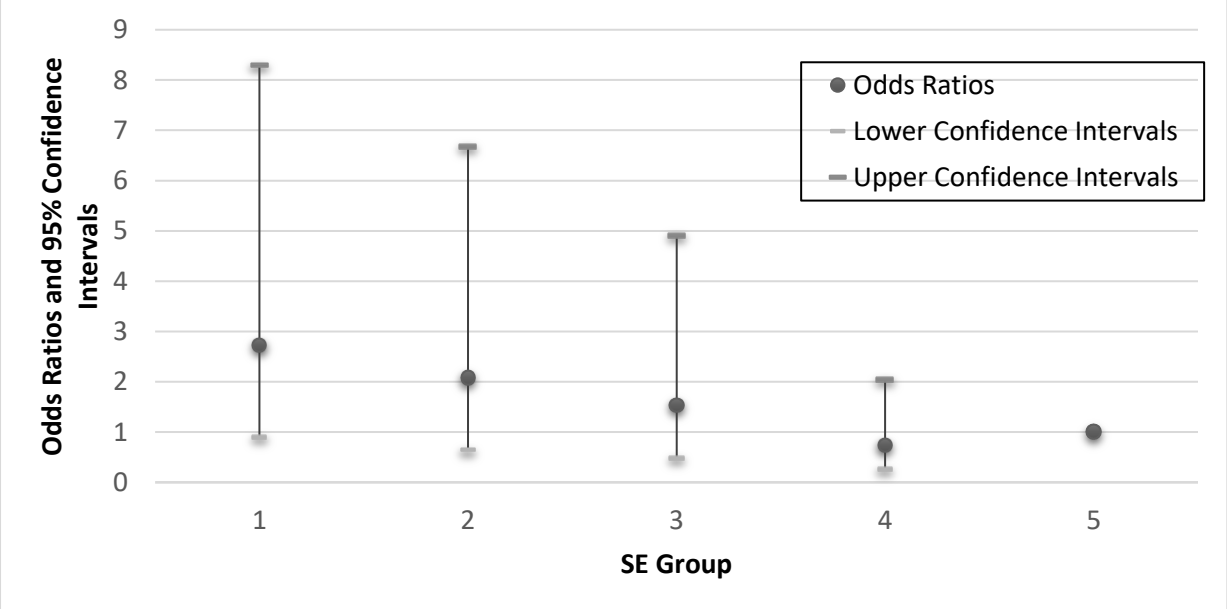


Figure 4:

Odds Ratios of Categorised SE Scores and Sending Image-based Sexts



Summary of Findings:

Following a logistic binary regression with Bonferroni adjustment, SE scores significantly predicted the sending of image-based sexts in the mutually adjusted model such that as scores on the SE scale increased the odds of reporting sending image-based sexts decreased. RRPS did not predict image-based sexting of any kind. In initial models, ToM scores significantly predicted sending and receiving image-based sexts following Bonferroni correction, however after mutual adjustment, findings were no longer significant. Therefore, in this sample SE scores was the only significant predictor of sending image-based sexts following mutual adjustment and Bonferroni correction.

Discussion

This study set out to explore the image-based sexting behaviours of adults in the UK and examine psychological factors that may make someone more likely to report sending or receiving image-based sexts. Exploratory analysis confirmed that 67% of participants reported having sent an image-based sext, and 77% of participants reported having received an image-based sext, most (74% and 69% respectively) were sexting intimate partners. These figures are higher than that identified by Klettke et al. (2014), and although this may be due to increased access/availability of image-sharing, these figures suggest that image-based sexting has become an increasingly common behaviour and therefore provides evidence in support of the normalcy argument for image-based sexting.

The media used to exchange sexual content is changing concomitantly with the increase in technology use, social media, and dating apps. As data shows a shift from; online chat rooms, forums, and the use of the now inactive AOL messenger, to encrypted apps; (e.g. WhatsApp or Wickr), dating sites (e.g. Grindr, Tinder), SnapChat, and the use of virtual reality sites (e.g. IMVU) as methods of sexting. Whist image-based sexting online and on encrypted sites may have its benefits in terms of data

security and user anonymity, these can also be to a user's detriment, creating barriers for policing and increasing vulnerability to the misuse of their data.

Whilst most participants (97.6%) have access to their own internet enabled device, 20.9% of participants reported they did not pay for this device themselves. Many studies do not report on these figures (e.g. Klettke, 2014). This is a limitation of the existent literature, that relies heavily on online sampling, as online sampling may result in a higher proportion of respondents having greater access to the internet/ mobile phone technology and therefore potentially be more likely to sext (Klettke, 2014; O'Donovan, 2010). This has been highlighted as a potential factor that may inflate the prevalence rates of sexting, bias samples, and result in less generalisable findings. Research by Bentosch (2013) asked participants if they owned their own 'cell phone' and found no differences in cell phone ownership or overall texting behaviour between white and minority participants. In the present study, this enquiry was furthered by asking participants if they paid for their own device. This is relevant because if participants were image-based sexting under the legal age from a device that they did not pay for, it could it be argued that bill payers are enabling this behaviour. As highlighted in Van Ouytsel et al. (2017) and Wolfe et al. (2016) those who have a device paid for by their parents are less likely to sext as they are more likely to be subject to parental supervision. Understanding this in the context of adolescent image-based sexting is important for policy makers within academic institutions, parental/carer monitoring of their child's mobile phone access/use, family therapy, and public protection notifications (executed by police forces).

Participants reported being victims and perpetrators of what is now coined cyber-flashing (the unsolicited sending of nudes). A limitation of this study is that it did not ascertain whether participants were aware of the legal implications of these behaviours. With its recent criminalisation (Dathan, 2022; McGlynn & Johnson, 2021), it is hoped that this will raise awareness of this behaviour, deter future perpetrators and increase victim's options and the support available to them.

There are many exploratory data not commented on in this discussion, it is simply not possible to discuss all observations within this thesis. However, this does not mean they are not worthy of further exploration, sexting in the UK is an important issue given the implications it has for senders, receivers, on or offline witnesses and other stakeholders (i.e. policing, internet and social media platforms, education providers, families, etc) and it should be treated as such, therefore future research is needed to further our understanding on the impact of sexting on those in the UK to identify further ways we can safeguard children, adolescents and adults from the forensic and mental health implications associated with sexting.

In terms of psychological factors, this study hypothesised that high and low self-esteem would predict image-based sexting. Results show that self-esteem predicts sending image-based sexts, such that as self-esteem scores increased, the odds of reporting sending image-based sexts decreased, a finding consistent within the literature (e.g. Ybarra & Mitchell, 2014; Scholes-Balog et al., 2016). For receiving image-based sexts, SE was only significant after adjustment for possible confounding variables (i.e. Age, Gender, and Sexuality). However, significance was lost following Bonferroni correction. This may have become significant after adjustment due to omitted variable bias. However, it is possible that due to the small sample size examined here, adding variables into the model has resulted in over fitting, thus producing a significant result. Whilst significance was lost following Bonferroni adjustment, this is a conservative adjustment and may not allow for significant findings to be shown (Emerson, 2020).

These results suggest that those with higher SE are less likely to report image-based sexting, this is important given that Sesar et al. (2019) found that increasing self-esteem mitigates the negative effects associated with sexting in younger populations. So even though those with higher self-esteem are less likely to be sexting, if they are, they are less likely to experience the negative implications of it. Therefore, it is possible that those with higher SE require less input, resources and support when it comes to managing online safety. Further, Wilson et al. (2021) report how sexting affords individuals the

time to re-take images, leading to increased confidence in the material being distributed, which may also suggest increasing one's self-esteem to be a motivating factor in sexting. Engaging in risky sexual behaviour to escape negative feelings of self-worth is documented in sexting and sexual offending literature (e.g., Wild et al., 2004; Shine et al., 2008) and so future research should continue to explore the role of SE in sexting and other image-based sexual abuse.

This was one of the first studies to explore revenge porn and image-based sexting together in the UK, contributing to a scarce literature base. In this sample, scores on the RPPS did not predict sending or receiving image-based sexts. Therefore, results do not support hypothesis (ii). Although found to be non-significant, an effect was observed in that as scores on the RPP scale increased, the odds of reporting sending and receiving image-based sexts decreased, which is comforting given the impact revenge porn has on its victims. It is possible that a number of factors influenced the non-significance of these findings, such as the small sample size examined, a predominant female and heterosexual sample (given that Revenge Porn is a gendered crime with mostly female victims, see Englander, 2012) and the absence of accounting for social-desirability bias, both of which future research should seek to rectify. Contrary to these findings, Lapidot-Lefler and Barak (2012) propose that there is greater propensity to perpetrate abuse when there is less facial or eye contact, which sexting may facilitate. Further, Hall and Hearn (2019) establish a link between the motivations for revenge porn perpetration and sexual offending, and given it is now a criminal offence, revenge porn and the factors and behaviours that possibly link to it (i.e. sexting) are imperative for future research. This study did not ask participants about personal victimisation of revenge porn, but it is likely given that over half of all participants admitted to being shown a sext not intended for themselves (50.7%), that victimisation of revenge porn is likely to surpass current understanding of victim rates. This is concerning, given the devastating consequences victims experience and the increasing link between on and offline abuse (e.g. Marganski & Melander, 2015; Reed et al., 2017).

In line with hypothesis (iii) higher ToM scores predicted increased odds of sending and receiving image-based sexts even when applying Bonferroni correction on the initial model. This is not consistent with the findings of Sesar et al. (2019) who found that lower levels of emotional competence were associated with increased sexting activity. However, following mutual adjustment and Bonferroni correction, ToM was not a significant predictor of image-based sexting in this sample. Whilst Elsegood and Duff (2010) explored ToM in relation to sexual offences against children establishing a link between sexual deviancy and emotional intelligence, this study was the first to explore ToM and sexting. Given these findings, it is possible that emotional intelligence influences an individual's ability to read sexual contexts and respond accordingly, resulting in increased reporting of sexting for those with a greater ToM.

Limitations

Although the contribution of this research to the literature base is noteworthy, there are some limitations that merit consideration. The generalisability of results is circumscribed using a general population sample, meaning findings are provisional and not representative of sanctioned offenders. It is difficult to truly represent the entire population from the sample collected. Participants were not asked about any convictions or physical/mental health diagnosis which may have influenced their responses. Further, there is a risk of sampling bias due to the study being advertised on forums and social media, meaning certain individuals who frequent these sites were more likely to complete the study. It is also recognised that the general population is diverse in terms of demographics, socioeconomic status, cultural background, and other factors which may not have been captured in the present study, all of which may have limited the generalisability of results. Whilst the participants of the current study were taken from a general population sample results found that many had broken the law by sending or receiving sexualised images when they were children and had engaged in acts of RP and cyber flashing.

This study used self-report data only and this may be considered a limitation as social desirability, fatigue and order effects were not accounted for. Given this, it is possible that perpetration of RP may be higher than reported, ToM and SE scores may also not be a true representation, so caution is warranted.

Another limitation of this research is that participants did not have the opportunity to withdraw their data after they submitted their responses. The absence of post-study data withdrawal option restricts participants control over their information and may limit this study's ethical considerations.

The majority of the participants in this study were female and this should be considered given the finding that gender is a possible confounding factor. Although it has been found that gender has no effect on sexting (e.g., Currin et al., 2020; Wilson et al., 2021), there is inconsistency across the literature (e.g., Brodie et al., 2019; Wysocki & Childers, 2011). It is particularly important when considering the findings relating to revenge porn proclivity, as females are more likely to be victims rather than perpetrators (McGlynn & Rackley, 2017). As such, there is a need for equal recruitment across genders for future research.

Implications

The findings of this study have many implications for forensic practice. As many participants identified that they had broken the law (i.e. sexting under the legal age, engaging in underage sexual acts), further work is needed to embed sexting within the education curriculum and health services and provide further support and psychoeducation for young people. This would ensure young people are aware of the ramifications of their behaviour, enabling them to make informed decisions about their sexual content. In this study, it was not clear whether participants were aware of the legal implications of their behaviour, and this is something future research should address. Given that the behaviours reported in this study could result in criminal charges, policy makers, law enforcers and education

providers must not dismiss that individuals are sexting underage, the risks this may pose and the consequences this is likely to have.

This study identified that image-based sexting is exiting traditional chat rooms and entering into a plethora of encrypted apps. As such, it becomes increasingly difficult to monitor and prevent the ill-effects of image-based sexting and image-based sexual violence. Web developers, social media platforms and dating websites must do more to moderate the content exchanged on their sites, educate users on the law and the impact of sexting gone-wrong, and offer guidance for safe sexting. Awareness should also be raised for the support available for those affected by image based sexual violence, including cyber-flashing and revenge porn.

RPPS scores did not predict image-based sexting in this sample. If RP is not linked to image-based sexting, then assessment and screening of those at risk of either behaviour may need to employ distinct tools ensuring that both behaviours can be addressed clinically without assuming a direct connection between the two. Similarly, treatment and intervention offered should be tailored to address the specific motivations and underlying psychological function and need of each behaviour separately. For example, intervention aimed at RP might focus on issues of control and power and how to manage these in intimate relationships. Sexting related intervention may focus on enhancing social communication, improving digital literacy and psychoeducation on the law and consent. However, it is possible that there may be a link between RP and image-based sexting not uncovered in this study. If future research were to uncover a link between these behaviours, early identification and education would be of paramount importance to provide those who image-based sext with the knowledge and awareness required to make informed decisions about their content and also to educate those who victim-blame for sexting to begin with (Mckinlay & Lavis, 2020).

The initial finding that higher ToM scores predict sending and receiving image-based sexts are important, as this suggests that those who engage in image-based sexting may have a higher ability to understand and anticipate others' thoughts and feelings, which may result in less adverse effects of sexting. If so, clinicians and intervention providers aiming to mitigate the risks of image-based sexting may wish to harness ToM skills and support those with a reduced ToM into increasing their knowledge and understanding of digital communication and consent, helping them to engage in healthy and consensual image-based sexting. It is possible that those with a higher ToM may be more inclined to misuse their skills in harmful ways (e.g. online grooming, manipulation, etc) and could be considered an aggravating factor in court. Conversely, higher ToM skills used to demonstrate remorse and understanding of victim's perspectives may be considered a mitigating factor in parole/court hearings. Therefore, increased ToM skills could be considered a factor in assessing future risk of image-based sexting and/or other image-based sexual violence, which could impact an offenders sentencing and parole. The ability to read the mind of a victim and ascertain their emotions and the impact one's behaviour had on another may feed into restorative justice and victim awareness programmes and could be considered in line with victim impact statements for court proceedings.

Understanding the role of self-esteem and image-based sexting is imperative to understanding the context of individual's behaviour and may influence assessment, intervention and treatment of individuals who have misused image-based sexting (i.e. revenge porn perpetrators). Self-esteem could be incorporated into risk assessments for image based sexual abuse perpetrators and could form basis for intervention programmes. Enhancing self-esteem may be considered a protective factor for those engaging in not just image-based sexting, but other risky sexual behaviour. Those with lower self-esteem may be more susceptible to online pressure and coercive sexting and this may help to identify and protect vulnerable individuals and feed into victim support programmes. Clinically, these findings are important as community mental health teams including child and adolescent mental health services

(CAMHS) and schools may wish to incorporate self-esteem building into their programmes to support those who have engaged in image-based sexting due to low self-esteem, to reduce future risk. Considering the link between self-esteem and image-based sexting may help to focus on schools and young people services, mitigating the adverse effects of it, enabling individuals to make safer online choices.

Conclusion

This study explored the image-based sexting behaviours of adults in the UK and the psychological factors that may predict sending or receiving image-based sexts. The findings confirmed that adults in the UK are engaging in image-based sexting and that higher ToM scores predict both sending and receiving image-based sexts in the initial model. The ToM measure used in this chapter will be examined in chapter five, to explore whether the tools use in this thesis is justified, and if the significant results observed in the initial model are valid and reliable. In contrast, RPPS did not predict image-based sexting. SE scores did predict image-based sexting, such that as SE increased, reporting of image-based sexting decreased. As identified in earlier chapters of this thesis, sexting can create a myriad of implications for those that are sharing their personal sexual content, so it is imperative that future research identify additional predictors of image-based sexting to aid early identification and intervention of those at-risk, helping to mitigate adverse effects and prevent victims of image-based sexual violence.

Chapter Four: An Exploration of Age, Sexuality, and Gender as Predictors of Adult Image-based Sexting in the UK.

Abstract

The results of the study presented in chapter three established that a general population sample of adults in the UK were image-based sexting. The study explored possible psychological predictors for image-based sexting and found that higher scores on a self-esteem scale predicted decreased odds of sending image-based sexts. This study aims to further the understanding of predictors of image-based sexting and examine whether differences in image-based sexting behaviours are better explained by demographic factors opposed to the psychological constructs explored in chapter three. A logistic binary regression found that participants identifying as non-heterosexual were at increased odds of sending and receiving image-based sexts than heterosexual participants, although these findings were not significant following Bonferroni correction. No significant effect was observed for gender or age group, but odds ratios demonstrated that participants identifying as female and younger age groups were at increased odds of report sending and receiving image-based sexts. Significant gender differences were observed for negative affect felt, particularly the feelings of; uncomfortable, worried, and feeling pressure to sext back. The presence of victimisation and perpetration of cyber-flashing was also observed within the sample. Implications for practice, limitations, and directions for future research are discussed.

Introduction

The study presented in chapter three confirmed that adults in the UK send and receive image-based sexts. SE was identified as the only significant psychological predictor of sending image-based sexts following Bonferroni correction (which is considered to be a conservative adjustment; Emerson, 2020). Whilst some findings were not statistically significant at the $p = .05$ or adjusted $p = .016$ level, a lack of statistical significance is often interpreted as an absence of an effect, which is a 'serious

misinterpretation' (Quertemont, 2011), despite literature warning researchers against it. Altman and Bland (1995) suggest that it is not that there is no statistical difference, it is that there is an absence of evidence of a difference between groups. Therefore, it is crucial to approach non-significant findings with caution and use them as a starting point for further research. As age, gender, and sexuality were treated as possible confounding variables in the first study and influenced the significance of some findings, valuable questions arose as to whether differences in image-based sexting are better explained by demographic factors such as sexuality, age, and gender and these are what will be explored in this chapter. Exploring these factors will further enable the identification of risk factors associated with image-based sexting.

Age

Whilst most sexting literature focuses on adolescents and emerging adults' experiences of sexting, sexting does occur across the lifespan (Currin et al., 2016). However, differences amongst age groups have been identified (e.g. Walrave et al., 2014). Klettke et al. (2014) estimated adult prevalence rates of sexting at 53%. Their later study found higher ages were associated with sending sexts (Klettke et al., 2018). This was further supported by Van Ouytsel et al. (2020) who identified that sexting was associated with being older. Walrave et al. (2014) found that 31 – 40-year-olds were more likely to intend to sext than 18 – 30 and 41 – 55-year-olds, but this did not relate to actual sexting behaviour, only intent. In a longitudinal study, Gámez-Guadix and de Santisteban (2018) found that higher ages in time point one, predicted increased sexting in time point two. Conversely, others have argued that sexting behaviour is stable across time (Alonso & Romero, 2019; Dodaj et al., 2020). So, whilst there is evidence for sexting across the lifespan, findings relating to prevalence vary and this may be a result of societal norms, differences in motivation and purpose for sexting, maturity and sexual exploration, such as one's sexual purpose (expression and sexuality exploration) of sexting also increasing with age and experience (Bianchi et al., 2021).

Motivations for sexting have also been found to differ across age groups, with younger individuals perceiving sexting as a form of self-expression or a way of exploring and establishing their identity by experimenting with their sexuality (Dir et al., 2013; Henderson, 2011; Lenhart, 2009) which is commonplace for adolescent sexual and self-development. Bianchi et al. (2017) identify three motivations for sexting in 13 – 20-year-olds; sexual purposes, body image reinforcement and aggravated/instrumental reasons (e.g., to control or manipulate). Motivations might be very different in adults who may use sexting to enhance and maintain romantic relationships (Weisskirch & Delevi, 2011) through flirting and sustaining intimacy (Currin et al., 2020).

Associations between sexting and depressive symptoms and other negative mental health outcomes also differ across age groups and appear to have a high prevalence amongst adolescent and younger adult sexters (Dake et al., 2012; Englander, 2012; Gordon-Messer et al., 2013), suggesting that there is something protective about sexting in later years which may account for the plethora of adverse implications observed in younger sexters.

Differences across age groups may arise from the relationship processes that occur in adolescence compared to adulthood (Walrave et al., 2014). Subjective norms are more prominent in decision making in adolescence, with approval from friends also influencing one's decisions to sext (Walrave et al., 2014). This transitional period of identity and role restructuring within new relational contexts can increase levels of stress, influence fluctuations in self-esteem and ability to cope (Furman & Shaffer, 2003; Walrave et al., 2014). This may make a teenager more suspectable to peer and partner influence and increase likelihood of sexting (Suleiman & Deardorff, 2015). Further, Zimmer-Gembeck (2002) identify that adolescent romantic relationships tend to be fairly brief in comparison to adult relationships, providing less time for trust and relational security to develop, leading to further reliance on perceived peer norms in sexting related decision making. Alternatively, it could be argued that those brief relationships also carry an absence of consequence, enticing teens to sext more.

Given that image-based sexting under the age of 18 in the UK is illegal and the aforementioned differences across the lifespan, age appears to be an important concept to consider when examining image-based sexting. Yet evidence of its role in image-based sexting appears inconsistent within nascent literature and so further exploration is warranted.

Gender

Whilst revenge porn is recognised as a gendered crime (Hall & Hearn, 2019), the literature on gender disparities in sexting appear less consistent. Sesar et al. (2019) found that younger males participated in sexting more so than young women and were less successful in recognising and understanding emotions. This is a key element of the ToM task used in Chapter Three and an important finding to consider when thinking about both the context and consequences of image-based sexting if senders are unable to recognise or understand emotions. Klettke et al. (2018) observed cultural differences amongst sexters in that Australian males were more likely to have sent sexts than Indian males, and Australian females were more likely to have both sent and received sexts compared to Indian females. Further, Indian males were more likely than Indian females to have sent and received sexts (Klettke et al., 2018), indicating both cultural and gender differences in sexting. Although comparing one sexting practices across nations is not without its limitations, which is why research in the UK about UK sexters is imperative to understanding the sexting practices here. Mori et al. (2021) found that females from ethnic minority groups were less likely to display higher rates of sexting. This may indicate that sexting behaviours may be associated with cultural values and practices and vary by gender in more traditional contexts and settings. In contrast to the findings of Van Ouytsel et al. (2020), who detected no gender disparities, their subsequent research unveiled a significant association between sending or requesting sexts and experiencing dating violence among females, but not males (Van Ouytsel et al., 2021) providing further evidence for the gendered nature of image-based sexual abuse. Yet Gassó et al.

(2020) report no significant gender differences in the prevalence rates of revenge porn victimization, so even literature on victims of image-based abuse is inconsistent.

In a study conducted by Casas et al. (2019) on adolescents aged 11 to 18 years-old, notable gender differences in sexting were observed. Amongst girls, cyber-gossip and the desire for popularity emerged as significant factors contributing to sexting. This suggests that for female adolescents, engaging in sexting may be associated with both online social dynamics and the pursuit of popularity within their peer groups. In contrast, for boys, the study found that the normalisation of sexting and a willingness to engage in such behaviour was more predictive. This implies that boys might be more influenced by the prevailing culture surrounding sexting and their own willingness to participate in sexting rather than external social factors like cyber-gossip or the desire for popularity. A related study by Maheux et al. (2020) observed that when adolescents believed their popular peers had not engaged in sexting, gender differences were apparent, with girls being more likely than boys to have sexted. However, these gender differences disappeared when adolescents believed their popular peers had sexted. This suggests that the perception of popular peers engaging in sexting might play a role in equalising the likelihood of sexting between boys and girls and highlights perception of others and social influence as vital in sexting decision making. The interplay of factors influencing sexting behaviours among adolescents involves a combination of gender-specific motivations, peer perceptions, and societal norms (Casas et al., 2019; Maheux et al., 2020). Understanding these dynamics is crucial for developing targeted interventions and educational curriculum aimed at addressing adolescent sexting and the possible negative implications of it.

Negative Affect

Despite the absence of gender-based differences in victimization rates in revenge porn Gassó et al.'s (2020) study did reveal a gender disparity in the emotional aspects related to sexting. Specifically,

females reported feeling more pressured and threatened into engaging in sexting compared to males, indicating that whilst the prevalence of revenge porn victimisation may be similar across genders, the experiences and perceptions surrounding sexting differs, with females expressing a greater sense of pressure and threat. Gassó et al. (2020) also found an association between the engagement of female participants in active/passive sexting, online victimisation experiences, and poorer mental health outcomes, implying that females who were involved in sexting (both actively and passively) and who experienced online victimisation tended to have poorer mental health outcomes compared to those who did not engage in such behaviours.

The systematic review conducted within this thesis revealed further evidence indicating gender disparities in emotional responses related to sexting (e.g., Henderson, 2011). Specifically, among adolescent populations, females are reported to encounter greater psychosocial challenges such as symptoms of anxiety and depression compared to male sexters (e.g., Burić et al., 2020; Chaudry et al., 2017; Kurup et al., 2022; Wachs et al., 2021; Ybarra and Mitchell, 2014). Further, Gámez-Gaudix and Mateos-Perez (2019) observed that girls were more likely to experience negative affect when sexting, although these findings did not achieve statistical significance. However, Alonso and Romero (2019) found that consensual sexting was not correlated with negative affect. Further gender differences were observed by Perkins et al. (2014) who identified that males responded more positively to receiving unsolicited sexts compared to females. If the emotional experience of sexting and revenge porn differs amongst genders, this may influence the ways in which individuals are educated and supported. Further, Bianchi et al. (2021) found that males exhibited a higher prevalence of instrumental/aggravated motivations for sexting. In simpler terms, males were more likely to engage in sexting for reasons such as the exchange of benefits, the perpetration of relational violence, or victimisation (e.g. sending sexts to hurt or damage someone; Bianchi et al., 2021). These motivations have been found to predict involvement in both adolescent and young adult cyber-dating abuse (Bianchi et al. 2018). The gender

differences observed in instrumental/aggravated motivations for sexting could be considered deviant and may reflect dominant and aggressive tendencies in male mating and thus require further clinical attention (Bianchi et al. 2021).

The gender disparities identified in existing literature highlight the importance of continued enquiry into the impact of sexting and image based sexual violence such as revenge porn across genders. Consequently, the present study aims to examine and compare the experiences of sexting in both males and females.

Sexuality

There is a dearth of research examining the role of sexuality in sexting behaviour. However, research has shown that sexual minority youth are more likely than heterosexual youth to have sent, received and asked for sexual images (Van Ouytsel et al., 2019). A possible explanation for this difference is that sexual minority adolescents often turn to the internet to establish relationships and explore their sexuality (Van Ouytsel et al., 2019). They are also more likely to have experienced pressure to send sexts, although no association between sexual minority status and perpetration of non-consensual sexting were found (Van Ouytsel et al., 2019). Bianchi et al. (2021) found that sexual minorities reported more sexual purposes and body image reinforcement in sexting. However, Van Ouytsel et al. (2019) highlight that sexual minority youth are more likely to experience abusive sexting behaviours and not perpetrate them. If negative experiences are heightened for sexual minority sexters, it is important that academia continue to explore this effect to identify how sexual minorities may be protected against the observed adversities. The present study will examine sexuality as a predictor of sexting in a UK sample.

As aforementioned, the findings of chapter three warrant further investigation. The role of demographic factors such as age, gender, and sexuality in sexting behaviour are inconsistent in the

emerging literature. Therefore, this study seeks to explore whether sexting behaviours differ as a result of such factors or whether differences in sexting behaviours are better explained by the psychological constructs first explored in chapter three.

Aims:

- To explore the effect of age, gender and sexuality on sending image-based sexts in a UK adult general population sample.
- To explore the effect of age, gender and sexuality on receiving image-based sexts in a UK adult general population sample.

Hypothesis:

i. Image-based sexting will be most prominent in younger participants and decrease with age (Suleiman & Deardorff, 2015).
ii. Male participants will image-based sext more than females (Sesar et al., 2019)
iii. Image-based sexting will be more prevalent in participants identifying as non-heterosexual (Van Ouytsel et al., 2019)
iv. Females will experience more negatively valanced affect when image-based sexting (Gassó et al., 2020)

Methods

Sample

A G*Power Analysis (Faul et al., 2007) indicated a minimum participant count of $N = 77$ to achieve power of 0.80 based on a desired moderate effect size (0.15) and a significance level of $p = .05$ using logistic regression. However, a $p = .05$ is used with caution to reduce misinterpretation and selective reporting as per emerging statistical research (Greenland et al., 2016). This study utilised the

same dataset as the initial empirical study (see Chapter three). However, whilst acknowledging the importance of exploring various gender identities, only those identifying as either male or female have been included in the following analysis due to the low prevalence of other genders identified in the original sample (non-binary, *n* = 1). Similarly, only individuals identifying as either heterosexual, homosexual or bisexual were included (*n* = 9 were excluded as they reported they were unsure of their sexuality or did not wish to disclose their sexuality). These are combined into a non-heterosexual group (*n*= 36). This created a final sample size of *N* = 201 aged 18 – 63 years old (*M* = 28.14, *SD* = 8.56). Table 14 shows a breakdown of participant demographic information.

Table 14:

Participant Demographic Information

Demographic	Totals	
	N	**%**
Gender		
Male	60	29.9%
Female	141	70.1%
Age		
18 - 25	99	49.3%
26 - 30	44	21.8%
≥ 31	58	28.9%
Sexuality		
Heterosexual	165	82.0%
Non – Heterosexual	36	18.0%
Ethnicity		
Black	5	2.5%
White	92	45.8%
Asian	29	14.5%
Mixed	10	5%
Other	65	32.3%

Design

A within-participants design was employed in this cross-sectional study. Utilisation of the same methodology employed in the previous chapter, allowed for data to be analysed in a consistent manner. It is acknowledged that the use of self-report data can incur self-selection and response bias (Elston, 2021).

Procedure

Participants were invited to complete an online questionnaire via JISC surveys (previously known as Bristol Online Surveys; Appendix V). Data collection occurred over a four-month period between 2020-2021. Consent and debrief procedures were administered (Appendix VI). The questionnaire comprised questions relating to demographic factors, sexting behaviours, the Revenge Porn Proclivity Scale (RPR; Pina et al., 2017), Rosenberg's Self-Esteem Scale (1965) and the revised Reading the Mind in

the Eyes task (Adult Version; Baron-Cohen et al., 2001). However, only the demographic factors and image-based sexting behaviours are examined in this study, as such the psychometrics will not be commented upon in this study, for further details on these measures please refer to Chapter Three or Appendix V.

Measures

Participants were asked to fill out a self-administered anonymous survey (please see Appendix V). It consisted of nine sections, the first of which asked demographic information. The following five sections comprised author developed questions on sexting behaviours. Negative affect was examined by asking participants specifically how they felt when sending or receiving image-based sexts. Participants were provided with a choice of eight emotions to select (important, happy, horny, excited, scared, worried, uncomfortable, nothing). They were also asked if they felt under pressure to return an image-based sext. For an exhaustive list of all questions asked, please refer to Appendix V.

Ethical Considerations

Ethical approval for this research was granted by the University of Nottingham Faculty of Medicine and Health Sciences Research Ethics Committee (Ref: 33-0620, please see Appendix VII). All issues relating to consent, confidentiality and anonymity of participant information is outlined in Chapter Three, along with the steps taken to minimise risk of harm to respondents and data management.

Statistical Analysis

Data were analysed using the Statistical Packages for Social Sciences (SPSS version 28). A logistic binary regression was employed as the outcome variables (sending and receiving sexts) were binary. The benchmark for statistical significance is p = .016 (as per Bonferroni Correction to adjusted p value).

Results

Treatment of Data and Data Screening

After the removal of the aforementioned cases, the remaining data set were examined for inconsistencies and invalid responses. A missing data analysis concluded there were no missing data in the independent variables. As there is no outlier detection method for categorical data, no outliers were identified. When both the independent and dependent variables are categorical, two assumptions apply (independence and expected count of less than 5). All data in the following analysis were independent (that is that one participant did not appear in multiple groups). Initial cross tabulation showed that on one occasion (i.e. male bisexual participants) the count was less than 5. Therefore, homosexual and bisexual participants were combined to make a non-heterosexual category (n = 36). The relationship between independent variables were also examined, and none were significant, all with p = > .27, therefore there was no evidence of multicollinearity. The distribution of the final sample across all demographic variables are presented in Table 14.

Table 15 shows frequencies of general image-based sexting questions responses by demographic group. This data highlights that most participants that reported they had sent and received image-based sexts were heterosexual females aged between 18 – 25 years old. Over half of the participants (51.7%, n = 104) admitted to being shown an image-based sext that was not intended for them to see, these were mostly heterosexual females aged 18 – 25 years old.

Table 15

Demographic Frequencies of Responders of General Image-based Sexting Questions

Variable	All Participants		Age Group						Gender				Sexuality			
			18 - 25		26 - 30		≥ 31		Males		Females		Heterosexual		Non-Heterosexual	
			(*n* = 99)		(*n* = 44)		(*n* = 58)		(*n* = 60)		(*n* = 141)		(*n* = 165)		(*n* = 36)	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Internet Enabled Camera Device (*n* = 201)																
Yes	198	98.5	97	49.0	43	21.7	58	29.3	59	29.8	139	70.2	162	81.8	36	18.2
No	3	1.5	2	66.7	1	33.3	-	-	1	33.3	2	66.7	3	100	-	-
Pays for the device themselves (*n* = 198)																
Yes	156	78.8	63	40.4	38	24.4	55	35.2	48	30.8	106	69.2	126	80.8	30	19.2
No	42	21.2	34	81.0	5	11.9	3	7.1	11	26.2	31	73.8	36	85.7	6	14.3
Sexual Education[1]																
School	109	-	56	51.4	21	19.3	32	29.4	34	31.2	75	68.8	100	91.7	9	8.3
Home	53	-	29	54.7	8	15.1	16	30.2	19	35.8	34	64.2	43	81.1	10	18.8
Friends	114	-	56	49.1	27	23.7	31	27.2	35	30.7	79	69.3	100	87.7	14	12.3
Other	45	-	24	53.3	10	22.2	11	24.4	11	24.4	34	75.6	27	60.0	18	40.0
Sent a Sext (*n* = 201)																
Yes	139	69.2	72	51.8	33	23.7	34	24.5	36	25.9	103	74.1	109	78.4	30	21.6
No	62	30.8	27	43.5	11	17.7	24	38.7	24	38.7	38	61.3	56	90.3	6	9.7
Received a Sext (*n* = 201)																

[1] Participants could select multiple responses to this question.

Variable	All Participants		Age Group						Gender				Sexuality			
			18 - 25		26 - 30		≥ 31		Males		Females		Heterosexual		Non-Heterosexual	
			(*n* = 99)		(*n* = 44)		(*n* = 58)		(*n* = 60)		(*n* = 141)		(*n* = 165)		(*n* = 36)	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Yes	158	78.6	78	49.4	38	24.1	42	26.6	43	27.2	115	72.8	124	78.5	34	21.5
No	43	21.4	21	48.8	6	14.0	16	37.2	17	39.5	26	60.5	41	95.3	2	4.7
Shown a sext not intended for you (*n* = 103)																
Yes	103	51.2	51	49.5	25	24.3	27	26.2	32	31.1	71	68.9	82	79.6	21	20.4

Table 16 shows the frequencies of responses to questions relating to the first image-based sext participants sent. This data highlights that most respondents reported sending image-based sexts to someone that they were romantically involved with, however some participants reported that they most frequently sexted strangers (*n* = 6, 4.3%). These were mainly younger sexual minority individuals. More 18 – 25-year-olds reported that they had sent their first image-based sext to a stranger than any other age group.

Table 16

Demographic Frequencies of Responders to First Sent Image-based Sexts

Variable	All Participants		Age Group						Gender				Sexuality			
			18 - 25		26 - 30		≥ 31		Males		Females		Heterosexual		Non-Heterosexual	
			(*n* = 99)		(*n* = 44)		(*n* = 58)		(*n* = 60)		(*n* = 141)		(*n* = 165)		(*n* = 36)	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Who do you mostly send sexts to (*n* = 139)																
Spouse	14	10.1	2	14.3	4	28.6	8	57.1	4	28.6	10	71.4	12	85.7	2	14.2
Boyfriend/Girlfriend	89	64.0	50	56.2	24	27.0	15	16.9	20	22.5	69	77.5	75	84.3	14	15.7
Hope to be with	25	18.0	14	56.0	4	16.0	7	28.0	7	28.0	18	72.0	16	64.0	9	36.0
Friend	3	1.4	-	-	1	33.3	2	66.7	1	33.3	2	66.7	3	100.0	-	-
Acquaintance	2	1.4	1	50.0	-	-	1	50.0	2	100.0	-	-	2	100.0	-	-
Stranger	6	4.3	5	83.3	-	-	1	16.7	2	33.3	4	66.7	1	16.7	5	83.3
Family	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Who did you send First Sext to (*n* = 139)																
Spouse	5	3.6	1	20.00	2	40.0	2	40.0	1	20.0	4	80.0	5	100.00	-	-
Boyfriend/Girlfriend	75	54.0	37	49.3	22	29.3	16	21.3	19	25.3	56	74.7	66	88.0	9	12.0
Hope to be with	37	26.6	19	51.4	8	21.6	10	27.0	10	27.0	27	73.0	25	67.6	12	32.4
Friend	7	5.0	3	42.9	1	14.3	3	42.9	2	28.6	5	71.4	4	57.1	3	42.9
Acquaintance	4	2.9	3	75.0	-	-	1	25.0	2	50.0	2	50.0	4	100.0	-	-
Stranger	11	7.9	9	81.8	-	-	2	18.2	2	18.2	9	81.8	5	45.5	6	54.6
Family	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Context of First Sent (*n* = 139)																
Receiver asked for it	44	31.7	24	54.5	9	20.5	11	25.0	8	18.2	36	81.8	32	72.7	12	27.3
Receiver sent one first	59	42.4	31	52.5	14	23.7	14	23.7	19	32.3	40	67.8	47	79.7	12	20.4
Joke	3	2.2	-	-	1	33.3	2	66.7	1	33.3	2	66.7	2	66.7	1	33.3

Variable	All Participants		Age Group						Gender				Sexuality			
			18 - 25		26 - 30		≥ 31		Males		Females		Heterosexual		Non-Heterosexual	
			(*n* = 99)		(*n* = 44)		(*n* = 58)		(*n* = 60)		(*n* = 141)		(*n* = 165)		(*n* = 36)	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Wanted one back	10	7.2	2	20.0	4	40.0	4	40.0	6	60.0	4	40.0	8	80.0	2	20.0
Not expecting it	5	3.6	3	60.0	1	20.0	1	20.0	-	-	5	100.0	4	80.0	1	20.0
I felt like it	18	12.9	12	66.7	4	22.2	2	11.1	2	11.1	16	88.9	16	88.9	2	11.1
Felt When First Sent Sext[8]																
Funny	20	10.0	10	50.0	5	25.0	5	25.0	5	25.0	15	75.0	16	80.0	4	20.0
Horny	73	36.3	41	56.2	11	15.1	21	28.8	27	37.0	46	63.0	57	78.1	16	21.9
Excited	93	46.3	49	52.7	22	23.7	22	23.7	25	26.9	68	73.1	74	79.6	19	20.4
Happy	31	15.4	16	51.6	8	25.8	7	22.6	7	22.6	24	77.4	27	87.1	4	12.9
Important	18	9.0	13	72.2	3	16.7	2	11.1	2	11.1	16	88.9	14	77.8	4	22.2
Negative Affect																
Scared	17	8.5	9	52.9	3	17.6	5	29.4	4	23.5	13	76.5	10	58.8	7	41.2
Worried	28	13.9	15	53.6	7	25.0	6	21.4	5	17.9	23	82.1	18	64.3	10	35.7
Uncomfortable	23	11.4	11	47.8	7	30.4	5	21.7	1	4.3	22	95.7	16	69.6	7	30.4
Nothing	4	2.0	1	25.0	3	75.0	-	-	1	25.0	3	75.0	3	75.0	1	25.0

Table 17 shows the spread of responses to questions relating to recently sent image-based sexts by demographic group. Sexual minority participants reported sending both their first image-based sext *and* their most recent image-based sext to a stranger, more than heterosexual participants. Males reported more than females that they had send their most recent image-based sext to a stranger.

Cyber-flashing (sending an image-based sext when the recipient was not expecting it; Harper et al., 2021), was reported more frequently by participants aged 18 – 25 years old (*n* = 3, 60%) when asked about their first sent image-based sext. No males reported cyber-flashing in this sample.

Reports of negative affect when sending their most recent image-based sext were highest amongst younger adults. Only two males (40%) reported feeling scared or worried when sending their most recent image-based sext. No males reported feeling uncomfortable when sending their most recent image-based sext.

Table 17

Demographic Frequencies of Responders to Recently Sent Image-based Sexts

Variable	All Participants		Age Group						Gender				Sexuality			
			18 - 25		26 - 30		≥ 31		Males		Females		Heterosexual		Non-Heterosexual	
			(*n* = 99)		(*n* = 44)		(*n* = 58)		(*n* = 60)		(*n* = 141)		(*n* = 165)		(*n* = 36)	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Who Received It (*n* = 139)																
Spouse	10	5.0	1	10.0	4	40.0	5	50.0	3	30.0	7	70.0	8	80.0	2	20.0
Boyfriend/ Girlfriend	86	42.8	51	59.3	20	23.3	15	17.4	19	22.1	67	77.9	70	81.4	16	18.6
Hoped to be with	28	13.9	13	46.4	5	17.9	10	35.7	7	25.0	21	75.0	20	71.4	8	28.6
Friend	10	5.0	4	40.0	4	40.0	2	20.0	3	30.0	7	70.0	9	90.0	1	10.0
Acquaintance	1	.5	1	100.0	-	-	-	-	1	100.0	-	-	1	100.0	-	-
Stranger	4	.5	2	50.0	-	-	2	50.0	3	75.0	1	25.0	1	25.0	3	75.0
Family	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Context (*n* = 139)																
Receiver asked for it	39	28.1	22	56.4	8	20.5	9	23.1	11	28.2	28	71.8	32	82.0	7	18.0
Receiver sent first	50	36.0	27	54.0	12	24.0	11	22.0	16	32.0	34	68.0	40	80.0	10	20.0
Joke	5	3.6	2	40.0	2	40.0	1	20.0	-	-	5	100.0	4	80.0	1	20.0
Wanted one back	12	8.6	5	41.7	4	33.3	3	25.0	5	41.7	7	58.3	8	66.7	4	33.3
Receiver Not Expecting it	3	2.2	1	33.3	-	-	2	66.7	-	-	3	100.0	3	100.0	-	-
I felt like it	30	21.6	15	50.0	7	23.3	8	26.7	4	13.3	26	86.7	22	73.3	8	26.7
How Did You Feel[9]																
Funny	30	14.9	13	43.3	8	26.7	9	30.0	9	30.0	21	70.0	27	90.0	3	10.0
Horny	82	40.8	47	57.3	16	19.5	19	23.2	22	26.8	60	73.2	61	74.4	21	25.6
Excited	92	45.8	43	46.7	23	25.0	26	28.3	26	28.3	66	71.7	73	79.3	19	20.7
Happy	46	22.9	23	50.0	11	23.9	12	26.1	11	23.9	35	76.1	35	76.1	11	23.9
Important	20	10	15	75.0	3	15.0	2	10.0	3	15.0	17	85.0	11	55.0	9	45.0

Variable	All Participants		Age Group						Gender				Sexuality			
			18 - 25		26 - 30		≥ 31		Males		Females		Heterosexual		Non-Heterosexual	
			(*n* = 99)		(*n* = 44)		(*n* = 58)		(*n* = 60)		(*n* = 141)		(*n* = 165)		(*n* = 36)	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Negative Affect																
Uncomfortable	8	4.0	4	50.0	2	25.0	2	25.0	-	-	8	100.0	6	75.0	2	25.0
Nothing	7	3.5	4	57.1	2	28.6	1	14.3	-	-	7	100.0	5	71.4	2	28.6
Scared	5	2.5	3	60.0	1	20.0	1	20.0	2	40.0	3	60.0	3	60.0	2	40.0
Worried	9	4.5	5	55.6	3	33.3	1	11.1	2	22.2	7	77.8	7	77.8	2	22.2

Table 18 presents the spread of responses per demographic factor for questions relating to the first image-based sext participants received. This data shows that most participants who reported they received their first image-based sext from a stranger were aged 18 – 25 years old (*n* = 19, 65.5%). Almost half of all females in the study received their first image-based sext when they were not expecting it (*n* = 70), indicating the possibility that they were victim to cyber-flashing.

Table 18

Demographic Frequencies of Responders to First Received Image-based Sexts

Variable	All Participants		Age Group						Gender				Sexuality			
			18 - 25		26 - 30		≥ 31		Males		Females		Heterosexual		Non-Heterosexual	
			(*n* = 99)		(*n* = 44)		(*n* = 58)		(*n* = 60)		(*n* = 141)		(*n* = 165)		(*n* = 36)	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Who Sent It (*n* = 158)																
Spouse	3	1.9	-	-	-	-	3	100.0	-	-	3	100.0	3	100.0	-	-
Boyfriend/ Girlfriend	63	39.9	31	49.2	17	27.0	15	23.8	19	30.2	44	69.8	56	88.9	7	11.1
Hoped To Be With	41	25.9	17	41.5	12	29.3	12	29.3	12	29.3	29	70.7	33	80.5	8	19.5
Friend	11	7.0	4	36.4	3	27.3	4	36.4	3	27.3	8	72.7	7	63.6	4	36.4
Acquaintance	11	7.0	7	63.6	2	18.2	2	18.2	3	27.3	8	72.7	7	63.6	4	36.4
Stranger	29	18.4	19	65.5	4	13.8	6	20.7	6	20.7	23	79.3	18	62.1	11	37.9
Family	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Context (*n* = 158)																
I Asked for It	15	9.5	7	46.7	4	26.7	4	26.7	7	46.7	8	53.3	9	60.0	6	40.0
I Wanted It	34	21.5	15	44.1	8	23.5	11	32.4	9	26.5	25	73.5	27	79.4	7	20.6
I Sent First	16	10.1	9	56.3	5	31.3	2	12.5	4	25.0	12	75.0	13	81.3	3	18.7
Not Expecting It	93	58.9	47	50.5	21	22.6	25	26.9	23	24.7	70	75.3	75	80.6	18	19.4
Feel First Received[10]																
Funny	38	18.9	19	50.0	9	23.7	10	26.3	8	21.1	30	78.9	33	86.8	5	13.2
Horny	72	35.8	31	43.1	20	27.8	21	29.2	30	41.7	42	58.3	56	77.8	16	22.2
Excited	90	44.8	43	47.8	21	23.3	26	28.9	33	36.7	57	63.3	74	82.2	16	17.8
Happy	45	22.4	23	51.1	8	17.8	14	31.1	19	42.2	26	57.8	36	80.0	9	20.0
Important	27	13.4	15	55.6	6	22.2	6	22.2	8	29.6	19	70.4	19	70.4	8	29.6
Negative Affect																
Uncomfortable	46	22.9	24	52.2	10	21.7	12	26.1	2	4.3	44	95.7	35	76.1	11	23.9
Nothing	6	3.9	3	50.0	3	50.0	-	-	1	16.7	5	83.3	4	66.7	2	33.3
Scared	16	8.0	10	62.5	3	18.8	3	18.8	1	6.3	15	93.5	10	62.5	6	37.5
Worried	19	9.5	10	52.6	6	31.6	3	15.8	1	5.3	18	94.7	11	57.9	8	42.1

Variable	All Participants		Age Group						Gender				Sexuality			
			18 - 25		26 - 30		≥ 31		Males		Females		Heterosexual		Non-Heterosexual	
			(*n* = 99)		(*n* = 44)		(*n* = 58)		(*n* = 60)		(*n* = 141)		(*n* = 165)		(*n* = 36)	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Did You Show Someone? (*n* = 158)																
Yes	9	5.7	4	44.4	3	33.3	2	22.2	2	22.2	7	77.8	6	66.7	3	33.3
No	149	94.3	74	49.7	35	23.5	40	26.8	41	27.5	108	72.5	118	79.2	21	20.8

Table 19 shows the spread of responses per demographic factors for questions relating to recently received image-based sexts. This data shows that a third of those reporting they received this from a stranger identified as non-heterosexual. No male participants reported feeling scared or worried when they received their most recent image-based sext. Over one quarter (*n* = 41, 25.9%) of recent image-based sext receivers reported feeling pressure to send an image-based sext back, these respondents were mostly young heterosexual females. Of the four participants (2.5%) who reported showing somebody else the image-based sext, all were females over the age of 25 and 75% (*n* = 3) were heterosexual.

Table 19

Demographic Frequencies of Responders to Recent Received Image-based Sexts

Variable	All Participants		Age Group						Gender				Sexuality			
			18 - 25 (*n* = 99)		26 - 30 (*n* = 44)		≥ 31 (*n* = 58)		Males (*n* = 60)		Females (*n* = 141)		Heterosexual (*n* = 165)		Non-Heterosexual (*n* = 36)	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Who Sext Recent Received (*n* = 158)																
Spouse	10	6.3	1	10.0	3	30.0	6	60.0	3	30.0	7	70.0	7	70.0	3	30.0
Boyfriend/ Girlfriend	86	54.4	48	55.8	22	25.6	16	18.6	23	26.7	63	73.3	71	82.6	15	17.4
Hoped to be with	29	18.4	13	44.8	7	24.1	9	31.0	8	27.6	21	72.4	20	69.0	9	31.0
Friend	12	7.6	4	33.3	4	33.3	4	33.3	3	25.0	9	75.0	10	83.3	2	16.6
Acquaintance	9	5.7	5	55.6	1	11.1	3	33.3	4	44.4	5	55.6	8	88.9	1	11.1
Stranger	12	7.6	7	58.3	1	8.3	4	33.3	2	16.7	10	83.3	8	66.7	4	33.3
Family	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Context *(n = 158)*																
I Asked for It	16	10.1	5	31.3	8	50.0	3	18.8	7	43.8	9	56.3	7	43.8	9	56.3
I Wanted One Back	50	31.6	28	56.0	12	24.0	10	20.0	12	24.0	38	76.0	41	82.0	9	18.0
I Sent First	24	15.2	18	75.0	2	8.3	4	16.7	4	16.7	20	83.3	18	75.0	6	35.0
Not Expecting It	68	43.0	27	39.7	16	23.5	25	36.8	20	29.4	48	70.6	58	85.3	10	14.7
How Did You Feel[5]																
Funny	30	14.9	14	46.7	4	13.3	12	40.0	6	20.0	24	80.0	26	86.7	4	13.3
Horny	91	45.3	47	51.6	24	26.4	20	22.0	34	37.4	57	62.6	70	76.9	21	23.1
Excited	93	46.3	48	51.6	23	24.7	22	23.7	27	29.0	66	71.0	72	77.4	21	22.6
Happy	61	30.3	29	47.5	16	26.2	16	26.2	18	29.5	43	70.5	47	77.0	14	22.9
Important	26	12.9	17	65.4	6	23.1	3	11.5	7	26.9	19	73.1	17	65.4	9	34.6
Negative Affect																
Scared	5	2.5	2	40.0	1	20.0	2	40.0	-	-	5	100.0	3	60.0	2	40.0
Worried	8	4.0	3	37.5	2	25.0	3	27.5	-	-	8	100.0	6	75.0	2	25.0
Uncomfortable	22	10.9	10	45.5	4	18.2	8	36.4	2	9.1	20	90.9	18	81.8	4	18.1

Nothing	8	4.0	3	37.5	3	37.5	2	25.0	2	25.0	6	75.0	5	62.5	3	37.5
Pressure To Send Back (*n* = 158)																
Yes	41	25.9	18	43.9	8	19.5	15	36.6	9	22.0	32	78.0	34	82.9	7	17.1
No	117	74.1	60	51.3	30	25.6	27	23.1	34	29.1	83	70.9	90	76.9	27	231.1
Did You Show Someone (*n* = 158)																
Yes	4	2.5	-	-	2	50.0	2	50.0	-	-	4	100.0	3	75.0	1	25.0
No	154	97.5	78	50.6	36	23.4	40	26.0	43	27.9	111	72.1	121	78.6	33	21.4

Logistic Binary Regression

Table 20 presents the unadjusted and adjusted associations of demographic predictor variables (age, gender, and sexuality) with receiving image-based sexts. The unadjusted analysis showed a significant effect of sexuality (p = .021) such that it was increased in the non-heterosexual group (OR = 5.62, 95% CI [1.30 – 24.4]). After mutual adjustment sexuality remained the only significant predictor of receiving image-based sexts (p = .024).

As the outcome of receiving image-based sexts is tested against three predictors, a Bonferroni-adjusted significance level of 0.016 was calculated to account for the increased possibility of a type-I error. Whilst sexuality was significant at the $p < .05$ level even when controlling for gender and age group, it was not significant at the more conservative $p < .016$ level.

Table 21 presents the unadjusted and adjusted associations of demographic predictor variables (gender, age, and sexuality) with sending image-based sexts. The unadjusted analysis showed a significant effect of sexuality (p = .048) such that it was increased in the non-heterosexual group (OR = 2.57, 95% CI [1.01 – 6.54]). After mutual adjustment statistical significance was lost (p = .056).

To account for the increased possibility of a type-I error, a Bonferroni-adjusted significance level of 0.016 was employed, resulting in no significant effects on any of the predictor variables and sending image-based sexts.

Table 20

Unadjusted and Adjusted Associations between Gender, Sexuality, Age and Receiving Image-based Sexts.

Variable	Category	N	N Received Sexts (%)	Unadjusted OR* (95% CI**)	*p* - value	Pseudo R^2 Cox & Snell (Nagelkerke)	Adjusted OR (95% CI)	Adjusted *p* - value
Gender	Male	60	43 (71.7%)	1	.120	.012 (.018)	1	1.34
	Female	141	115 (81.6%)	1.75 (.86 – 3.54)			1.74 (.843 – 3.60)	
Sexuality	Heterosexual	165	124 (75.2%)	1	.021***	.040 (.062)	1	.024***
	Non - Heterosexual	36	34 (94.4 %)	5.62 (1.30 – 24.4)			5.47 (1.25 – 23.98)	
Age	18 – 25	99	78 (78.8%)	1	.244	.015 (.023)	1	.397
	26 – 30	44	38 (86.4 %)	1.71 (.64 – 4.57)			1.60 (.583 – 4.37)	
	31 - 63	58	42 (72.4 %)	.71 (.33 – 1.50)			.77 (.355 – 1.66)	

*Odds Ratios ** Confidence Intervals ***Significant p <. 05

Table 21

Unadjusted and Adjusted Associations between Gender, Sexuality, Age Group and Sending Image-based Sexts.

Variable	Category	N	N Sending Sexts (%)	Unadjusted OR* (95% CI**)	*p* - value	Pseudo R^2 Cox & Snell (Nagelkerke)	Adjusted OR (95% CI)	Adjusted *p* -value
Gender	Male	60	36 (60.0%)	1	.068	.016 (.023)	1	0.95
	Female	141	103 (73.0%)	1.81 (.96 – 3.42)			1.75 (.91 – 3.35)	
Sexuality	Heterosexual	165	109 (66.1%)	1	.048***	.022 (.031)	1	.056
	Non-Heterosexual	36	30 (83.3%)	2.57 (1.01 – 6.54)			2.53 (.98 – 6.53)	
Age	18 – 25	99	72 (72.7%)	1	.120	.021 (.029)	1	.217
	26 – 30	44	33 (75.0%)	1.13 (.50 – 2.54)			1.07 (.47 – 2.44)	
	31 - 89	58	34 (58.6%)	.53 (.27 – 1.05)			.57 (.28 – 1.15)	

*Odds Ratios ** Confidence Intervals *** Significant *p* <. 05

Additional Analysis

Due to the small proportion of responses in relation to negative affect, all variables were analysed via Fisher's exact test.

More females reported incidences of negative affect when sending their first image-based sext and their most recent image-based sext compared to males. However, 'feeling uncomfortable' when sending their first image-based sext was the only feeling to reach statistical significance (p = .008).

More females reported incidents of negative affect when receiving their first and most recent image-based sext compared to males. In the case of participants first received image-based sexts this was statistically significant for both feeling 'uncomfortable' (p <.001) and 'worried' (p = .021), feeling pressure to return an image-based sext was also statistically significant (p = .020). For their most recently received image-based sext feeling 'uncomfortable' was the only feeling to reach statistical significance (p = .041).

Summary of Findings

A logistic binary regression found that in the initial model there was a significant difference between sending and receiving image-based sexts and sexuality group membership such that those identifying at non-heterosexual were at greater odds of reporting sending and receiving image-based sexts. For receiving image-based sexts this effect remained significant even when controlling for age and gender. However, significance was lost following Bonferroni correction. Females and those in younger age categories were at greater odds of reporting sending and receiving image-based sexts, but this effect was not statistically significant before or after mutual adjustment. Following mutual adjustment and Bonferroni correction, it is concluded that no demographic factors examined in this study significantly predicted the sending or receiving of image-based sexts.

Females reported greater experience of negative affect across all image-based sexting practices (sending and receiving), but not all effects were observed to be statistically significant. Feeling uncomfortable was statistically significant for sending a first image-based sext and receiving image-based sexts and feeling worried and a pressure to return an image-based sext were also significant.

Discussion

To address the dearth of research examining predictors of image-based sexting behaviour in the UK this study set out to explore the effect of age, gender, and sexuality on sending and receiving image-based sexts in a general population sample within the UK, where it is illegal to image-based sext under the age of 18 (Protection of Children Act, 1978).

In relation to hypothesis (i) age group did not predict image-based sexting. However, odds ratios indicated that those aged between 26 – 30 years old were at increased odds of reporting image-based sexting compared to older participants, however these effects were found to be non-significant.

The findings of this study reject hypothesis (ii) that males would image-based sext more than females. Odds ratios were increased for female participants, but results did not reach statistical significance.

In line with the hypothesis (iii) sexuality was predictive of sending and receiving image-based sexts in the initial model, such that those identifying at non-heterosexual were at increased odds of sending and receiving image-based sexts compared to heterosexual participants. However, significance was lost following Bonferroni correction on the adjusted model.

The results of this study confirmed hypothesis (iv), as more females reported experiencing negative affect when image-based sexting compared to males. Statistical significance appeared to be context dependent (i.e. first sent, recently sent, etc) and pertained only to feelings of ‘uncomfortable’, ‘worried’ and ‘feeling pressure to sext back’.

Therefore, this study did not identify any significant demographic predictors of sending or receiving image-based sexts. However, the odds of reporting sending and receiving image-based sexts were greater for those identifying as non-heterosexual, a finding consistent with emerging literature (Van Ouytsel et al., 2019). Sexual minorities have increasingly been identified as at risk to online sexual victimisation leading to poorer mental health outcomes (Gámez-Guadix & Incera, 2021). Despite this, sexting for the non-heterosexual boys has been found to increase self-confidence (Needham, 2021). It appears that sexting and the internet has become a key element in exploring sexual identity and this is most pertinent to those from the LGBTQ+ community whose identify formation is complicated by the experience of prejudice and stigma experiences in society (Harper et al., 2009). The internet affords the opportunity to explore the sexual self with a degree of anonymity, without the consequences of this exploration offline. However, as identified, the internet also opens up a plethora of opportunity for online victimisation and poses risk to all users, not just those identifying as non-heterosexual. These findings suggest that sexuality may be a risk factor for predicting the occurrence of sexting, and could highlight specific populations to focus education, support, and intervention resources into. Although relying on sexuality as a predictor of image-based sexting and possible image-based abuse associated with sexting should be handled with caution, taking care not to create judgement or bias. Furthermore, sexuality should not be used to victim blame should those identifying as non-heterosexual who are at greater odds of sexting be victimised online. Future research should consider recruiting strictly non-heterosexual participants to explore their sexting practices and associated risks in greater detail.

Age was not predictive of sending or receiving image-based sexts in this sample. However, younger age groups were observed to have greater odds of image-based sexting than the eldest age group. Twenge et al., (2017) report on young people's preference to form and maintain relationships online opposed to in person, which may account for the increased rates in younger age groups. The presence of image-based sexting across all age groups is consistent with Currin et al.'s (2016)

observation that sexting occurs across the life course. Houck et al. (2014) suggest that sexting follows the typical developmental trajectory of other sexual behaviours across the life course, whilst Bianchi (2021) argue that sexual purpose in sexting increases with age therefore indicating that motivation for sexting may also play an important role in the effect of age and sexting. Chapter Three of this thesis highlighted that many participants began image-based sexting under the legal age and although age group was not found to predict image-based sexting in this study, the relationship between age and image-based sexting should not be ignored. Due to the legalities surrounding under-age image-based sexting, child pornography, and other image-based sexual abuse laws, the enquiry into the role of age and image-based sexting is of continued clinical importance. This study did not ask participants the age of the individual(s) they were image-based sexting and this is something that would have furthered understanding into the image-based sexting practices of this sample.

The finding that gender was not found to predict sending or receiving image-based sexts in this sample may reflect that females and males do not differ from each other when sending and receiving image-based sexts and the observed differences (higher proportion of females sending and receiving image-based sexts) are due to the uneven sample size across genders. Or, as observed by Liong and Chang (2017) that gender differences do exist, but due to the limited sample size and the high proportion of image-based sexting in the sample, this study was not able to significantly identify this effect. It would make sense that there are gender differences in image-based sexting given the gender differences observed in traditional human mating (Bianchi et al., 2021; Buss, 2007). It is possible that these processes are replicated in its modern manifestation (i.e. intimate image sharing) and would account for the gendered effects observed in image-based sexual abuse (McGlynn et al., 2017). Understanding the role of gender in image-based sexting is imperative at safeguarding against the detrimental implications associated with image-based sexual abuse.

Despite the absence of significance pertaining to gender and image-based sexting, significant differences were observed between gender and experienced affect when image-based sexting. These findings echo those of Gassó et al. (2020) who found females to experience more negatively valanced affect compared to males. Feeling uncomfortable, worried, and pressure to return image-based sexts may indicate that females have an awareness of the possible consequences associated with intimate image sharing. This study did not define where the 'pressure' derived from (i.e. pressure to look good, pressure to conform to the request, etc.) and this is something that could have added greater clarity into the implications of this experience. For example, if the pressure arose from issues of self-image, this would highlight links between self-esteem and image-based sexting (previously explored in chapter three) and if the pressure arose from others, this would be concerning given this is indicative of dating violence (Van Outysel et al., 2021).

Exploratory data reported in this study suggest the occurrence of both the perpetration and victimisation of cyber-flashing (i.e., when an unexpected image-based sext was sent or received; Harper et al., 2021). Despite the general understanding that 'dick pics' (as they are known colloquially; Hayes & Dragiewicz, 2018; Waling & Pym, 2019) are normally sent by men, this study reported the inverse, which is consistent with the findings of Karasavva's et al. (2023). They report that women who cyber-flash do so to partner-hunt or for personal/sexual gratification (Karasavva et al., 2023). This may suggest that the findings of the current study are not particularly concerning given they echo the emerging literature gratification (Karasavva et al., 2023). However, those that do expose themselves to unsuspecting others fall under the bracket of exhibitionists. These individuals score higher on levels of sexual sensation seeking and endorse a greater breadth of sexual fantasies (Baur et al., 2016; Långström & Seto, 2006). Cyber-flashing may arise from the pursuit of personal sexual gratification, or as suggested by Harper et al. (2021) the demonstration of sexual availability and interest in the pre-tactile stage of courtship (Freund & Blanchard, 1986). Despite this, it is important to hold in mind that cyber-flashing may also be

indicative of more sinister motivations such as sexual grooming whereby the sender attempts to desensitise potential partners to the idea of sexual activity (Briggs et al., 2011; Elliott, 2017).

Whilst the findings of this study provide further insight into the image-based sexting practices of those in the UK, and the possible predictors of image-based sexting, there is still a long way to go in terms of fully understanding image-based sexting, its predictors, and consequences, particularly in the UK. Online behaviour continues to be a matter for academic and clinical enquiry due to the vast implications it poses. The Online Disinhibition effect (Suler, 2004) would explain that individuals may act differently online (i.e., when sexting) than they would offline. Dissociative anonymity accounts for when someone's online behaviour is separate to their offline behaviour as the internet affords individual's the space to feel less vulnerable to act how they would offline, which may explain those choosing to image-based sext as a form of sexual exploration (Suler, 2004) in the context of sexuality development, accounting for the increased proportion of non-heterosexual image-based sexters. Further, individuals do not necessarily have to acknowledge their online behaviour within the context of their offline self, that is that individuals can compartmentalise their online vs offline selves and this is particularly pertinent to online offenders/ perpetrators of revenge porn or cyber-flashing or in the context of these findings, may represent individuals identifying as non-heterosexual image-based sexting and exploring their sexuality online when it is possible this is not echoed offline (although this discrepancy was not examined in this study). Image-based sexting online can also offer invisibility and the opportunity to be faceless, this links with traditional psychoanalytical theory where invisibility facilities the transparency of the real self. In other words, people can act out their true selves and fantasies online (Suler, 2004). This may account for the small proportion of negative affect felt, particularly in males, image-based sexting (potentially faceless) could offer the space to communicate or express their sexual needs without the risk of being identified which may decrease the risks of adverse feelings. The internet also affords users minimisation of authority within certain contexts (Suler, 2004). That is, the usual cues that portray authority are

absent meaning people are more likely to misbehave online due to this minimisation of authority and this may account for some of the image-based sexting practices reported in this thesis such as underage image-based sexting and cyber-flashing.

Implications

The enquiry into the role of age, gender, and sexuality in image-based sexting and image-based sexual abuse have significant implications for clinical practice. Identifying predictors and thus specific at-risk groups of future online victimisation, cyberbullying, grooming, and image-based abuse is imperative to strengthening safeguarding practices and supportive measures for all online users. Sexuality was found to be predictive of sending and receiving image-based sexts in the initial model and this is something that practitioners could ensure they explore with anyone involved in intimate image sharing and/or image-based abuse. Identifying predictors of image-based sexters and thus potential future image-based abuse can help health and justice systems, charities, and other organisations that aim to police the internet (e.g. The Internet Watch Foundation). Social media platforms and dating sites all have a duty of care to protect their users from possible image-based abuse that initiates from image-based sexting, so identifying risk factors (e.g. non-heterosexual users) could be important for ensuring users are fully informed of the possible risks and consequences associated with intimate image sharing. Age was not predictive of image-based sexting in this sample, but data showed sexting across the life course. If this is representative of the general population then it is proposed that education, support, and intervention (such as internet safety offered to CAMHS patients and public protection notices served by police forces to those under the age of 18) consider providing services to image-based sexters of all ages so users can make informed decisions when choosing to image-based sext.

Limitations

Despite the notable contribution to the research base this study has made there are limitations that merit consideration. This study excluded anyone not identifying as male or female, heterosexual,

homosexual, or bisexual and so these findings may not be applicable to those whose genders and sexualities are not represented in these participant categories. In this sample sending and receiving image-based sexts was not a rare outcome, so the odds ratios reported may be an overestimate of risk ratios. For reported affect numbers were very small and this may have been influenced by social desirability bias, as participants may not have wanted to admit to their true feelings when image-based sexting, thus impacting the significance of results.

The use of Bonferroni-adjustment in this study is also noted as a limitation. Whilst it accounts for the increased possibility of type-I errors due to the multiple hypothesised predictors, it also increases the risk of generating type-II errors, and so significant findings may be missed. Further, non-significant findings, particularly those that could be described as 'borderline significant' (Goodman, 2008; Goodman & Berlin, 1994; Greenland et al., 2016; Wasserstein & Lazar, 2016) should be interpretated with caution, as statisticians move away from the conventional and arbitrary significance value of $p = .05$ to reduce selective reporting and misinterpretation of results and null hypothesis (Greenland et al., 2016).

Participants were taken from the general population, yet they were not provided with the opportunity to report any mental health or offending histories or other factors that may limit the generalisability of results. So, the sample may include individuals whose responses may circumscribe generalisability of results.

Limitations on the use of self-report data and the implications of a predominantly female sample are highlighted in chapter three of this thesis and apply to this chapter. The questions in this study were presented to participants in a fixed order, therefore data may have been influenced by order and fatigue effects. A further constraint in the study design arises from the absence of an option for participants to withdraw their data once they had submitted. This limits participant's control over their information and poses limitations on the ethical aspects of this research. Finally, caution is warranted as the results of

this study may be influenced by selection, reporting or measurement bias or other confounding variables not controlled for in this study.

Direction For Future Research

The results of this study have raised many points worthy of further exploration. Future research should consider specific sexuality group recruitment to further the understanding of image-based sexting practices in non-heterosexual individuals. Research should continue to explore predictor variables for image-based sexting behaviours, to help identify those at greater risk of engaging in the behaviour, in order to educate, support, and safeguard against the possible adverse effects of image-based sexting. Future studies could explore in greater detail whom participants are image-based sexting (e.g. the age of recipients). Evaluation of current safeguarding practices and intervention offered to UK image-based sexters would also contribute to the emerging literature base and help identify where these can be improved to help reduce the negative affect and risks associated with image-based sexting. Future research could further explore the motivations and outcomes of image-based sexting to help further the enquiry into the normative vs deviancy debate.

Conclusion

Image-based sexting is a normative behaviour within the repertoire of sexual behaviour and can enhance sexual pleasure between partners (e.g. Currin et al., 2016). However, it can be viewed as a risk-taking behaviour and have negative consequences (Parker et al., 2013; Wiederhold, 2015). This study set out to expand on the findings of chapter three and explore demographic predictors of image-based sexting. A logistic binary regression identified that those identifying as non-heterosexual were at increased odds of reporting image-based sexting than those identifying at heterosexual. However, these observations were non-significant in adjusted models following Bonferroni correction. Therefore concluding no significant demographic predictors of image-based sexting in this sample. Implications for clinical practice include ensuring individuals receive timely education and support with issues pertaining

to consent and intimate image sharing and where possible health, social, and justice systems work together to safeguard image-based sexters from the adverse risks associated with this behaviour. Future research should consider specific recruitment of those in the LGBTQ+ community to further the enquiry between image-based sexting and image-based sexual abuse.

Chapter Five: The Reading the Mind in the Eyes Test- Revised (RMET-R): A Psychometric Critique

Abstract

Theory of Mind (hereafter ToM) is the universal phenomenon which describes a person's ability to infer the mental states of others. A widely used measure of ToM is the Reading the Mind in the Eyes Test -Revised (RMET-R: Baron-Cohen et al., 2001). The empirical research detailed in Chapter Three utilised the RMET-R to assess participants abilities to accurately recognise the emotional states of others and investigate a possible relationship between scores on the RMET-R and image-based sexting behaviours. Findings showed that as scores on the RMET-R increased, the odds of reporting the sending and receiving of image-based sexting also increased. Therefore, the present chapter aims to critique the tool to establish whether its use within this thesis is justified. In this critique, the RMET-R is considered to present good test-retest reliability but lack internal consistency. Whilst it presents as an ecologically sound tool, research concerning its validity is inconsistent, and the tool would benefit from updating the quality of its images.

Introduction

Theory of Mind (ToM)

ToM refers to the ability to infer the mental states of others by hypothesising what others may think or feel (Baron-Cohen et al., 2001; Premack & Woodruff, 1978). Also described as mentalising (Frith et al., 1991) or mindreading (Whiten, 1991) this form of social cognition is the main way we make sense of or predict another person's behaviour. Humans need to perceive, represent and reason about others' intentions for survival (Feeser et al., 2015). The vital role this plays in social cognition is rooted in infant caregiving attachment relationships and matures over one's life course with increased interpersonal interactions (Fonagy et al., 2007).

Baron-Cohen (1991) acknowledges ToM as a measure of social intelligence and recognises its overlap with empathy, an umbrella term used to describe affect sharing, concern and perspective taking (Ainley et al., 2015). ToM is a universal phenomenon in neurotypical development, however cross-cultural research has demonstrated that environmental factors such as socio-economic status (Rizqi et al., 2022), poverty (Baker et al., 2021) and abuse (Heleniak & McLaughlin, 2020) can impact both the emergence and development of a child's nascent ToM ability. Other research has identified ToM as a salient predictor of a child's social competence (Devine & Hughes, 2016) and academic achievement (Cavadel & Frye, 2017). However, research is no longer limited to the exploration of a child's ToM, as similar impacts on the aforementioned factors have also been observed in adults, highlighting ToM as an important issue to explore across the life course (Dietze & Knowles, 2021).

Wellman (2018) summarised that ToM reasoning involves a network of neural regions, predominantly the medial prefrontal cortex and the left and right temporoparietal junction and several temporal lobe sites. These regions are activated when adults engage in mental-reasoning tasks and are impaired in adults with autism (Gallagher & Frith, 2003; Saxe et al., 2004). Typically, ToM advances in line with brain development (Wiesmann et al., 2017). However, the environment can inform the sequence and timing of its growth. As such, deficits in ToM abilities are often observed in individuals with additional needs such as those on the autistic spectrum (Peterson et al., 2009) or deaf children of hearing parents (Moeller & Schick, 2006).

Research has established that poorer ToM creates barriers to communication and closeness with others and results in cognitive distortions and empathy deficits (Elsegood & Duff, 2010). Extant literature has utilised the RMET-R or adapted versions to explore ToM in individuals with sexual convictions (e.g. Elsegood & Duff, 2010)

Elsegood and Duff (2010) found that those who offended against children displayed significantly poorer ToM when inferring the mental states of adults, compared to non-offending controls. Suggesting that that ToM abilities may be an area of interest in understanding sexual deviancy and those who offend against children find difficulty in reading and understanding the emotions of adults, which may explain their attempts to relate to children. However, there were no differences between offenders and controls in their ability to infer the mental states of children when using a novel version of the RMET-R task that used images of children's expressions rather than adults (Elsegood & Duff, 2010). This suggests that there is either no difference between sex offenders and control's ability to infer the mental states of children, or that the adapted version of the RMET-R may have limitations and not be sensitive to possible differences in their mindreading abilities. This indicates that further work on investigating the mindreading abilities of adults towards children would be beneficial for furthering understanding in the context of sex offending.

It is well established that social cognitions are crucial in decision making, and that successful decision making depends on abilities to understand the intentions, emotions and beliefs of others, involving both empathy and ToM (e.g. Frith and Singer, 2008). As such, social cognition may have a role in the decision to create request and/or distribute sexts. Social cognitions such as differential reinforcement (implicit or explicit reward resulting from the execution of a behaviour) and imitation (repeating behaviour they have been exposed to) have been found to predict sexting in romantic relationships (Brodie et al., 2019). The presence of these associations highlights the need for further investigations into social cognitions and sexting behaviours.

Similarly, empathy has been recognised as imperative to social decision making (Ramsøy et al, 2014). In the context of sexting, it is important to understand the role empathy has on recognising the impact of requesting, creating and distributing sexual content on the emotional wellbeing and consent of others involved (e.g. Clancy et al., 2020; Hernández et al., 2021). As such, the RMET-R as a tool of

measuring ToM and thus an individual's capacity to recognise emotions was utilised earlier within this thesis and is subject to critique in the current chapter.

Measuring Theory of Mind

Traditionally, research on the ToM concept has narrowly focused on preschool children, as this is when ToM emerges, with rapid progressive development seen throughout childhood (Baker et al., 2021). Experimental tasks such as false-belief tasks (e.g. Perner et al., 1987) are used to measure a child's ToM abilities, as they are founded on the comprehension that an individual's perception of the world might diverge from actuality. They include the opportunity to distinguish unambiguously between a child's (true) belief and the child's awareness of someone else's different (false belief) (Bauminger-Zviely, 2013).

First-order false-belief tasks involve attribution of others false beliefs to real events. For example, The Smarties Task (Perner et al., 1987), involves a child being shown a tube of 'Smarties' and asked to guess the contents. Children typically respond by saying "Smarties". The experimenter then opens the tube and reveals it actually contains an unlikely object (e.g. pencils or money). Children are then either asked what another child may think is in the tube, or what they initially thought the tube contained (Perner et al., 1987). Children aged 3 or under would be expected to say what they saw in the tube (i.e. pencils or money) whereas older individuals would answer "smarties" (American Psychological Association, 2022).

Second-order false-belief tasks are related with what individuals think about other people's thoughts (e.g., a child is required to attribute the false belief of one person based on the thoughts of another) (Bauminger-Zviely, 2013). These tasks assess whether children can recognise that another person does not possess knowledge that they themselves hold. For example, The Sally-Anne Experiment (Baron-Cohen et al., 1985). This involves a character 'Sally' placing a marble in her basket and leaving

the scene. ‘Anne’ then enters and moves the marble to her box. The experimenter then asks, ‘Where will Sally look for her marble?’. If the child responds “basket”, they demonstrate an understanding that although this is no longer the reality, ‘Sally’ possesses a false belief that it is in her basket, because she did not see ‘Anne’ move it.

Other measures that assess ToM include The Strange Stories Task (Happé, 1994), where participants are asked to read a series of stories and are asked to explain why a character says something that is not literally true (e.g. a white lie about complimenting an 'awful' hat). Successful performance requires attribution of mental states (e.g. desires, intentions, beliefs) and sometimes higher order mental states (i.e. one character’s belief about what another character knows). This is widely regarded as the primary measure of higher order mental state understanding (Osterhaus & Bosacki, 2022), though a newer version by White et al. (2009) is gaining acceptance as the standard (Nawaz et al., 2023); The Faux Pas Recognition Test (Baron-Cohen et al., 1999) involves participants recognising that someone made a social mistake (i.e. faux pas). Both the Strange Stories Task and Faux Pas Test were originally developed for clinical trials in autism in children and have since been adapted to reliably assess performance in adult subjects (Gourlay et al., 2022); The 5-step ToM scale (Wellman & Liu, 2004), which Peterson et al. (2012) extended to six steps. This measure includes tasks involving a contrast between a protagonist's inner psychological states (e.g. ignorance, felt emotion) and either reality or the mental states of others, to assess children's understanding of a particular type of nonliteral message (i.e. sarcastic irony); The Silent Films Task (Devine & Hughes, 2013, 2016) where participants are shown five short film clips and asked to explain the behaviour of a character; The Reading the Mind in the Eyes Task (RMET), which was later revised (RMET-R; Baron-Cohen et al., 2001). This task requires participants to infer the mental states of others based on images of eye regions. This is often utilised in research concerning adults (Baron-Cohen et al., 2001; Kirkland et al., 2013) and this was a contributing

factor for the decision to include this measure within this thesis. Thus, this critique will focus on the RMET-R (Baron-Cohen et al., 2001).

Aims of the Critique

This critique aims to examine the RMET-R (Baron-Cohen et al., 2001) in terms of its psychometric properties and its clinical and research use.

The Reading the Mind in the Eyes Test: Overview

The Development of the Reading the Mind in the Eyes Test

Baron-Cohen et al. (1997) devised what was then an advanced ToM test, the original 'Reading the Mind in the Eyes Test'. As a measure of adult mentalising, the tool was able to successfully distinguish between adults with High Functioning Autism (HFA), Asperger's Syndrome (AS) and controls. The test involved participants looking at 25 individual photographs of the eye region of faces of different actors/actresses (Figure 5). They were required to understand the mental state terms presented alongside these images and make a forced choice between two words as to what best described what the person in the photograph might be thinking or feeling. Although nothing in the test assesses whether participants use a "theory" or not, the forced-choice method for interpreting faces for mental states has been used successfully before (Baron-Cohen, 1996). The original test was a test of how well the participant can put themselves into the mind of the other person and tune into their mental state.

Figure 5

Example of RMET (1996) Stimuli



Note. Options presented for this figure were “Serious” (target) and “Playful” (foil).

Analysis of the task identified that participants need to have a mental state lexicon (vocabulary) and know the semantics (meaning) of the terms presented to them, then map these terms onto the fragments of the facial expressions of mental states that are presented in the images (Baron-Cohen et al. 2001). Participants then match the expression in the image to examples of eye-region expressions they have stored in memory and seen in the context of particular mental states and then make a decision on which word presented to them closely matches this. All of which seemingly happens at an unconscious, rapid and automatic level (Baron-Cohen et al. 2001). Although described as an advanced ToM test, the RMET-R involves only the attribution of the relevant mental state (e.g., compassion) which is the first stage of ToM. It does not include the second stage, the inferring of context of said mental state (e.g., compassion for a bereavement). Despite this, it was concluded that attribution of the type of mental state is nevertheless part of ToM even if it is not all of it (Baron-Cohen et al. 2001).

Whilst the test was able to successfully identify mind-reading difficulties in adults with HFA and AS (Baron-Cohen et al., 1997), a number of issues were soon identified. These included:

I. A forced choice between two options (target word and foil word). This meant that chance performance was $p = .5$ so an overall test score of ≥ 17 would be needed for scores to be significantly above chance (binomial test). This means that individual differences between participants could only be observed between scores of 17-25, which is too narrow.

II. Baron-Cohen and Hammer (1997) found that parents of children with HFA scored lower than the general population. Although this might be explained by one or both parents carrying similar genes for HFA, they scored similar to their children even when they did not have the condition themselves. The test had a narrow range of scores (0 - 25) to be able to accurately distinguish between a first-degree relative of someone with autism, or an individual with that diagnosis.

III. The narrow range of scores that are significantly above chance can lead to a score in the normal range being close to the ceiling of the test. Baron-Cohen et al. (2001) state that ceiling effects are undesirable because one loses power to detect individual differences.

IV. The use of basic emotions. These can be universally recognised without the need to attribute context or belief to the individual (Ekman & Friesen, 1971; Harris, 1991).

V. Some items could be answered by only attending to the gaze direction of the eyes (e.g., 'noticing' or 'ignoring').

VI. More female than male images were used and may have biased results.

VII. The target word and the foil word were semantically opposite. This meant that respondents would only have to decide between opposite emotional valence.

VIII. Comprehension difficulties may have biased an individual's score as the test involved mapping a word to an image.

As such, Baron-Cohen et al. (2001) aimed to correct these limitations in the RMET-R (see Figure 6 for an example item). This involved: increasing the number of items on the test from 25 to 36 and the number of response options from two to four, including the sole use of complex emotions for all four terms (one target and three foils) ensuring all of which were of similar emotional valence, excluding images where direction of gaze hinted to the correct answer, having an equal number of male and female images and including a glossary of terms (Baron-Cohen et al., 2001).

Figure 6

Example Stimuli from RMET-R (2001)



Note. Options provided were "Playful" (target), "Comforting" (foil), "Irritated" (foil) and "Bored" (foil).

In revising the test, they aimed to investigate whether; the deficits in the original study could be replicated, to test the sex differences (female superiority) found in the first study, and test in a normal adult sample if the inverse correlation would be found between the new revised version and scores on the Autism Quotient (AQ; Baron-Cohen et al., 2001). The AQ measures the degree to which an adult of normal IQ possesses traits related to Autism Spectrum Disorder (Baron-Cohen et al., 2001). It is a self-report questionnaire with possible scores ranging from 0-50, higher scores demonstrating the more autistic traits a person is likely to possess (Baron-Cohen et al., 2001).

Four participant groups were tested. Group one comprised male adults with Asperger's Syndrome (AS) or HFA (*n* = 15). Group two comprised a mixed adult sample (*n* = 122). Group three comprised normal adult students (*n* = 103) and group four comprised randomly selected general population sample IQ matched with group one (*n* = 14). Group one was instructed to judge the gender of each photograph as a control task. Groups one, three and four also completed the AQ, and all participants were asked to read through the glossary of terms and indicate words they were unsure of.

Target words and foils were generated by the first two authors and piloted on groups of eight judges (four male, four female). Five out of eight judges needed to agree that the target word was the most suitable description for each image. No more than two judges were able to pick any single foil. Items that did not meet this criterion had new target words and/or foils generated and were re-piloted until all criteria were met. Data from groups two and three did not differ from one another, so they were combined (*n* = 255). At least 50% of these participants had to select the target word and no more than 25% could select any one of the foils. This was to test that a clear majority of normal controls selected the target words and that this was twice as often as a foil. To start 40 items were generated, however items 1, 2, 12 and 40 failed to meet these criteria so were excluded from the test, leaving the remaining 36 items found in the RMET-R today.

The RMET-R has been used in a range of contexts, in both general and clinical populations including individuals with ASD, HFA and Tourette's Syndrome (TS; e.g., Baron-Cohen et al., 2001), patients with schizophrenia (e.g. Bora et al., 2009), mild to severe brain injury (e.g. Geraci et al., 2010; Tonks et al., 2008), Post-Traumatic Stress Disorder (PTSD; Schmidt & Zachariae, 2009), Concussion (Gallant & Good, 2020) and those with alcohol addiction (Maurage et al., 2011), demonstrating its applicability to a range of clinical populations, supporting its use in clinical practice. It has also been translated into several languages such as Bosnian (Schmidt & Zachariae, 2009), French (Prevost et al., 2014), Italian (Vellante et al., 2013), Japanese (Adams et al., 2010), Persian (Khorashad et al., 2015),

Romanian (Miu et al., 2012), Spanish (Fernández-Abascal et al., 2013), Swedish (Hallerbäck et al., 2009) and Turkish (Girli, 2014) therefore establishing the tool as an internationally recognised and utilised measure of ToM.

Administration

Administration of the RMET-R can be done online or on a hard paper copy, the flexibility in this approach makes it convenient and adaptable for clinical practice. Participants are required to indicate one of four words that accurately depict the image they are shown. Scoring of the RMET-R is not onerous, with only 36 images to score, this could be done by a researcher, research assistant or assistant psychologists in practice. No interpretation of responses is required as researchers will have access to target and foil terms so will be able to indicate whether a correct response was achieved or not. The time to complete the RMET-R depends on ability of participants completing the task. The administration of the RMET-R demonstrates that it is a user-friendly tool, and versatile for both clinical and research practice.

Characteristics of a Good Psychological Measure

A psychological test is any procedure on the basis of which inferences are made concerning a person's capacity, propensity or liability to act, react, experience or to structure or order thought or behaviour in particular ways (British Psychological Society, 2017). The British Psychological Society state that a psychometric assessment should be supported by evidence of both reliability and validity for their intended purposes (British Psychological Society, 2017). Validity, reliability and the appropriateness of the normative data are the essential components to evaluate the quality of a psychometric tool (Kline, 2015). These constructs are discussed to examine whether the RMET-R is a valid, reliable, and useful measure.

Psychometric Properties of the Reading Mind in the Eyes Task -Revised

Level of Measurement

The RMET-R is an implicit association test, presenting participants with an image and four multiple-choice format answers. Baron-Cohen et al.'s (2001) experimental study was quasi-natural in nature, collecting quantitative data comprising total scores of participant's correct responses (with a maximum score of 36).

Reliability

The term reliability refers to the reproducibility of measurements, which is the degree to which a measure produces the same values when applied repeatedly (Shrout & Lane, 2012). A reliable test means variation in participants' scores can be attributed to the fact that the target concept is being measured opposed to a result of random error or chance (Hammond, 2002).

Inter-rater reliability (i.e., the consistency of scoring between independent judges) is not appropriate here as the RMET-R is a measure of self-report and target answers are already identified, meaning only one rater is required, the simplicity of which makes it an efficient tool for both research and clinical practice. Instead, this critique will examine the; internal consistency and test-retest reliability of the RMET-R.

Internal Consistency Reliability. Internal consistency reliability is the extent to which all test items measure the same construct (in this instance, ToM). An internally consistent or reliable psychometric assumes that all items contribute equally to the overall score in a consistent manner. However, if the internal consistency is too high, items may be too similar which can be problematic, as they may not be adding something unique to the tool and may become redundant. A Cronbach's alpha between 0 and 1 is the gold-standard measure of internal consistency. For a measure to demonstrate internal consistency, Cronbach's alpha should be at least 0.70. However, Kline (2000) argues that an acceptable alpha is between 0.60 and 0.70.

No Cronbach's alpha was provided in the 2001 study when the tool was revised (Baron-Cohen et al., 2001), so it is not possible to directly compare the findings of other research to the original study. Yet, studies that have since utilised the tool have reported it as low (e.g. Meyer & Shean, 2006). More recent research has reported internal consistencies ranging from unacceptable – acceptable with Cronbach's alpha varying between 0.37 and 0.61 across adaptations of the tool (Khorashad et al., 2015; Vellante et al., 2013). This is concerning given that the cut off for acceptable Cronbach's alpha is 0.60 (Kline, 2000), suggesting this low internal consistency may mean that items on the tool are not correlating well with one another, and may not be measuring ToM. Despite this, Baron-Cohen et al. (2015) note that the RMET-R is a reliable measure for the cognitive bases of autism, confirming its appropriateness for continued use in the measurement of ToM.

Olderbak et al's. (2015) review of the RMET-R concluded the tool has poor internal consistency (Dehning et al., 2012; Girli, 2014; Harkness et al., 2010; Khorashad et al., 2015; Ragsdale & Foley, 2011; Vellante et al., 2013; Voracek & Dressler, 2006), whilst the French translation of the tool reports good internal consistency (Prevost et al., 2014). Olderbak et al. (2015) explain that the low internal consistency in the RMET-R may be a result of the test attributes due to the inconsistencies between items such as the angle of the faces in the images and the commonness of response option words, all of which may reduce the internal consistency of the test. Further, the limited standardisation of the picture characteristics such as the number of light/dark areas, the use of shadows etc may act as confounds (Olderbak et al., 2015).

These findings suggest that the internal consistency reliability of the RMET-R is low. However, the developers of the tool assert its suitability for practical application. This raises the question whether Baron-Cohen et al. (2001, 2015) may have potential biases due to their vested interest in the tools continued use in both clinical and research practice.

Test-Retest Reliability. Test-Retest reliability indicates the stability of test results over repeated administration of the test. A correlation analysis is the most effective way to examine test-retest reliability. A Pearson's *r* of at least .70 should be achieved for test-retest reliability to be demonstrated or Intraclass Correlation Coefficient (ICC) ≥ .60 is considered acceptable. Time between administrations varies and there are discrepancies in the literature advising of durations ranging between 3-12 months (Kline, 2000; Streiner & Norman, 2008). The RMET-R is not routinely repeatedly administered to test populations; therefore, it is an efficient tool to use in practice. However, experimental research has demonstrated acceptable test-retest reliability of the RMET-R (e.g. Khorashad et al., 2015; Prevost et al., 2014; Vellante et al., 2013; Yildirim et al., 2013).

Data collected over two time points, one month apart showed good test-retest stability in Italian undergraduates (ICC = .833 [CI = .745, .902]) (Vellante et al., 2013). In the Persian translation of the tool where 44 participants completed the RMET-R one-year apart (ICC = .735 [CI = .514, .855]) also demonstrated good agreement between time points (Khorashad et al., 2015). These findings suggest that participant's scores on the RMET-R remain consistent whether administered one month or 12 months apart. This supports the single administration of the RMET-R in clinical practice (as it may be considered unnecessary to repeat the test if participant results remain consistent) and provides researchers with confidence in the reliability of repeated measures.

However, there are factors which may circumvent the strength of these findings. The samples used within these studies may not be fully representative of a general population sample. Further, the online administration of the RMET-R cannot account for all environmental controls (Khorashad et al., 2015). Additionally, with all translations of tools language may not be a perfect translation to match the emotions identified in the original tool. This is something that should also be considered in the French translation (see Prevost et al., 2014) which also revealed good stability in a larger sample of participants, with one week between time points with intra-class correlation coefficient of .70 (*CI* = [.46, .84])

(Prevost et al., 2014). This study consisted of an all-female sample and given the observed gender differences between male and female performance in some studies (e.g. Vellante et al., 2012; Yildrim et al., 2011) who suggest that females perform better than males, this may bias the reliability of results. Nevertheless, there is evidence to the contrary, with many reporting no gender differences (e.g. Baron-Cohen et al., 2001). So, whilst the RMET-R is not routinely repeated in clinical practice, the tool has demonstrated acceptable test-retest reliability across translations, time points and sample groups, meaning the RMET-R is suitable for single administration and reliable for repeated measures.

Validity

The term validity refers to the extent to which a psychometric tool accurately measures the construct it claims to. This critique will inspect: Face, Concurrent, Construct and Content Validity.

Face Validity. Face validity indicates whether a tool measures what it intends to measure. This can be difficult when measuring psychological constructs such as one's ToM abilities as they are not directly observable and therefore must be inferred by observing behaviour on performance tasks (e.g. RMET-R). Therefore, caution must always be considered when examining face validity of such a tool, particularly for participant's performance on the RMET-R whose ToM abilities we infer by observing their behavioural response (i.e., selection of an emotional state) to grainy images of a static eye region. However, after utilising the tool within the research documented in this thesis and having an awareness of the literature surrounding ToM, the RMET-R does on face value set out to measure the first construct of ToM i.e., attribution of a mental state from an image of an eye region (Baron-Cohen et al., 2001).

Since its development, the RMET-R has become a popular measure of ToM ability, and as aforementioned largely validated by the poor performance of those with ASD (Baron-Cohen et al., 2001). However, Oakley et al. (2016) investigated the independent contributions of ASD and Alexithymia (a condition frequently co-occurring in ASD, characterised by difficulty experiencing, identifying, and

expressing emotions) to performance on the RMET-R and found that both ASD and Alexithymia-matched control participants performance was impaired on the RMET-R. As both participant group's performance was impaired, Oakley et al. (2016) suggest that the RMET-R measures emotion recognition rather than ToM. However, as Alexithymia frequently co-occurs with ASD it is possible that their sample groups may not be as distinct as the researchers intended therefore influencing test performance. Further, when assessing performance on an alternative ToM measure (The MASC; Movie for Assessment of Social Cognition; Dziobek et al., 2006), participant performance was impaired for those with ASD but not with Alexithymia. Therefore, suggesting that the RMET-R may not be a valid measure of ToM and to identify deficits in ToM specifically, and not difficulties with emotion recognition an alternative ToM measure may be more appropriate. The use of the MASC involved the use of video which may also be more ecologically valid and as later discussed the RMET-R may benefit from an upgrade to dynamic imaging/videos.

In its development, the RMET-R replicated earlier findings that found adults with ASD or HFA were significantly impaired on RMET and were not impaired on gender recognition control tests, validating the tool as a useful test to identify subtle impairments in social intelligence in otherwise normally intelligent adults (Baron-Cohen et al., 2001; Baron-Cohen et al., 1997). The RMET-R's validity has also been demonstrated in other studies with autistic patients (e.g. Craig et al., 2004; Guastella et al., 2010) as well as healthy subjects (Feeser et al., 2015). These findings raise important considerations when assessing ToM abilities in clinical populations and for future research, such as assessing emotion recognition abilities independently of performance on the RMET-R, which is not something that was considered during the use of the tool in this thesis.

Concurrent Validity. Concurrent validity refers to whether a test correlates with other tests purporting to measure the same construct. In this instance, concurrent validity assesses whether the RMET-R correlates with other measures that measure ToM abilities. Golan et al. (2007) report that the

RMET-R correlated with other revised versions of the tool including the Reading the Mind in the Voices – Revised, therefore strengthening its applicability to clinical practice, as this is important to consider when assessing participants with additional needs such as those with visual impairments, who may not be able to complete the RMET-R. Concurrent validity has also been established with the short stories task and the interpersonal reactivity index (Dodell-Feder et al., 2013; Giordano et al., 2019). These findings indicate that the RMET-R correlates with other measures of ToM assessment, and this is useful for clinicians when considering access to clinical resources.

Construct Validity. Construct validity assesses the degree to which items in a measure correlate with theoretically relevant and similar measures. In this instance, items on the RMET-R are considered to relate to theoretical understandings of ToM. This is explored through factor analysis, which determines how much each item in the measure contributes to the whole scale result. Researchers can then perform a confirmatory factor analysis to confirm the construct validity of the tool.

Shamay-Tsoory and Aharon-Peretz (2007) indicate that affective ToM is dependent on the ventromedial pre-frontal cortex (vmPFC) and its bidirectional connections with subcortical structures and so disruption of the vmPFC should result in physiological under-arousal and subsequent deficits on affective tasks. Gallant and Good (2020) examined RMET-R validity following concussion and its correlation with other ToM measures and constructs such as empathy. Whilst they acknowledge its good ecological validity for its use of diversified emotional descriptions compared to alternative assessments that use only the six basic emotions, they found that the RMET-R was not sensitive to ToM impairments in patients with concussion and suggest rather that the REMT-R is related to language skills among neurotypical participants. Olderbak et al. (2015) report the results of a confirmatory factor analysis that suggest that whilst the RMET-R is proposed to measure a single construct (Baron-Cohen et al., 2001), researchers have suggested there may be subscales within the measure that represent positive, negative and neutral affect, impacting the tools construct validity (e.g. Harkness et al., 2010;

Konrath et al., 2014; Maurage et al., 2011). Research by Vellante et al. (2012) suggests that dividing items into affect-specific factors is a poor fit considering relations between items that shared the same target word were also weak. The average inter-item correlations were outside the range recommended by Clark and Watson (2016) for sufficient internal consistency (i.e. 0.15 – 0.50). These findings suggest that the RMET-R may not be effective in assessing ToM abilities as first suggested and that it may not be appropriate for use on those with vmPFC damage or concussion and therefore it is possible that when assessing ToM abilities in brain injured patients, the RMET-R may not be the most appropriate tool to use.

Convergent Validity. Convergent Validity is a type of construct validity. It investigates the extent to which test scores are related to scores on alternative measures of the same attribute. A number of studies have demonstrated that the RMET-R shows convergent validity evidence with other measures of ToM including the Strange Stories Task and Faux Pas tasks (e.g. Ferguson & Austin, 2010; Kirkland et al., 2013; Torralva et al., 2009). However, results are inconsistent (e.g. Ahmed & Stephen Miller, 2011; Duval et al., 2011). Further discrepancies were found in between the RMET-R and self-report measures of cognitive empathy (e.g. Grove et al., 2014; Spreng et al., 2009). The Empathic Accuracy Paradigm (EAP; Ickes, 2001) is another measure of ToM. It assesses the ability to infer a person's mental states from moment to moment as the person interacts with another. It does not require the matching of emotions to be correct. Unlike the RMET-R, it assesses the ability to process dynamic cues and so Goldstein and Winner (2012) suggest it is a more ecologically valid and naturalistic measure of ToM than the RMET-R. Scores on the EAP marginally correlated with RMET-R, r (50) = .25, p = .07 pre-test and significantly correlated with both the RMET-R, r (47) = .35, p = .015, and the Basic Empathy Scale, r (47) = .41, p = .004 post-test (Goldstein & Winner, 2012). These findings further support the use of live images/videos in assessing ToM, reinforcing the notion that the RMET-R may benefit from an update.

Discriminant Validity. Discriminant validity is another type of construct validity. It is the extent to which test scores are unrelated or negatively related to scores on alternative tests or measures of different attributes. If a tool were to demonstrate discriminant validity, it would mean that it is not connected with other measures which theoretically it should not be connected to. Whilst research pertaining to the discriminant validity of the RMET-R is limited, Vellante et al. (2012) established discriminant validity of the tool when comparing its scores to a measure of social desirability. These findings indicate that the RMET-R is distinct from measures of social desirability which is desirable when utilised in practice.

Content Validity. Content validity examines whether the tool examines all aspects of the subject under consideration and the degree to which the instrument is relevant to or representative of the construct in question. In the case of the RMET-R, ToM is the only intended construct under examination in the tool, yet it only examines one aspect of ToM (attention to others) and does not include an examination of intentionality (knowing how others will act according to their beliefs and desires). This indicates that for clinicians and researchers to accurately and completed assess respondents ToM abilities, further analysis may be required, and the generalisation of current conclusions may be limited. So, whilst intentionality may not be assessed, attention to emotions is, and that is still important to consider in the context of image-based sexual abuse when used within this thesis.

Cultural Variation. Further evidence for the tool's validity, is its international use. Multiple translations of the tool are used for research and clinical purposes and many studies comment to its validation. However, results are mixed, and it is possible that in the translation of the tool small changes may have been made, effecting both reliability and validity (e.g. Girli, 2014; Lee et al., 2020; Vellante et al., 2013). However, the breadth of utility speaks to the tools robustness whereby findings indicate the tool is relevant to the construct of ToM cross-culturally.

Normative Data

Normative data refers to a set of specific, clearly defined samples of participants. Kline (2000) highlights the two most important factors under consideration here are the sample's representation to the target population and the size of the sample being used, with 500 participants recommended to reduce standard error. Normative data provides a baseline of understanding to respondent's scores and without it, assessors cannot infer meaning from their scores. Baron-Cohen et al.'s (2001) paper presents normative data for the RMET-R. This is presented in Table 22:

Table 22:

Normative Data for RMET-R (Baron-Cohen et al., 2001)

Participant Groups	***N***	**Mean**	***SD***
Group 1: AS/HFA Adults (ALL)	15	21.9	6.6
Group 2: General Population Controls (ALL)	122	26.2	3.6
Males	55	26.0	4.2
Females	67	26.5	3.2
Group 3: Students	103	28.0	3.5
Group 4: IQ Matched Controls	14	30.9	3.0

The gender differences observed in the general population controls were later replicated in 2015 (Baron-Cohen et al., 2015), demonstrating their consistency across time and is an important factor to consider when assessing female or multi-gendered samples. Baron-Cohen et al. (2001) identify that the RMET-R may have clinical applicability in groups beyond those with AS/HFA such as those with brain damage. However, studies using the RMET-R with brain damaged patients have demonstrated mixed

validity (Gallant & Good, 2020; Turkstra, 2008), indicating that further research may be required to validate the RMET-R in populations outside of those referenced here.

Other Areas of Critique/ Limitations

The RMET-R is now over 20 years old. Understanding of ToM has developed during this time. Wellman (2018) reflects on this development, highlighting that ToM research now includes evidence of its development across the life course and its cultural variation. This may have implications for the way in which ToM is assessed at different developmental stages and in different cultures.

The rise of digital communication has prompted investigations into the differences between online and offline interactions. Engel et al. (2014) found that the RMET measures a deeper, domain-independent aspect of social reasoning, indicating that ToM is crucial in both text-based online and face-to-face offline communication. Additionally, Gentina et al. (2021) found that social networking influences how adolescents acquire ToM, and that ToM is essential in interpretating and detecting deceptive content, which may have further implications for protecting individuals against adverse online experiences such as online grooming and possible online facilitated image-based abuse. These findings support the RMET-R's online utility. Despite this, the images of the RMET-R are grainy and of poor quality. Hallerbäck et al. (2009) found that by improving the lighting on an image, it improved the internal consistency and performance on the item. As the utilisation of the RMET-R can be both electronic and on paper format, updated and improved image quality could improve the accuracy of participant selection and further modernise the tool.

Also worthy of consideration is the language used in the tool. The terms used in the tool may still accurately depict descriptions of emotions 20 years later, but the English Dictionary is ever developing and there are new lexica in circulation that were not at the time of the tool's development.

So, the original terms used to describe the emotions in the pictures may no longer be the most appropriate.

Tiredness and fatigue effects may influence performance on the RMET-R as individuals are repeatedly shown similar yet different images of eye regions, 37 times (including the example/trial case). Further, as aforementioned the images remain static. It could be argued that in line with technological advances an electronic version of live eye images may be more appropriate for participants to decipher the mental states of others, given that the primary expression of emotion is through the muscles in the face, and movements in the face communicate both our mental state and intent to others (van der Kolk, 2014). In retaining the use of static images in the tool, accurate identification of emotional state may be missed.

A limitation of this psychometric critique is that it relies on research that solely reports Cronbach's alpha (α) as a measure of reliability. Despite alpha being the most widely used measure of reliability in social and behavioural research (Deng & Chang, 2016; Hayes & Coutts, 2020), and the only measure of reliability cited within the literature used to inform this critique, it is important to note that there are other measures of reliability such as coefficient omega (McDonald, 1999) and greatest lower bound reliability (Bentler, 1972). Some researchers have reported that the use of Cronbach's alpha is not the optimal measure of reliability, and that McDonald's Omega (ω) is an appropriate alternative (Hayes & Coutts, 2020). Reports suggest that unlike alpha, which can underestimate true reliability unless items are tau-equivalent (when all the items on the measurement scale have equal covariance with the true scores), omega does not hold this assumption. Green and Yang (2008) report that despite researchers using alpha as a measure of reliability, the assumption of tau-equivalence is seldom met. Deng and Chang (2016) suggest that omega can overcome the deficiencies of alpha and is thus the preferable measure of reliability. This critique highlighted that the inter-item correlations of the RMET-R were outside the range recommended by Clark and Watson (2016) for sufficient internal consistency, yet

Hayes and Coutts (2020) suggest that alpha is not a measure of internal consistency, even though this is the intended use of alpha (Cronbach, 1951). Nevertheless, if the RMET-R violates the assumption of tau-equivalence (each item measures the same latent variable) then omega may have been a more accurate measure of reliability. However, many suggest that the differences between alpha and omega are small in application (E.g. Deng & Chang, 2016; Maydeu-Olivares et al., 2007). Further, omega was not cited within the literature surrounding the RMET-R and despite the observed argument between the use of alpha and omega, alpha continues to be the more dominant measure of reliability of multi-item measurement scales (McNeish, 2018). Future critiques or use of the RMET-R should observe this limitation and consider alternative measures of reliability.

Forensic Implications

The findings of this review have a number of implications for forensic practice, that can be applied outside of the themes pertinent to this thesis. As the RMET-R assesses individual's abilities to understand and interpret the mental states of others, this could be particularly important across legal settings where understanding social cognition is crucial such as suspect interrogations, jury decision-making and eyewitness testimony, particularly given that research has already highlighted the difficulties with ToM in those who have offended sexually (e.g. Castellino et al., 2011; Elsegood & Duff, 2010; Karoglu et al., 2021). Further, if the RMET-R accurately and reliability assesses emotion recognition, it could have significant implications in incidences such as police lineups (i.e. could a victim accurately identify an offender based on the subtle differences in their eye gaze).

The validity and reliability of the RMET-R as a measure of assessing ToM may also have implications for evaluating the credibility of witnesses as those who score lower on ToM measures may struggle with accurately perceiving and conveying emotional states, which may in turn affect their reliability in court. If this measure was used in child custody cases to help assess a parent's ability to

understand and respond to their child's emotional needs, the RMET-R could provide insights into a parent's capacity for empathy. In forensic risk assessment and culpability assessment, understanding an offender's ToM may be relevant in assessing and treating their risk and risk of recidivism. When considering an offender's treatment Marshall et al. (2008) recommends that psychological treatment for individuals who have committed sexual offences should include the development and rebuilding of basic social cognitive skills and Castellino et al. (2011) highlight how enhancing ToM skills (i.e. mindreading) should be a central feature of treatment programmes (see Mentalisation Based Treatment; Batemen & Fonagy, 2004). However, given the ToM deficits observed in sexual offenders, this should be extended to sex offending treatment plans.

Difficulties in understanding other's perspectives may contribute to interpersonal challenges and impact individual's behaviour (whether deemed acceptable or not; Castellino et al. 2011). Further, if the RMET-R is used in mental health evaluations, it may have implications for sentencing and mental health support provision, as understanding social cognitive abilities could help to provide context for individuals behaviours or identify deficits in their abilities, thus identifying areas for possible intervention and treatment. Despite this, it is important to note that whilst the RMET-R provides valuable insight into an individual's ToM it is just one tool amongst many used in forensic contexts. Its application should be considered in conjunction with other relevant assessments, available research and the findings of this review. And finally, the use of any psychological testing in legal settings requires careful consideration of ethical and methodological issues.

Conclusion

This critique set out to examine the RMET-R in terms of its psychometric properties and research utility. The RMET-R aims to assess an individual's ToM abilities in that a score is given for each correct item achieved when selecting a term that accurately depicts the emotional state of an image

containing a static eye region of an actor/actress. This critique has revealed that RMET-R is one of the most widely used measures of ToM internationally, with mixed evidence of reliability and validity across a broad range of populations in multiple languages.

In earlier chapters of this thesis, the RMET-R is utilised as a measure of emotional intelligence/social cognition, using scores to provide an indication of participants abilities to infer the mental states of others (thinking particularly in the context of sending sexual/nude stimuli). However, given the RMET-R only examines the attribution of mental state and not the context, future research may benefit from considering the latter (i.e. inferring the mental state of a victim of image-based abuse).

In summary, research has indicated that the RMET-R has poor internal consistency which may be influenced by a number of confounds, suggesting an update of the measure is required. Inter-item correlations are low, and this may indicate that rather than measuring a single construct as intended (Baron-Cohen et al., 2001) it may indeed measure more (e.g. positive, negative or neutral affect). Test-retest reliability is good, providing support for its single use in practice and use in longitudinal research that may utilise repeated measures. Research has established its concurrent validity and content validity (for attribution of mental states e.g. Golan et al., 2007). However, findings relating to the RMET-R's construct validity is inconsistent.

The tool would benefit from updating its images and upgrading to live-images (ensuring consistent superior psychometric properties and homogeneity). Other updates could include reconsidering the language used in the tool, enhancing the scoring system to capture a degree of certainty in participants responses, periodically reviewing the tool and its utility and incorporating the latest research findings and technological advances in Theory of Mind development and assessment.

Despite the variability in the literature outlined in this critique pertaining to the validity and reliability of the tool, as per the guidance outlined by the British Psychological Society (2017) for psychometric assessments, the RMET-R is supported by evidence of both reliability and validity for its intended purpose internationally, across a variety of clinical settings and population groups, thus supporting its use in this thesis.

Chapter Six: Discussion

This chapter synthesises the results and findings from the chapters presented in this thesis. It begins by drawing together a predictive model of all independent variables for sending and receiving image-based sexts with the inclusion of Ethnicity (see Tables 23 and 24 in Appendix IX). Results are discussed in reference to extant literature and other chapters. The implications of the thesis as a whole are presented, followed by acknowledging the limitations of the thesis and suggested directions for future research**.**

Main Findings

The present research thesis explored sexting behaviours which is of forensic importance due to its links with online victimisation, grooming, child pornography, and other image-based sexual abuse such as cyber-flashing and revenge porn (e.g. Gámez-Gaudix & Mateos-Perez, 2019; Machimbarrena et al., 2018, McGlynn & Rackley, 2018). Sexting arose from the increase in digitally facilitated communication and whilst some argue it is a normative approach to modern day courtship and can enhance intimate relationships, many argue the inverse and suggest that it is linked to a plethora of risks (Dir et al., 2013). Despite this argument and much international attention, research in the UK is scant, even though self-generated child abuse images make up a large proportion of images being removed from the internet (Internet Watch Foundation, 2023). The present thesis aimed to fill this gap by exploring the sexting behaviours of those residing in the UK, to help gain insight into sexting practices and its predictors, whilst also identifying the mental health and forensic implications of adolescent sexting.

To begin, a systematic literature review was conducted. This was an attempt to establish what the forensic and mental health implications of adolescent sexting were. The results of this review identified the presence of both forensic and mental health implications including the experience of DMS-IV disorders such as depression and anxiety. Identified implications were not limited to non-

consensual sexting and highlighted that females were at greater risk of experiencing implications. Links to low self-esteem were also identified, replicating the findings of Hudson (2011). This review also identified that sexting is associated with offline behaviours such as dating violence, cyberbullying, sexual solicitation, and blackmail. Findings provided further evidence for the gendered nature of image-based sexual abuse in that males who asked for sexts were more likely to perpetrate dating violence (Van Ouytsel et al., 2021). These findings are concerning given how prevalent adolescent sexting is and how challenging it is to monitor sexting and associated cyber-crimes due to its online and sometimes anonymous nature.

Implications were not limited to online experience and many off-line and in-person implications were noted (i.e. dating violence and sexual solicitation), echoing findings observed in Mexican samples (e.g. Rodriquez-Otero, 2020), indicating that the implications of sexting are global and not limited to particular countries or cultures. Adolescent sexting was linked to traditional bullying victimisation which appeared over time, adding to the longitudinal distress experienced by victims. One study found that women who reported sending and being asked to send sexts were more likely to report dating violence victimisation, indicating that not all sexting in relationships is relationship enhancing and positive as previously suggested (McDaniel & Drouin, 2015). These findings cement the importance of continued clinical and academic enquiry into sexting behaviours, for the purpose of ensuring both emotional wellbeing and public protection.

Continuing the enquiry into sexting behaviours, chapters three and four aimed to examine sexting through an alternative lens. This time situating sexting as the outcome, and thereby examining possible predictors for this behaviour. 67% of participants reported having sent an image-based sext, and 77% of participants reported having received an image-based sext, most of which were sexting intimate partners. These figures were higher than that previously identified by Klettke et al. (2014), and although this may be due to increased access/availability of image-sharing, these figures suggest that

image-based sexting has become an increasingly common behaviour observed in a UK based adult sample, and therefore supports the normalcy argument for image-based sexting.

Chapter three examined psychological constructs; ToM (a measure of social cognition and emotional intelligence), SE, and RP proclivity as predictors of image-based sexting. This study aimed to bridge the gap in existent literature as the first study to examine ToM and RP proclivity in relation to image-based sexting. Similar to findings identified in the systematic literature review, SE predicted the sending and receiving of image-based sexts, such that as scores on a self-esteem measure increased, the odds of image-based sexting decreased, suggesting that perhaps image-based sexting is used to enhance self-esteem or seek approval from others, which would be consistent with existent literature (e.g., Gámez-Guadix & de Santisteban, 2018; Hudson & Fetro, 2015; Scholes-Balog et al., 2016). Further, the initial model showed that as scores on a ToM measure increased the odds of reporting image-based sexting also increased. This implies that those with lower ToM may be less likely to get into situations where image-based sexting is more likely to occur (i.e., intimate relationships due to difficulties in empathising with others, flirting, and relationships in general; Mintah & Parlow, 2018). Individuals with a higher ToM may have greater emotional intelligence meaning their access to opportunities to image-based sext (i.e. more sexual partners, more sexual communication) are also greater. In some instances, findings were confounded by demographic factors (age, gender, and sexuality) and therefore these constructs were considered as predictor variables in Chapter Four.

Here an effect of sexuality was significant for both sending and receiving image-based sexts in the initial model. However following adjustment and Bonferroni correction, there were no significant demographic predictors of sexting in this study. Existent literature suggests that sexting play a different role in sexual minority relationships, and this may account for the observed effect in the odds ratios (Bianchi et al., 2021; Van Ouytsel et al., 2019). Contrary to the hypothesised effect of age and gender, neither were significant at predicting image-based sexting in this sample. Although females and younger

age groups were at increased odds of reporting image-based sexting, no significant effects were observed. This contrasts the findings of Klettke et al. (2018) who observed gender difference both within and between cultures (i.e. Indian and Australian participants). Results may be confounded by the higher proportion of younger and female participants included in this sample.

In the complete predictive logistic binary regression model with all seven independent variables (see Appendix IX), sexuality and ToM scores were significant predictors of sending and receiving image-based sexts. Those identifying as non-heterosexual were at increased odds of reporting receiving and sending image-based sexts and as scores on a ToM scale increased, the odds of reporting receiving and sending image-based sexts also increased. These findings echo that of Chapters 3 and 4, demonstrating that the inclusion of ethnicity as a predictive variable of sending and receiving image-based sexts did not alter the significance of these findings. In this model, ethnicity did not predict sending or receiving image-based sexts. Extant literature regarding ethnicity and sexting is mixed (e.g. Peskin et al., 2013 and Hicks et al., 2021), and it is possible that the inclusion of ethnicity as a predictor variable does not account for the individual differences and cultural variation observed within ethnic groups which may influence sexting behaviour.

As Chapter Three utilised the Reading the Mind in the Eyes Task – Revised (RMET-R; Baron-Cohen et al., 2001) and found a significant effect between ToM and image-based sexting before Bonferroni correction was applied, this thesis concludes with a critique of this measure, to examine whether its use within this thesis is justified and the contributions it has made are valid and reliable. It was clear that the RMET-R is one of the most widely used adult measures of ToM, with evidence suggesting its reliability across a range of populations. However, it lacks internal consistency and inter-item correlations are low. Whilst both concurrent and content validity were established, findings relating to construct validity were less consistent. Given the prominence of the tool within clinical, forensic, and neurodevelopmental practice and research, this chapter concluded that the tool may

benefit from an update to ensure homogeneity. As the tool has been found to examine only the attribution of mental states of others and not the context, caution is required when inferring results as it would be beneficial to study the latter given the theme of this thesis. For example, inferring the mental state of a victim of revenge porn or online grooming. Nevertheless, its use within the current thesis is justified.

The chapters included in this thesis support the notion that sexting is a global phenomenon (Agustina and Gomez-Duran, 2012) and that whilst it has been seen to facilitate, maintain, and enhance romantic sexual relationships (e.g. Weisskirch & Delevi, 2011) negative mental health and forensic implications have been identified (e.g. Benotsch et al., 2013; Villacampa., 2017). Nevertheless, in answering the query relating to deviancy or normalcy (Dodaj et al., 2020), it appears that particularly in the UK individuals are image-based sexting and are doing so across the life course, therefore suggesting its commonplace throughout society. However, the implications identified are concerning, particularly surrounding non-consensual sexting (e.g. Gasso et al.,2020; Krieger, 2017) and suggest that whilst sexting may be an everyday behaviour used to initiate and/or maintain intimacy in the modern world, it can pose risks and implications, imperative to forensic and clinical practice, particularly when considering the emotional wellbeing of sexters and public protection of victims of non-consensual sexting and/or other image based sexual abuse occurring from sexting.

Implications

The evidence presented in this thesis has many implications for clinical practice and academia. With sexting occurring across the life course, it is imperative that health and social systems and educational institutes cement information on sexting, consent and the internet and/or social media use within the national sex education curriculum. This will help to ensure that all young people receive adequate information relating to sexting, the risks and the legalities of the behaviour, enabling them to make informed decisions about their sexual content, and signposting them to available support.

As sexting occurs across the life course (e.g. Currin et al., 2016), it is important to consider the forensic and mental health implications of both adolescent and adult sexters and how services offer support to all sexters, not just adolescents. Identifying the risks associated with sexting can help health services to support individuals actively sexting or those affected by it. Findings relating to the predictors of sexting can help to identify at-risk populations and inform the assessment, treatment and therapy targets for those implicated in image-based abuse.

In incidences of cybercrime sexting can be used as a tool to manipulate and groom individuals and can result in on-and-offline victimisation (e.g. Van Outysel et al., 2019; 2021), so by developing understanding into sexting and its consequences and by raising awareness into the legal ramifications of sexting, can act as a starting point to deter individuals from engaging in risky sexting practices. Findings regarding underage sexting, can help to inform policy makers responsible for child pornography laws, and would be beneficial for social media and application developers to consider when managing image-sharing apps such as SnapChat. Findings may also help to inform those concerned with digital forensics whose role includes data recovery in instances where sexting could provide crucial evidence in criminal cases. Ultimately, the paramount implications of sexting research within clinical practice are to safeguard public protection, enhance online safety, and promote emotional wellbeing. Ensuring these outcomes demands a comprehensive approach that includes education of the risks and consequences associated with sexting, implementing strategies to mitigate potential harm, and providing support to those affected. Maintaining a focus on public protection, practitioners can work to prevent sexual exploitation, whilst emphasising online safety is critical in reducing image based sexual abuse and related cyber-crime. Finally, fostering emotional wellbeing involves supporting individuals in coping with the mental health implications of sexting including assessing their self-esteem, thereby contributing to their overall emotional wellbeing.

Limitations

This thesis has drawn on extensive literature in the study of sexting behaviours across the life course, however being able to confidently draw conclusions that the examine constructs are causally related to sexting is challenging as many factors may influence this relationship that have not been considered here. The chapters within this thesis are subject to many methodological limitations. Firstly, publication bias has long been considered an issue for systematic reviews (Togerson, 2006) and this may have influenced the findings of this review. To mediate any reporting biases, both significant and non-significant findings have been reported. Ultimately, there was no measure of social desirability included in chapters three and four. The empirical projects relied on retrospective data collection, which is not fault proof. Further, the use of an online voluntary sample may have attracted participants with a specific interest or knowledge in sexting and the internet (and this may account for the high proportion of sexting amongst participants). It is difficult to assess the accuracy of participant responses to sexting questions as only self-report was used, no observational methods were included. This is a limitation of the majority of sexting research, as there is a dearth of observational research in sexting (e.g. Kurup et al., 2022). Order effects and the fixed presentation of questions in the empirical studies may also have influenced data collection. The empirical studies did not examine sext type (e.g. topless, bottomless, fully nude, etc.) and this limits the enquiry into the nuances of sexting. Further, in the samples used in chapters three and four, sexting was not a rare outcome. Therefore, the reported odds ratios may be an over-estimate of the risk ratios. The use of Bonferroni correction may be considered a conservative adjustment and result in the presence of type-II error. Categorising variables that are typically analysed continuously can have limitations. The categorisation of age groups may be considered arbitrary, individual differences may not be accurately identified and cut offs may not be universally recognised. In terms of ethical limitations, individuals were not afforded the opportunity to withdraw their data post study completion in the studies presented in Chapters Three and Four. This raises concerns regarding

participants autonomy and privacy as it limits their control over the usage and dissemination of their personal information. This limitation should be addressed in all future online studies.

The generalisability of the entire thesis is circumscribed by the use of a general population sample. Given that other studies are yet to examine concepts such as ToM and sexting, accurate comparisons cannot be made. Further, it is not possible to accurately draw on cultural differences across countries where rules on sexting and sexual consent may differ. In addition, the sample utilised in the empirical research is not representative of a sexually deviant sample (i.e. those with sexual convictions), although it may include individuals with these histories, but a design flaw meant that this was not identified during data collection. Although many limitations are identified, this thesis serves as a starting point for the consideration of psychological and demographic predictors of sexting in the UK highlighting the significant role of ToM (and thereby emotional intelligence) and sexuality in predicting sexting.

Directions for Future Research

The findings in this thesis provide only a snapshot of sexting behaviour. The true extent of sexting, its implications, and predictors are likely to be much greater than reported. Therefore, future research in light of the thesis' implications of both individual's wellbeing and online safety is warranted. In summary, more research utilising UK samples is imperative to informing policy, law and health care provision involving sexting in the UK. Sexuality (specifically non-heterosexuality) was identified as a risk factor for sending and receiving sexts as such research concerning sexual minorities sexting practices should continue. The influence of online dating, SnapChat use and other applications and websites may help to understand how the adverse effects of sexting are facilitated. Current interventions offered to sexters (e.g. internet safety through CAMHS) or image-based sexual violence perpetrators should be continually evaluated to help reduce reoffending and incidences of harmful sexting. Research concerning the predictors of specific adolescent samples in the UK is imperative. It could be beneficial to build on emerging findings from Morelli et al. (2024) and examine sexting in relation to pornography

use, masturbation and sexual gratification, to assess whether sexting is replacing pornography use as it cements itself as a normative behaviour in sexual intimacy. And finally, it would be beneficial for researchers to collaborate and study the sexting practices of different countries together, to create meaningful comparisons that would have implications for practice internationally (e.g. Morelli et al., 2021). For example, how one country polices sexting and online victimisation, may differ from other countries, and how these countries work together when victims and perpetrators do not reside in the same jurisdiction is of particular forensic importance for organisations such as Europol.

Conclusion

In conclusion, this thesis aimed to further the discussion on whether sexting is a cause for concern or whether it is normative and an established part of modern-day intimacy concomitant with the use of mobile phone technology and the internet. A systematic literature revealed a relationship between sexting and negative mental health and forensic outcomes, particularly in the context of non-consensual and pressured sexting. The empirical studies identified that 67% of participants reported having sent an image-based sext, whilst 77% reported receiving an image-based sext. These figures provide evidence for the normality of sexting within a UK based sample. These chapters examined psychological and demographic predictors of sexting and in doing so also uncovered underage and pressured sexting and acts of cyber-flashing. In the final model, ToM and Sexuality were significant predictors of image-based sexting and this has important implications for clinical and forensic practice when considering those at risk of future image based sexual abuse. Therefore, to answer the overarching research question, it appears that sexting has become a normative behaviour for many individuals and whilst research suggests that dyadic consensual sexting is not overly concerning, non-consensual and pressured sexting is, and links with deviancy (i.e. intimate partner violence, image-based abuse, etc) have been identified. More research is needed to further current understanding of sexting's precursory role in image-based sexual abuse. Increasing understanding into this complex yet increasing

behaviour will help protect future victims of image based sexual abuse and help to educate those in healthy, dyadic, and legal sexting dynamics.

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Appendices

Appendix I: Table of Excluded Articles at Full Text Review Stage

Note. These references are not included in the reference list

Reference	Reasons for Exclusion
Abrha, K., Worku, A., Lerebo, W., & Berhane, Y. (2019). Sexting and high sexual risk-taking behaviours among school youth in northern Ethiopia: estimating using prevalence ratio. *BMJ Sexual & Reproductive Health*, *45*(3), 200-206.	Outcome: not forensic or mental health implication
Ahern, N. R., & Mechling, B. (2013). Sexting: Serious problems for youth. *Journal of psychosocial nursing and mental health services*, *51*(7), 22-30.	Study Type: Review of the literature, not an empirical study.
Alonso-Ruido, P., Rodríguez-Castro, Y., Lameiras-Fernández, M., & Martínez-Román, R. (2018). El Sexting a través del discurso de adolescentes españoles. *Saúde e Sociedade*, *27*, 398-409.	Study Design: Qualitative
Alonso, C., & Romero, E. (2021). Uso problemático de internet en adolescentes: factores personales de riesgo y consecuencias emocionales y conductuales. *Revista iberoamericana de psicologia y salud.*, *12*(2), 76-89.	Intervention/Exposure: Sexting not an exposure variable in this study.
Anastassiou, A. (2017). Sexting and young people: A review of the qualitative literature. *Qualitative Report*, *22*(8).	Study Type: Review of the literature, not an empirical study.
Baiden, F., Amankwah, J., & Owusu, A. (2020). Sexting among high school students in a metropolis in Ghana: an exploratory and descriptive study. *Journal of Children and Media*, *14*(3), 361-375.	Intervention/Exposure: Sexting not an exposure variable in this study.
Barrense-Dias, Y., Chok, L., Stadelmann, S., Berchtold, A., & Suris, J. C. (2022). Sending One's Own Intimate Image: Sexting Among Middle-School Teens. *Journal of school health*, *92*(4), 353-360.	Intervention/Exposure: Sexting not an exposure variable in this study.
Becnel, J., Terrell, A., & Merten, M. (2021, December). Sexting and Sexual Health in Adolescents and Young Adults with Excess Weight. In *OBESITY* (Vol. 29, pp. 160-160). 111 RIVER ST, HOBOKEN 07030-5774, NJ USA: WILEY.	Full Text not available, contacted authors for access, no response.
Benotsch, E. G., Snipes, D. J., Martin, A. M., & Bull, S. S. (2013). Sexting, substance use, and sexual risk behavior in young adults. *Journal of adolescent health*, *52*(3), 307-313.	Population: 18–25-year-olds, not strictly adolescents.
Bogner, J., Hadley, W., Franz, D., Barker, D. H., & Houck, C. D. (2022). Sexting as a Predictor of First-Time Sexual Behavior Among At-Risk Early Adolescents. *The Journal of Early Adolescence*, 02724316221113351.	Outcome: not forensic or mental health related.
Bragard, E. S. (2020) *The role of sexual subjectivity and peer influence on sexting consequences among adolescent girls [Masters dissertation, Fordham University].*	Outcome: Paper examines attitudes towards sexting consequence rather than the consequences themselves.
Brenick, A., Flannery, K. M., Karr, E., & Carvalheiro, D. (2020). Send nudes?: Sexting experiences and victimization relating to attachment and rejection sensitivity–incorporating sexual minority perspectives. In *Recent advances in digital media impacts on identity, sexuality, and relationships* (pp. 119-143). IGI Global.	Study Type: Review of the literature, not an empirical study.
Brinkley, D. Y. (2014). *Let's talk about sex: Sexting, early sexual activity, and borderline personality features in adolescents*. The University of Texas at Dallas.	Full text version not available. Emailed Author on 21/09/2022
Brinkley, D. Y., Ackerman, R. A., Ehrenreich, S. E., & Underwood, M. K. (2017). Sending and receiving text messages with sexual content: Relations with early sexual activity and borderline personality features in late adolescence. *Computers in human behavior*, *70*, 119-130.	Study Design: Qualitative
Budde, J., Witz, C., & Böhm, M. (2021). Sexual boundary violations via digital media among students. *Frontiers in psychology*, *12*.	Outcome: Paper examines perception of boundary violation in sexting adolescents rather than implications.
Burén, J., & Lunde, C. (2018). Sexting among adolescents: A nuanced and gendered online challenge for young people. *Computers in Human Behavior*, *85*, 210-217.	Intervention/Exposure: Sexting not an exposure variable in this study as the study looked at

	psychosocial factors that predict sexting behaviour.
Burke, G., & Norvilitis, J. M. (2022). The Relationships Between Cyberbullying, Sexting, and College Student Well-Being. In *Research Anthology on Combating Cyber-Aggression and Online Negativity* (pp. 789-802). IGI Global.	Population: 18 – 26-year-olds, not strictly adolescents.
Caraballo, A. A. (2018). 62.3 Sexting. *Journal of the American Academy of Child and Adolescent Psychiatry, 57*(10) http://nottingham.idm.oclc.org/login?url=https://www.proquest.com/scholarly-journals/62-3-sexting/docview/2133831526/se-2	Study Type: Review Presentation, not empirical research
Champion, A. R., & Pedersen, C. L. (2015). Investigating differences between sexters and non-sexters on attitudes, subjective norms, and risky sexual behaviours. *The Canadian Journal of Human Sexuality*, *24*(3), 205-214.	Population: 16 – 51-year-olds, not strictly adolescents.
Chaudhry, K. A., Bartholomew, C., Miller, A., Sonneville, K., Leonard, K., Miller, S., ... & Chang, T. (2019). 166. Attitudes Around Sexting Among Youth: A National Text Message Survey. *Journal of Adolescent Health*, *64*(2), S85.	Outcome: Paper examines attitudes about sexting rather than implications
Choi, H., Van Ouytsel, J., & Temple, J. R. (2016). Association between sexting and sexual coercion among female adolescents. *Journal of adolescence*, *53*, 164-168.	Population: Mean age is 19.02 indicating participants older than 19 were involved in the study, no age range provided.
Choi, H. J., Mori, C., Van Ouytsel, J., Madigan, S., & Temple, J. R. (2019). Adolescent sexting involvement over 4 years and associations with sexual activity. *Journal of Adolescent Health*, *65*(6), 738-744.	Intervention/Exposure: Sexting not an exposure variable in this study, rather they list it as their outcome variable.
Cornelius, T. L., Bell, K. M., Kistler, T., & Drouin, M. (2020). Consensual sexting among college students: the interplay of coercion and intimate partner aggression in perceived consequences of sexting. *International journal of environmental research and public health*, *17*(19), 7141.	Population: 18–36-year-olds, not strictly adolescents.
Confalonieri, E., Cucci, G., & Olivari, M. G. (2017). Adolescenti e sexting: Una review della letteratura. *Adolescenti e Sexting: una review della letteratura*, 119-140.	Full Text Paper not available in English
Dake, J. A., Price, J. H., Maziarz, L., & Ward, B. (2012). Prevalence and correlates of sexting behavior in adolescents. *American Journal of Sexuality Education*, *7*(1), 1-15.	Outcome: Sexting
Davis, M. J. (2014). *I want your sext: Sexting and sexual risk in young men* (Order No. 1569295). Available from ProQuest Dissertations & Theses A&I. (1628966068). Retrieved from http://nottingham.idm.oclc.org/login?url=https://www.proquest.com/dissertations-theses/i-want-your-sext-sexting-sexual-risk-young-men/docview/1628966068/se-2	Full Text Paper not available
Davis, M. J., Powell, A., Gordon, D., & Kershaw, T. (2016). I want your sext: Sexting and sexual risk in emerging adult minority men. *AIDS education and prevention: official publication of the International Society for AIDS Education*, *28*(2), 138.	Population: 18 – 25-year-olds
Dekker, A., Behrendt, P., & Pregartbauer, L. (2021). Non-consensual forwarding of personal erotic photos at schools: a survey of school principals in Schleswig-Holstein on sexual border violations using digital media. *Bundesgesundheitsblatt, Gesundheitsforschung, Gesundheitsschutz*.	Outcome: Prevalence rates of non-consensual forwarding of sexts.
Manoel, D. F., Lordello, S. R., Souza, L., & Pessoa, A. S. G. (2020). Sexting e adolescência: a emergência de novos temas para a psicologia do desenvolvimento. *Revista da SPAGESP*, *21*(1).	Study Type: Review of literature and full text not available in English.
Dir, A. L., Riley, E. N., Cyders, M. A., & Smith, G. T. (2018). Problematic alcohol use and sexting as risk factors for sexual assault among college women. *Journal of American college health*, *66*(7), 553-560.	Population: Age range 18 – 28
Dodaj, A., Sesar, K., & Jerinić, S. (2020). A prospective study of high-school adolescent sexting behavior and psychological distress. *The journal of psychology*, *154*(2), 111-128.	Intervention/Exposure: Psychological Difficulties Outcome: Sexting
Downs, J. S., Ashcraft, A. M., Berta, A. M., Chang, J., Coyle, K., Lanyon, M. B., ... & Murray, P. J. (2021). 20. Sexual Minority Female Adolescents are More Likely to Receive Sexually Explicit Messages and Experience Fear From Unwanted Messages Compared to Their Heterosexual Female Peers. *Journal of Adolescent Health*, *68*(2), S11-S12.	Study Type: Full text version not yet published, only poster presentation available (spoke with Author).
Doyle, C., Douglas, E., & O'Reilly, G. (2021). The outcomes of sexting for children and adolescents: A systematic review of the literature. *Journal of Adolescence*, *92*, 86-113.	Study Type: Systematic Review

Englander, E. K., & McCoy, M. (2017). Pressured sexting and revenge porn in a sample of Massachusetts adolescents. *International Journal of Technoethics (IJT)*, *8*(2), 16-25.	Intervention: Non-consensual sharing/Revenge Porn
Villacampa Estiarte, C. (2016). Sexting: prevalencia, características personales y conductuales y efectos en una muestra de adolescentes en España. *Revista General de Derecho Penal, 2016, núm. 25, p. 1-36*.	Study Type: Full Text version not available in English
Foody, M., Mazzone, A., Laffan, D. A., Loftsson, M., & Norman, J. O. H. (2021). "It's not just sexy pics": An investigation into sexting behaviour and behavioural problems in adolescents. *Computers in human behavior*, *117*, 106662.	Outcome: different types of sexters.
Frankel, A. S., Bass, S. B., Patterson, F., Dai, T., & Brown, D. (2018). Sexting, risk behavior, and mental health in adolescents: An examination of 2015 Pennsylvania Youth Risk Behavior Survey data. *Journal of school health*, *88*(3), 190-199.	Exposure: Mental health, substance use, sex Outcome: Sexting
Gassó, A. M., Klettke, B., Agustina, J. R., & Montiel, I. (2019). Sexting, mental health, and victimization among adolescents: A literature review. *International journal of environmental research and public health*, *16*(13), 2364.	Study Type: Review
Ghorashi, Z. (2019). Teenage sexting and sexual behaviors in an Iranian setting. *Sexuality & Culture*, *23*(4), 1274-1282.	Outcome: sexual behaviour in Iran (not forensic or mental health related)
Gómez, L. C., & Ayala, E. S. (2014). Psychological aspects, attitudes and behaviour related to the practice of sexting: a systematic review of the existent literature. *Procedia-Social and Behavioral Sciences*, *132*, 114-120.	Study Type: Review
Gutberlet, T. (2019). Is Sharing Nude Content a Problematic Behavior? Self-Made Sexually Explicit Pictures, Gendered Risks of Harm, and Online Victimization. *Journal of Research in Gender Studies*, *9*(2), 57-63.	Study Type: Review
Handschuh, C. S. (2019). *Peer and parental relationships and their association with adolescent sexual behaviors* (Doctoral dissertation, Columbia University).	Study Type: Review
Handschuh, C., La Cross, A., & Smaldone, A. (2019). Is Sexting Associated with Sexual Behaviors During Adolescence? A Systematic Literature Review and Meta-Analysis. *Journal of midwifery & women's health*, *64*(1), 88-97.	Study Type: Review
Hicks, M. R., Kernsmith, P., & Smith-Darden, J. (2021). Does sexting predict sexual behaviors among adolescents? Gender and race effects. *Journal of Adolescence*, *93*, 126-133.	Outcome: sexual behaviour (not forensic or mental health related)
Hollander, D. (2015). Growing Evidence Links Sexting to Teenagers' Sexual Activity; Link to Risky Behavior Less Clear. *Perspectives on Sexual and Reproductive Health*, *47*(1), 51-52.	Study Type: Review
Holoyda, B., Landess, J., Sorrentino, R., & Friedman, S. H. (2018). Trouble at teens' fingertips: Youth sexting and the law. *Behavioral sciences & the law*, *36*(2), 170-181.	Study Type: Review
Hong, S., Lu, N., Wu, D., Jimenez, D. E., & Milanaik, R. L. (2020). Digital sextortion: Internet predators and pediatric interventions. *Current opinion in pediatrics*, *32*(1), 192-197.	Study Type: Review
Hornor, G. (2020). Online sexual solicitation of children and adolescents. *Journal of Pediatric Health Care*, *34*(6), 610-618.	Study Type: Review
Howard, T., & Rokach, A. (2017). Emerging adults: Sexting behaviors potentially leading to sextortion and difficulty with seeking help and reporting the incident. *International Journal of Psychology Research*, *12*(4), 277.	Population: 18 – 24-year-olds
Houck, C. D., Barker, D., Rizzo, C., Hancock, E., Norton, A., & Brown, L. K. (2014). Sexting and sexual behavior in at-risk adolescents. *Pediatrics*, *133*(2), e276-e282.	Outcome: not forensic/mental health
Hudson, H. K., & Marshall, S. A. (2018). Consequences and predictors of sexting among selected southern undergraduates. *International Journal of Sexual Health*, *30*(1), 20-27.	Population: 18 – 26-year-olds
Huntington, C., & Rhoades, G. (2021). Associations of sexting with dating partners with adolescents' romantic relationship behaviors and attitudes. *Sexual and Relationship Therapy*, 1-16.	Intervention: relationship characteristics Outcome: sexting
Jonsson, L. S., Priebe, G., Bladh, M., & Svedin, C. G. (2014). Voluntary sexual exposure online among Swedish youth–social background, Internet behavior and psychosocial health. *Computers in Human Behavior*, *30*, 181-190.	Population: 16 – 22-year-olds
Judge, A. M. (2012). " Sexting" among US adolescents: psychological and legal perspectives. *Harvard review of psychiatry*, *20*(2), 86-96.	Study Type: Review
Kernsmith, P. D., Victor, B. G., & Smith-Darden, J. P. (2018). Online, offline, and over the line: Coercive sexting among adolescent dating partners. *Youth & Society*, *50*(7), 891-904	Outcome: coercive sexting
Kim, S., Martin-Storey, A., Drossos, A., Barbosa, S., & Georgiades, K. (2020). Prevalence and Correlates of Sexting Behaviors in a Provincially Representative Sample of	Exposure: Mental Health Outcome: Sexting

Adolescents. *Canadian journal of psychiatry. Revue canadienne de psychiatrie*, *65*(6), 401-408	
Kopecký, K. Sexting among Czech Preadolescents and Adolescents. *Stanisław Juszczyk*, 39.	Outcome: prevalence rates/ participants perception of risk
Korenis, P., & Billick, S. B. (2014). Forensic implications: Adolescent sexting and cyberbullying. *Psychiatric quarterly*, *85*(1), 97-101.	Study Type: Review
Lindsay, M., & Krysik, J. (2012). Online harassment among college students: A replication incorporating new Internet trends. *Information, Communication & Society*, *15*(5), 703-719	Exposure: Online harassment, not specifically sexting.
Lippman, J. R., & Campbell, S. W. (2014). Damned if you do, damned if you don't… if you're a girl: Relational and normative contexts of adolescent sexting in the United States. *Journal of Children and Media*, *8*(4), 371-386.	Outcome: relational and normative contexts
Lorang, M. R., McNiel, D. E., & Binder, R. L. (2016). Minors and sexting: Legal implications. *The journal of the American Academy of Psychiatry and the Law*, *44*(1), 73-81.	Study Type: Review
Loveless, M. (2016). Concerns regarding social media and health issues in adolescents and young adults. *Obstetrics and Gynecology*, *127*(2), E62-E65.	Study Type: Review/Opinion piece
Maas, M. K., Bray, B. C., & Noll, J. G. (2019). Online sexual experiences predict subsequent sexual health and victimization outcomes among female adolescents: A latent class analysis. *Journal of youth and adolescence*, *48*(5), 837-849.	Exposure: includes other online sexual experiences, not limited to solely sexting.
Marinescu, V. (2014). PORNOGRAFIE ŞI SEXUALITATE ONLINE. ASPECTE ALE ANCHETEI EU KIDS ONLINE II ÎN CAZUL ROMÂNIEI. *Revista Romana de Sociologie*, *25*.	Full Text not available in English
MacDonald, K., Imburgia, T. M., Auerswald, C., & Ott, M. A. (2018). Sexting among adolescent urban males. *Journal of Adolescent Health*, *62*(2), S126.	Full Text not available, contacted authors for access, no response
Marume, A., Maradzika, J., & January, J. (2018). Adolescent sexting and risky sexual behaviours in Zimbabwe: a cross-sectional study. *Sexuality & Culture*, *22*(3), 931-941.	Outcome: not mental health/forensic implications
McCarthy, C., 2014. *Link Between Sexting and Sex in Teens*. Boston: Harvard Health Publications.	Full Text not available, contacted authors for access, no response
Medrano, J. L. J., Lopez Rosales, F., & Gámez-Guadix, M. (2018). Assessing the links of sexting, cybervictimization, depression, and suicidal ideation among university students. *Archives of suicide research*, *22*(1), 153-164	Population: University Students 18-24
Mehari, K. R., Thompson, E. L., & Farrell, A. D. (2020). Differential longitudinal outcomes of in-person and cyber victimization in early adolescence. *Psychology of violence*, *10*(4), 367.	Exposure: Cyber Victimisation, not sexting
Mhlanga, A., Bhunu, C. P., & Mushayabasa, S. (2015). Modelling the effects of sexting on the transmission dynamics of HSV-2 amongst adolescents. *Cogent Mathematics*, *2*(1), 1085940.	Population: doesn't state how old sample is, contacted authors for clarification, no response
Milton, A. C., Gill, B. A., Davenport, T. A., Dowling, M., Burns, J. M., & Hickie, I. B. (2019). Sexting, web-based risks, and safety in two representative national samples of young Australians: Prevalence, perspectives, and predictors. *JMIR mental health*, *6*(6), e13338.	Population: 16 – 25-year-olds
Morelli, M., Bianchi, D., Baiocco, R., Pezzuti, L., & Chirumbolo, A. (2017). Sexting behaviors and cyber pornography addiction among adolescents: The moderating role of alcohol consumption. *Sexuality Research and Social Policy*, *14*(2), 113-121.	Population: 13 – 20-year-olds
Mori, C., Temple, J. R., Browne, D., & Madigan, S. (2019). Association of sexting with sexual behaviors and mental health among adolescents: A systematic review and meta-analysis. *JAMA pediatrics*, *173*(8), 770-779.	Study Type: Review
Mori, C. M., Temple, J., Browne, D., & Madigan, S. (2019, October). Sexting, Sexual Behaviors, and Mental Health Among Adolescents: A Meta-Analysis. In *66th Annual Meeting*. AACAP.	Study Type: Meta Analysis
Murphy, D. M., & Spencer, B. (2021). Teens' experiences with sexting: A grounded theory study. *Journal of Pediatric Health Care*, *35*(4), 387-400.	Population: 18 – 22-year-olds
Needham, J. (2021). Sending nudes: Intent and risk associated with 'sexting' as understood by gay adolescent boys. *Sexuality & Culture*, *25*(2), 396-416.	Outcome: not mental health or forensic implications
O'Keeffe, G. S., Clarke-Pearson, K., & Council on Communications and Media. (2011). The impact of social media on children, adolescents, and families. *Pediatrics*, *127*(4), 800-804.	Study Type: Review
O'Sullivan, L. F. (2014). Linking online sexual activities to health outcomes among teens. *New directions for child and adolescent development*, *2014*(144), 37-51.	Exposure: Online sexual activity not limited to sexting
Olatunde, O., & Balogun, F. (2017). Sexting: Prevalence, predictors, and associated sexual risk behaviors among postsecondary school young people in Ibadan, Nigeria. *Frontiers in public health*, *5*, 96.	Exposure: predictors of sexting

Ostrager, B. (2010). SMS. OMG! LOL! TTYL: Translating the law to accommodate today's teens and the evolution from texting to sexting. *Family Court Review*, *48*(4), 712-726.	Study Type: Review
Rodríguez Otero, L. (2020). Attitudes, behaviors and consequences of sexting in Mexican gay and bisexual adolescents. *European Journal of Public Health*, *30*(Supplement_5), ckaa166-726.	Full text not available in English
Van Ouytsel, J., Walrave, M., & Ponnet, K. (2018). Adolescent sexting research: The challenges ahead. *JAMA pediatrics*, *172*(5), 405-406.	Study Type: Viewpoint note, not empirical
Paat, Y. F., & Markham, C. (2021). Digital crime, trauma, and abuse: Internet safety and cyber risks for adolescents and emerging adults in the 21st century. *Social Work in Mental Health*, *19*(1), 18-40.	Study Type: Review
Patrocino, L. B., & Bevilacqua, P. D. (2021). A debate about risk, violence, and gender: a review of health production on sexting among young people. *Ciência & Saúde Coletiva*, *26*, 2709-2718.	Study Type: Review
Pineda, C. O., Torres, C. A., Carreño, T. P., & Rodríguez, R. A. (2019). Sexting And Its Relationship With Early Maladaptive Schemes In Adolescents. *Revista Argentina de Clínica Psicológica*, *28*(4), 461.	Outcome: sexting
Quayle, E., & Newman, E. (2015). The role of sexual images in online and offline sexual behaviour with minors. *Current Psychiatry Reports*, *17*(6), 1-6.	Study Type: Review
Reed, E., Salazar, M., & Raj, A. (2018). Non-consensual sexting and the role of sex differences. *JAMA pediatrics*, *172*(9), 890-890.	Study Type: Response Article
Reer, F., Wendt, R., & Quandt, T. (2021). A Longitudinal Study on Online Sexual Engagement, Victimization, and Psychosocial Well-Being. *Frontiers in Psychology*, 5709.	Population: 14 - 64-year-olds
Reyns, B. W. (2019). Online pursuit in the twilight zone: Cyberstalking perpetration by college students. *Victims & Offenders*, *14*(2), 183-198.	Population: 18 – 24-year-olds
Rhyner, K. J., Uhl, C. A., & Terrance, C. A. (2018). Are teens being unfairly punished? Applying the dual systems model of adolescent risk-taking to sexting among adolescents. *Youth justice*, *18*(1), 52-66.	Study Type: Review
Rial, A., Golpe, S., Isorna, M., Braña, T., & Gómez, P. (2018). Minors and problematic Internet use: Evidence for better prevention. *Computers in Human Behavior*, *87*, 140-145.	Outcome: problematic internet use
Rice, E., Craddock, J., Hemler, M., Rusow, J., Plant, A., Montoya, J., & Kordic, T. (2018). Associations between sexting behaviors and sexual behaviors among mobile phone-owning teens in Los Angeles. *Child development*, *89*(1), 110-117.	Outcome: not mental health or forensic implications
Rice, E., Gibbs, J., Winetrobe, H., Rhoades, H., Plant, A., Montoya, J., & Kordic, T. (2014). Sexting and sexual behavior among middle school students. *Pediatrics*, *134*(1), e21-e28.	Outcome: not mental health or forensic implications
Rice, E., Rhoades, H., Winetrobe, H., Sanchez, M., Montoya, J., Plant, A., & Kordic, T. (2012). Sexually explicit cell phone messaging associated with sexual risk among adolescents. *Pediatrics*, *130*(4), 667-673.	Outcome: not mental health or forensic implications
Rodríguez-Castro, Y., Alonso-Ruido, P., Lameiras-Fernández, M., & Faílde-Garrido, J. M. (2018). From sexting to cybercontrol among dating teens in Spain: An analysis of their arguments. *Revista Latinoamericana de Psicología*, *50*(3), 170-178.	Full Text not available in English
Sánchez-Jiménez, V., Pérez, M. O., Fernández, N. M., & Del Rey, R. (2020). Cyberdating abuse and sexting in adolescence. In *Online Peer Engagement in Adolescence* (pp. 103-121). Routledge.	Study Type: Not empirical research
Scott, D. A., McCormick, K., Smith, K., Budlong, E., & Vitonis, A. (2020). The prevalence, risks and associations of problematic cell phone use and sexting on mental health. *Mental Health and Social Inclusion*.	Study Type: Review
Ševčíková, A. (2016). Girls' and boys' experience with teen sexting in early and late adolescence. *Journal of adolescence*, *51*, 156-162.	Outcome: sexting
Ševčíková, A., Blinka, L., & Daneback, K. (2018). Sexting as a predictor of sexual behavior in a sample of Czech adolescents. *European Journal of Developmental Psychology*, *15*(4), 426-437.	Outcome: not mental health or forensic implications
Skarbek, D., & Mooney, M. E. (2020). Can txting B bad 4 Spec. Ed Stdnts? Sexting and its implications for children with disabilities. In *Sexual Abuse: Types, Signs and Treatments* (pp. 129-141). Nova Science Publishers, Inc..	Study Type: Not empirical research
Smith, P. K., Thompson, F., & Davidson, J. (2014). Cyber safety for adolescent girls: bullying, harassment, sexting, pornography, and solicitation. *Current opinion in obstetrics and gynecology*, *26*(5), 360-365.	Study Type: Review

Stanley, N., Barter, C., Wood, M., Aghtaie, N., Larkins, C., Lanau, A., & Överlien, C. (2018). Pornography, sexual coercion and abuse and sexting in young people's intimate relationships: A European study. *Journal of interpersonal violence*, *33*(19), 2919-2944.	Exposure: Online Pornography Outcome: Sexting
Stone, N. (2011). The 'Sexting'Quagmire: Criminal justice responses to adolescents' electronic transmission of indecent images in the UK and the USA. *Youth Justice*, *11*(3), 266-281.	Study Type: Review
Temple, J. R. (2016). 50.3 THE CO-OCCURRENCE OF SEXTING AND CYBER DATING ABUSE. *Journal of the American Academy of Child & Adolescent Psychiatry*, *10*(55), S339.	Full text not available only abstract for symposium.
Temple, J. R., & Choi, H. (2014). Longitudinal association between teen sexting and sexual behavior. *Pediatrics*, *134*(5), e1287-e1292	Outcome: sexual behaviour
Temple, J. R., Paul, J. A., Van Den Berg, P., Le, V. D., McElhany, A., & Temple, B. W. (2012). Teen sexting and its association with sexual behaviors. *Archives of pediatrics & adolescent medicine*, *166*(9), 828-833.	Outcome: sexual behaviour
Titchen, K. E., Maslyanskaya, S., Silver, E. J., & Coupey, S. M. (2018). Sexting and adolescent girls: associations with sexual activity and abuse. *Journal of Adolescent Health*, *62*(2), S62	Full text not available only abstract.
Titchen, K. E., Maslyanskaya, S., Silver, E. J., & Coupey, S. M. (2019). Sexting and young adolescents: associations with sexual abuse and intimate partner violence. *Journal of Pediatric and Adolescent Gynecology*, *32*(5), 481-486.	Outcome: sexting
Turner-Distin, A. (2020). *An investigation into sexting of adolescents and adults* (Doctoral dissertation, University of Nottingham).	Outcome: not mental health or forensic implications
Van Ouytsel, J. (2020). A decade of sexting research: Are we any wiser?. *JAMA pediatrics*, *174*(2), 204-204.	Study Type: Comment/ Response piece
Van Ouytsel, J., Van Gool, E., Walrave, M., Ponnet, K., & Peeters, E. (2017). Sexting: Adolescents' perceptions of the applications used for, motives for, and consequences of sexting. *Journal of Youth Studies*, *20*(4), 446-470.	Study Design: Qualitative
Van Ouytsel, J., Lu, Y., & Temple, J. R. (2022). An exploratory study of online early sexual initiation through pressured and unwanted sexting. *The Journal of Sex Research*, *59*(6), 742-748.	Population: Under 12s
Van Ouytsel, J., Madigan, S., Ponnet, K., Walrave, M., & Temple, J. R. (2019). Adolescent sexting: myths, facts, and advice. *NASN School Nurse*, *34*(6), 345-350.	Study Type: Review
Van Ouytsel, J., Ponnet, K., & Walrave, M. (2018). Cyber dating abuse victimization among secondary school students from a lifestyle-routine activities theory perspective. *Journal of interpersonal violence*, *33*(17), 2767-2776.	Population: 16 – 22
Van Ouytsel, J., Walrave, M., De Marez, L., Vanhaelewyn, B., & Ponnet, K. (2020). A first investigation into gender minority adolescents' sexting experiences. *Journal of Adolescence*, *84*, 213-218.	Outcome: not mental health or forensic implications
Van Ouytsel, J., Walrave, M., De Marez, L., Vanhaelewyn, B., & Ponnet, K. (2021). Sexting, pressured sexting and image-based sexual abuse among a weighted-sample of heterosexual and LGB-youth. *Computers in human behavior*, *117*, 106630.	Outcome: not mental health or forensic implications
Van Ouytsel, J., Walrave, M., Lu, Y., Temple, J. R., & Ponnet, K. (2018). The associations between substance use, sexual behavior, deviant behaviors and adolescents' engagement in sexting: does relationship context matter?. *Journal of youth and adolescence*, *47*(11), 2353-2370.	Population: 16 – 22
Van Ouytsel, J., Walrave, M., Ponnet, K., & Heirman, W. (2015). The association between adolescent sexting, psychosocial difficulties, and risk behavior: Integrative review. *The Journal of School Nursing*, *31*(1), 54-69.	Study Type: Review
Van Ouytsel, J. (2016). 50.1 CYBER DATING ABUSE: RESEARCH ON YOUNG PEOPLE'S MOTIVES AND THE ASSOCIATIONS OF THE BEHAVIOR IN FLANDERS, BELGIUM. *Journal of the American Academy of Child & Adolescent Psychiatry*, *10*(55), S338-S339.	Study Type: Not empirical research
Vrselja, I., Pacadi, D., & Maričić, J. (2015). Relationship between sexting and sexual risk behavior and some psychosocial factors. *Psihologijske teme*, *24*(3), 425-447.	Outcome: sexting
West, J. H., Lister, C. E., Hall, P., Crookston, B. T., Snow, P. R., Zvietcovich, M. E., & West, R. P. (2014). Sexting among Peruvian adolescents. *BMC public health*, *14*(1), 1-7.	Outcome: not mental health or forensic implications
Wolak, J., Finkelhor, D., & Mitchell, K. J. (2012). How often are teens arrested for sexting? Data from a national sample of police cases. *Pediatrics*, *129*(1), 4-12.	Study Design: Mixed Methods – mainly qualitative data
Woodward, V. H., Evans, M., & Brooks, M. (2017). Social and psychological factors of rural youth sexting: An examination of gender-specific models. *Deviant behavior*, *38*(4), 461-476.	Outcome: sexting

Yoder, J., Hansen, J., & Precht, M. (2018). Correlates and outcomes associated with sexting among justice involved youth: The role of developmental adversity, emotional disinhibitions, relationship context, and dating violence. *Children and Youth Services Review*, *94*, 493-499.	Population: 13 – 20
Yoshihara, L. Y. (2013). *Sexting behaviors among teens, adolescents, and adults: A content analysis of existing literature*. California State University, Long Beach.	Study Type: Review

Appendix II: Quality Assessment / Critical Appraisal Form

Critical Appraisal and Quality Assessment Form

Critical Appraisal/ Quality Assessment Form					
Title & Author:					
Study Number:					
Item	**Question**	**Yes**	**P**	**No**	**Unsure/Comment**
Introduction					
1	Were the aims of the study clear?				
Methods					
2	Were participants recruited in an acceptable way?				
3	Was the sample taken from an appropriate population base so that it closely represented the target/reference population under investigation?				
4	Was the study design appropriate for the aims?				
5	Was ethical approval obtained				
6	Was consent obtained from participants				
7	Was the sample size justified				
8	Were the methods and statistical analysis sufficiently described to enable replication?				
9	Was the exposure accurately measured to minimise bias?				
10	Was the outcome accurately measured to minimise bias?				
11	Have all confounding factors been identified and taken into consideration in design/analysis?				
12	If applicable, was time between data collection long enough?				
13	Is it clear what was used to determine statistical significance (p-values, confidence intervals)				
Results					
14	Were results adequately described?				
15	Were results internally consistent?				
16	If applicable, were missing data addressed adequately				
Discussion					
17	Do the results fit with other available evidence?				
18	Were limitations of the study discussed?				

19	Were there any funding sources or conflicts of interest that may affect authors interpretation of results?				
TOTAL SCORE:					

TOTAL NUMBER OF ITEMS APPLICABLE:

TOTAL OVERALL QUALITY SCORE: /

TOTAL OVERALL QUALITY %:

Appendix III: Quality Assessment Data for Included Studies

Quality Assessment Scores and Percentages for Full-Text Included References

Article Number	Author & Date	Quality Assessment Item																			Total /	Quality %
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19*		
i	Alonso & Romero (2019)	Y	Y	Y	Y	N	N	P	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y	N	31/36	86.1%
ii	Burić et al. (2020)	Y	Y	Y	Y	Y	Y	P	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	37/38	97.4%
iii	Chaudry et al. (2017)	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	34/38	89.5%
iv	Del Ray et al. (2019)	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	P	-	Y	Y	P	N	Y	Y	Y	28/36	77.7%
v	Gamez-Gaudix & Mateos-Perez (2019)	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	P	Y	Y	Y	N	35/38	92.1%
vi	Kurup et al. (2021)	Y	Y	Y	Y	Y	Y	P	Y	P	Y	P	Y	Y	Y	Y	Y	Y	Y	P	34/38	89.5%
vii	Lu, et al. (2021)	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	P	31/38	81.6%
viii	Mori et al. (2021)	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	N	32/38	84.2%
ix	Ng et al. (2022)	Y	Y	P	Y	Y	Y	N	Y	Y	Y	P	P	Y	Y	Y	Y	Y	Y	P	32/38	84.2%
x	Rice (2015)	Y	P	P	Y	Y	Y	N	Y	P	Y	N	-	Y	Y	N	N	Y	Y	N	23/38	63.9%
xi	Rodriguez-Castro et al. (2020)	Y	Y	Y	P	N	Y	N	P	Y	P	N	-	N	Y	N	N	Y	Y	Y	19/36	52.8%
xii	Temple et al. (2014)	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	-	Y	Y	Y	N	Y	Y	P	31/36	86.1%
xiii	Van Ouytsel et al. (2019)	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	P	Y	P	Y	Y	Y	N	34/38	89.5%
xiv	Van Ouytsel et al. (2021)	Y	Y	P	Y	Y	Y	N	Y	Y	Y	P	-	Y	Y	Y	N	Y	Y	N	30/36	83.3%
xv	Villacampa (2017)	Y	P	Y	Y	Y	N	N	Y	Y	N	N	-	N	Y	N	N	Y	N	Y	17/36	47.2%
xvi	Wachs et al. (2021)	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	-	Y	Y	Y	N	Y	Y	N	32/36	88.9%
xvii	Ybarra & Mitchell (2014)	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	Y	P	31/36	86.1%

Note. Y = YES (2), P = PARTIAL (1), N = NO, "-" = Not applicable (not included in total), item 19 was reverse scored, where no information was available to determine the answer a score of 0 was given.

Appendix IV: Data Extraction Form

Data Extraction Form		
1) Study Information:		
Paper title:		
Author(s)		
Year published		
Article type (e.g., journal, doctoral thesis etc.)		
Country research completed		
2) Study Characteristics:		
Study design (e.g., cross sectional etc)		
Study aims		
Study factors	How was sexting defined and measured?	**Definition:**
		Measures used:
		Reliability and Validity:
	How was the implications of sexting defined and measured?	**Definition:**
		Measures used:
		Reliability and Validity:
Location/setting:		
3) Participant characteristics:		
Age information		
Ethnicity breakdown		
Sample size		
Recruitment method		

4) Study results (only those relevant to the review question noted):	
Analysis used	
Findings & Significance	**e.g., what implications were identified, were there a difference between groups (i.e., males/females), were these mediated by any other factors?**
5) Conclusion/Summary:	
6) Strengths and Limitations	
7) Quality assessment score:	
8) Any other important/relevant information:	

Appendix V: Sexting Questionnaire

Section 1: Demographic Information

1. **Gender:** Male **/** Female **/** Other - Please specify
2. **Age:** (free text but 18+)
3. **Race/Ethnicity:** white/ black/ asian/ mixed/ other
4. **Sexuality:** Heterosexual / Homosexual / Bisexual / Other (please state) / Prefer not to say
5. **Do you have access to your own internet/ 3G/ 4G enabled device? E.g., mobile phone/ tablet/ laptop that has a camera?** Yes/ No
6. **Do you pay your own phone bill?** Yes / No

Section 2: General Sexting Questions

7. **Where did you receive the majority of your sex education?** At School / At Home / Friends / All of the Above
8. **How many significant relationships have you had in your life?** [free text]
9. **At what age was your first sexual relationship?** [free text]
10. **Do you understand what the following terms mean? Tick each one that you understand** Sexting / Sexually Suggestive / Consent / Nude photographs / Nearly Nude photographs /Revenge Porn
11. **What terms you are most likely to use in your language:** Nudes/ Sexts/ Naked Photo/Picture/ Tit Pic/ Dick Pic/ Other: please specify

For this research 'sexts' will be defined as the exchange of sexually suggestive, nude or semi-nude images and/or videos.

12. **Have you ever been shown (by a friend or other) a sext that they have received? This does not include being shown images of celebrities or individuals in the public eye that have been posted online?** Yes/ No
13. **How were you shown this photograph?** In person on their device/ I was forwarded the picture/ It was printed out/ It was posted online
14. **How did this make you feel? (Tick all that apply)** It was funny / It made me feel excited / It made me feel horny / It made me feel happy / It made me feel scared / It made me feel worried / It made me feel important / It made me feel uncomfortable / I didn't feel anything

15. **On Average how many sexts do you think you have received?** [free text]
16. **On Average how many sexts do you think you have sent?** [free text]
17. **Who do you think you have sexted the most?** Spouse / Romantic Partner / Someone I was/am dating / Someone I hope/ hoped to be in a sexual relationship with / A friend / An Acquaintance / A stranger

Section 3: Sexts you have received

18. **Have you ever received a sext?** Yes / No

The following questions are about the first sext you ever received:

19. **At what age did you receive your first sext?** [free text]
20. **By what medium was this received?** Text Message / WhatsApp /Snap Chat /Instagram messenger /Facebook messenger /Email /Other -Please state
21. **Who sent the sext?** Spouse /Romantic Partner /Someone I was dating /Someone I hoped to be in a sexual relationship with /A friend /An Acquaintance /A stranger
22. **Under what context was this received?** I asked for it /I wanted it / I had sent one first /It was sent to me when I was not expecting it
23. **How did you feel receiving this sext? [Tick all that apply]** It was funny / It made me feel horny/ It made me feel excited / It made me feel happy / It made me feel scared / It made me feel worried / It made me feel important / It made me feel uncomfortable / I didn't feel anything
24. **Did you feel under pressure to send a sext back?** Yes/ No
25. **Did you ever show anyone else the sext?** Yes/ No
26. **How did you show them?** In person on my device / I forwarded the picture / I Printed it out and showed someone / I Posted it online
27. **Did you ask for the individual in the photographs permission before showing anyone else?** Yes/ No

Section 4: Recently Received Sexts:

The following questions are about the most recent sext you received:

28. **By what medium was this received?** Text Message / WhatsApp/ Snap Chat /Instagram/ messenger /Facebook messenger / Email /Other - Please state
29. **When was this received?** Within the last week /Within the last month /Within the last 3 months /Within the last 6 months /Within the last 12 month/ Longer than 1 year ago
30. **Who sent the sext?** Spouse /Romantic Partner /Someone I was dating /Someone I hoped to be in a sexual relationship with / A friend / An Acquaintance /A stranger

31. **Under what context was this received?** I asked for it / I wanted it /I had sent one first / It was sent to me when I was not expecting it
32. **How did you feel receiving this sext? Tick all that apply** It was funny / It made me feel horny / It made me feel excited / It made me feel happy / It made me feel scared / It made me feel worried / It made me feel important / It made me feel uncomfortable / I didn't feel anything
33. **Did you feel under pressure to send a sext back?** Yes/ No
34. **Did you ever show anyone else the sext?** Yes/ No
35. **How did you show them?** In person on my device / I forwarded the picture / I printed it out and showed someone / I posted it online
36. **Did you ask for the individual in the photographs permission before showing anyone else?** Yes/ No

Section 5: Sent Sexts

37. **Have you ever sent a sext?** Yes/ No

This section will focus on the first sext you sent

38. **At what age did you send your first sext?** [free text]
39. **By what medium did you send this?** Text Message / WhatsApp / Snap Chat / Instagram messenger / Facebook messenger / Email / Other - Please state
40. **Who did you send it to?** Spouse / Romantic Partner / Someone I was dating / Someone I hoped to be in a sexual relationship with / A friend / An acquaintance /A stranger
41. **Under what context was this sent?** The receiver asked for it, so I sent one / The receiver had sent me one first / I sent it for a joke / I sent it because I wanted them to send me one back / I sent it when the receiver was not expecting it.
42. **How did you feel sending it? Tick all that apply** It was funny /It made me feel horny / It made me feel excited / It made me feel happy / It made me feel scared / It made me feel worried / It made me feel important /It made me feel uncomfortable / I didn't feel anything
43. **Did you ask them to send a sext back?** Yes/ No

Section 6: Recently Sent Sexts

The following questions are about the most recent sext you sent:

44. **By what medium was this sent?** Text Message / WhatsApp / Snap Chat / Instagram messenger /Facebook messenger / Email /Other -Please state
45. **Who did you send it to?** Spouse /Romantic Partner / Someone I was dating / Someone I hoped to be in a sexual relationship with / A friend / An Acquaintance / A stranger

46. **When did you send this?** Within the last week / Within the last month / Within the last 3 months / Within the last 6 months / Within the last 12 month / Longer than 1 year ago
47. **Under what context was this sent?** The receiver asked for it, so I sent one / The receiver had sent me one first / I sent it for a joke / I sent it because I wanted them to send me one back /I sent it when the receiver was not expecting it.
48. **How did you feel sending it? Tick all that apply** It was funny / It made me feel horny / It made me feel excited / It made me feel happy / It made me feel scared / It made me feel worried / It made me feel important / It made me feel uncomfortable / I didn't feel anything
49. **Did you ask them to send a sext back?** Yes/ No

Section 7: Revenge Porn Proclivity Scale (Pina, Holland & James, 2017).

Each vignette to be followed by the seven questions listed.

Please read the following text carefully and imagine yourself in the situation presented:

1. You have recently begun dating someone. During this time, you have been out for meals, to the cinema and for social occasions, just as many couples do. One evening whilst you are out for a meal, your partner goes to the toilet leaving their phone on the table. Whilst waiting for them to return you notice they have received a message from a name you recognise as their ex-partner. Curious, you check to see what the message says and find that multiple messages have been exchanged. You place the phone back and continue the evening as normal. Over the next few days, you begin to think more about how this has made you feel. You then decide to upload onto the internet a photo of your naked partner that they sent to you when you first begun dating.

2. You and your partner have been together for a few years, but recently they have become distant with you. You try to do things to make them happy, but they respond with little interest. A few days later, your partner arranges to meet up with you. Here they explain that they no longer want to be in a relationship, saying that they no longer love you. Afterwards you begin to think about all of the lost time and effort you have invested into this ended relationship. Whilst going through photos on your phone, you come across a naked photo that your now ex-partner sent to you during the relationship. You then decide to upload this photo onto the internet.

3. You have been in a happy relationship for some time now. You rarely argue with each other and seem to have a good relationship, often spending time with your partner. One evening whilst socialising with a friend, your friend tells you that they believe your partner is cheating on you. That evening you confront your partner, questioning whether this is true, upon which they confess it is. You consequently abruptly end the relationship. You soon hear that your friends are gossiping that you have been cheated on, causing you to avoid socialising. You react by uploading a naked photo to the internet of your now ex-partner that they previously sent to you.

4. You and your friends often communicate via social media or through text. Most weeks you will send each other messages, which often include images that you both find amusing. One evening your friend sends you a message which includes a nude photo of one of their previous partners. Although you didn't know this ex-partner, you decided to upload this onto the internet so that your other friends can see it.

5. You are currently in a relationship and have been for a few months. It doesn't always run as smoothly as you would like but you feel a relationship is something that should be worked on. One evening an argument begins over your partner's friend who has recently been flirting with them and sending them text messages. One of these messages included a nude photo of the friend. In reaction to this, you send this photo of their friend to your own phone so that you can then upload it onto the internet for others to see.

Now please answer the following questions, selecting the answer most applicable to yourself: (All questions to be answered using a Likert scale ranging from 1 to 5)

1. **In this situation, would you have done the same? (P)**

1 = Definitely would not have done the same

2 = Probably would not have done the same

3 = Don't know

4 = Probably would have done the same

5 = Definitely would have done the same

2. **In this situation, how excited would you be?**

1 = not at all,

2 = not particularly,

3 = don't know,

4 = fairly,

5 = very

3. **In this situation, how in control would you feel?**

1 = not at all,

2 = not particularly,

3 = don't know,

4 = fairly,

5 = very

4. **In this situation, how much would you blame the person who initially sent the photo?**

1 = not at all,

2 = not particularly,

3 = don't know,

4 = fairly,

5 = very

5. **In this situation, how amused would you be?**

1 = not at all,

2 = not particularly,

3 = don't know,

4 = fairly,

5 = very

6. **In this situation, how angry would you be?**

1 = not at all,

2 = not particularly,

3 = don't know,

4 = fairly,

5 = very

7. In this situation, how regretful would you be? (R)

1 = not at all,

2 = not particularly,

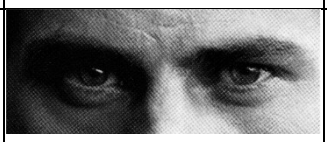
3 = don't know,

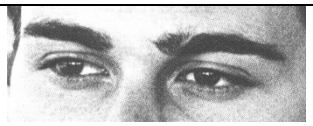
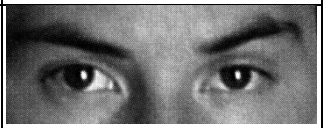
4 = fairly,

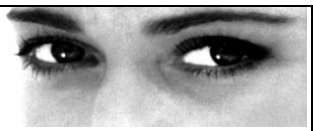
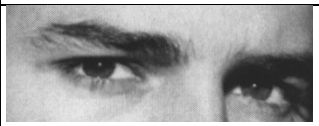
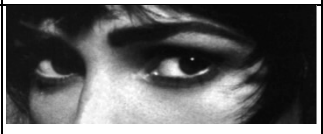
5 = very

Section 8: Theory of Mind Task. Reading Mind in the Eyes Task - Revised – Adult (Baron-Cohen et al., 2001)

Item Number	Image	Term 1	Term 2	Term 3	Term 4
Practice		jealous	panicked	arrogant	hateful
1		playful	comforting	irritated	bored

2		terrified	upset	arrogant	annoyed
3		joking	flustered	desire	convinced
4		joking	insisting	amused	relaxed
5		irritated	sarcastic	worried	Friendly
6		aghast	fantasizing	impatient	alarmed
7		apologetic	friendly	uneasy	dispirited
8		despondent	relieved	shy	excited
9		annoyed	hostile	horrified	preoccupied
10		cautious	insisting	bored	aghast
11		terrified	amused	regretful	flirtatious
12		indifferent	embarrassed	sceptical	dispirited

13		decisive	anticipating	threatening	shy
14		irritated	disappointed	depressed	accusing
15		contemplative	flustered	encouraging	amused
16		irritated	thoughtful	encouraging	sympathetic
17		doubtful	affectionate	Playful	aghast
18		decisive	amused	aghast	bored
19		arrogant	grateful	sarcastic	tentative
20		dominant	friendly	guilty	horrified
21		embarrassed	fantasizing	confused	panicked
22		preoccupied	grateful	insisting	imploring
23		contented	apologetic	defiant	curious
24		pensive	irritated	excited	hostile

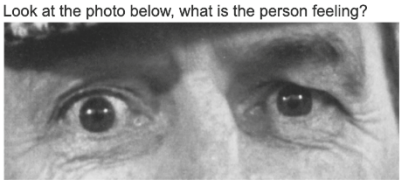
25		Panicked	incredulous	despondent	interested
26		alarmed	shy	hostile	anxious
27		joking	cautious	arrogant	reassuring
28		interested	joking	affectionate	Contented
29		impatient	aghast	irritated	reflective
30		grateful	flirtatious	hostile	disappointed
31		ashamed	confident	joking	dispirited
32		serious	ashamed	bewildered	alarmed
33		embarrassed	guilty	fantasizing	concerned
34		aghast	baffled	distrustful	terrified
35		puzzled	nervous	insisting	contemplative

36		ashamed	nervous	suspicious	indecisive

This is presented in the online questionnaire in the following format:

Practice

Look at the photo below, what is the person feeling?



* *Required*

- ○ Jealous (envious)
- ○ Panicked (distraught, feeling of terror or anxiety)
- ○ Arrogant (conceited, self-important, having a big opinion of oneself)
- ○ Hateful (showing intense dislike)

Section 9: Self Esteem Measure (Rosenberg, 1989)

Please indicate how strongly you agree or disagree with each statement.

1. **On the whole, I am satisfied with myself.** Strongly Agree/ Agree/ Disagree/ Strongly Disagree
2. **At times I think I am no good at all.** Strongly Agree/ Agree/ Disagree/ Strongly Disagree
3. **I feel that I have a number of good qualities.** Strongly Agree/ Agree/ Disagree/ Strongly Disagree
4. **I am able to do things as well as most other people.** Strongly Agree/ Agree / Disagree/ Strongly Disagree
5. **I feel I do not have much to be proud of.** Strongly Agree / Agree / Disagree/ Strongly Disagree
6. **I certainly feel useless at times.** Strongly Agree/ Agree / Disagree / Strongly Disagree
7. **I feel that I'm a person of worth, at least on an equal plane with others.** Strongly Agree/ Agree/ Disagree/ Strongly Disagree
8. **I wish I could have more respect for myself.** Strongly Agree/ Agree/ Disagree/ Strongly Disagree
9. **All in all, I am inclined to feel that I am a failure.** Strongly Agree/ Agree/ Disagree/ Strongly Disagree
10. **I take a positive attitude toward myself.** Strongly Agree/ Agree/ Disagree/ Strongly Disagree

Section 9: Debrief

Thank you for your participation in this research study.

This research aims to investigate the sexting behaviours of adults and the implications of this. Your participation will help us to understand sexting across the lifespan and help us to think about ways in which we can keep people safe from the potential harmful implications of sending nude photographs online.

If you have any questions relating to the aims of this research or about your participation, or if you feel any distress as a result of completing this questionnaire, please contact Dannii Jarvis at dannii.jarvis@nottingham.ac.uk or Dr Simon Duff at simon.duff@nottingham.ac.uk with *Adult Sexting Research Project* in the subject line.

Alternatively, you access support online from the following organisations:

www.nspcc.org.uk

www.revengepornhelpline.org.uk

www.victimsupport.org.uk

To report incidents of revenge porn or online victimization you can contact:

The Police: 101

Revenge Porn Helpline: 0345 6000 459

If you wish to complain formally, you should 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 email: FMHS-ResearchEthics@nottingham.ac.uk

Appendix VI: Information and Consent Form

Information and Consent page for an Online Survey/Questionnaire

Name of Study: Sexting

Research Team: Dr Simon Duff, Associate Professor and Dannii Jarvis, Trainee Forensic Psychologist, Centre for Forensic and Family Psychology, School of Medicine, University of Nottingham

Faculty of Medicine & Health Sciences Research Ethics Ref: FMHS 33-0620

General Information

The aim of this study is to investigate the sexting behaviours of adults in a UK sample.

We appreciate your interest. You are invited to participate as you are an adult with online access and have either sent or received a sext. Please read through this information before agreeing to participate by ticking the 'yes' box below. You may ask any questions before taking part by contacting the researchers (details below).

You will be given some questions and scenarios to read and answer questions on your sexting behaviour. It should take you about **30** minutes to complete with a total of approximately 70 questions.

Your contribution together with others will help the researchers to understand more about Sexting behaviours.

Do I have to take part?

Taking part is entirely voluntary. You can withdraw at any point during the questionnaire for any reason, before submitting your answers, by pressing the 'Exit' button / closing the browser.

Your contribution together with others will help the researchers to understand more about Sexting behaviours.

Who will know I have taken part in the study?

No one will know you have taken part in this study because we will not ask for your name or any other personal ID during this questionnaire. Your IP address will not be visible to or stored by the research team because an online survey platform is being used which receives and stores an IP address but enables this detail to be filtered out before it is transferred to the research team. As with any online related activity the risk of breach is possible but this risk is being minimized by using a platform that sits on an encrypted webpage. For further information about the online survey tool security please see https://www.onlinesurveys.ac.uk/security/

What will happen to your data?

When you have clicked the submit button at the end of the questionnaire, it will be uploaded into a password protected database with a code number. The research team will not be able to see who it is

from and for this reason it will not possible to withdraw the data at this point. Your data (research data) will be stored in a password-protected folder sitting on a restricted access server at the University under the terms of its data protection policy. Data is kept for a minimum of 7 years and then destroyed.

This questionnaire is for a Doctorate project and the answers received from all participants will be combined in a password protected database ready for analysis. The results will be written up as a dissertation and may be used in academic publications and presentations. The overall anonymised data from this study may be shared for use in future research and teaching (with research ethics approval).

The only personal data we will receive is your e-mail if you contact us to ask further questions or need support. Your e-mail address will only be kept as long as needed to resolve your query. It will then be destroyed. For further information about how the university processes personal data please see: https://www.nottingham.ac.uk/utilities/privacy.aspx/

Who will have access to your data?

The University of Nottingham is the data controller (legally responsible for data security) and the Supervisor of this study (named above) is the data custodian (manages access to the data) and as such will determine how your data is used in the study. Your research and personal data will be used for the purposes of the research only. Research is a task that we perform in the public interest.

Responsible members of the University of Nottingham may be given access to data for monitoring and/or audit of the study to ensure we are complying with guidelines.

If you have any questions or concerns about this project, please contact:

Dannii Jarvis E-mail: Dannii.Jarvis@nottingham.ac.uk

or if you have any concerns about any aspect of this study please contact the Research Supervisor:

Dr Simon Duff E-mail: simon.duff@nottingham.ac.uk.

The researchers should acknowledge your concern and give you an indication of how they intend to deal with it.

If you remain unhappy and wish to complain formally, please contact the FMHS Research Ethics Committee Administrator, E-mail: FMHS-ResearchEthics@nottingham.ac.uk.

I have read and understood the above information, I confirm that I am 18 years old or older and by clicking the NEXT button to begin the online questionnaire, I indicate my willingness to voluntarily take part in the study.

NEXT – I consent to take part EXIT - I do not give consent

Consent form (on a separate page) including Title, names of researchers, School and division address + Ethics ref no

Adult Sexting

Dannii Jarvis | Dr Simon Duff

Dannii.Jarvis@nottingham.ac.uk | Simon.Duff@nottingham.ac.uk

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Thank you for participating!

Please, tick each box to continue:

- I confirm that I have read and understood the information on the previous page
- I am 18 years old and/or older
- I understand that my participation is voluntary and I can end the study at any time and withdraw my data by clicking the EXIT button.
- I understand that my answers will be anonymous.
- I understand the overall anonymized data from this study may be used in the future for research (with research ethics approval) and teaching purposes.

NEXT – to be taken to the survey.

Appendix VII: Ethical approval

University of Nottingham
UK | CHINA | MALAYSIA

Faculty of Medicine & Health Sciences
Research Ethics Committee
Faculty Hub
Room E41, E Floor, Medical School
Queen's Medical Centre Campus
Nottingham University Hospitals
Nottingham, NG7 2UH
Email: FMHS-ResearchEthics@nottingham.ac.uk

02 July 2020

Dannii Jarvis
Professional Doctorate in Forensic Psychology
c/o Dr Simon Duff
Director of Stage II Forensic Training
Centre for Forensic & Family Psychology
Room B05 YANG Fujia
Jubilee Campus
Wollaton Road
Nottingham, NG8 1BB

Dear Ms Jarvis

Ethics Reference No: 33-0620 **– please always quote**	
Study Title: An exploration of adult sexting behaviours in a UK sample.	
Chief Investigator/Supervisor: Dr Simon Duff, Registered Practitioner Psychologist (Forensic) Division of Psychiatry and Applied Psychology, School of Medicine.	
Lead Investigators/student: Dannii Jarvis, Professional Doctorate in Forensic Psychology, Centre for Forensic and Family Psychology, School of Medicine	
Proposed Start Date: 01/06/2020	**Proposed End Date:** 01/01/2021

Thank you for submitting the above application which was considered at the meeting on 12 June 2020 and the following documents were received:

- FMHS REC Application form and supporting documents version 1.0: 19.05.2020

These have been reviewed and are satisfactory and the study is approved.

Approval is given on the understanding that:

1. The protocol agreed is followed and the Committee is informed of any changes using a notice of amendment form (please request a form).
2. The Chair is informed of any serious or unexpected event.
3. An End of Project Progress Report is completed and returned when the study has finished (Please request a form).

Yours sincerely

Dr Bethan E Phillips, Associate Professor
Clinical, Metabolic & Molecular Physiology, Medical Sciences & Graduate Entry Medicine
Acting Chair, Faculty of Medicine & Health Sciences Research Ethics Committee

Appendix VIII: PRISMA (2020) Checklist for Systematic Review Reports

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	13
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	13
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	14 - 16
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	16
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	19 - 20
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	18
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	17
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	18
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	21
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	19-20
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	19-20
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	23
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	25 - 58
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	N/A
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	N/A
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	N/A
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	N/A
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	N/A

	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	N/A
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	N/A
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	59 - 69
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	22
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	22
Study characteristics	17	Cite each included study and present its characteristics.	25 - 58
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Q/A
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	26 - 58
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	N/A
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	N/A
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	N/A
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	N/A
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	26 - 58
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	166
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	65-68
	23b	Discuss any limitations of the evidence included in the review.	64-65
	23c	Discuss any limitations of the review processes used.	68
	23d	Discuss implications of the results for practice, policy, and future research.	68-69
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	N/A
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	N/A
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	N/A
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	N/A
Competing interests	26	Declare any competing interests of review authors.	N/A
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	154 - 166

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71 For more information, visit: http://www.prisma-statement.org/

Appendix IX: Complete Predictive Logistic Regression Results

Table 23:

Unadjusted and Adjusted Associations of all Independent Variables and Receiving Image-Based Sexts

Variable	Category	N	N Received Sexts (%)	Unadjusted OR* (95% CI**)	*p* - value	Pseudo R^2 Cox & Snell (Nagelkerke)	Mutually Adjusted OR (95% CI)	Mutually Adjusted *p* - value
Gender	Male	60	43 (71.7%)	1	.120	.012 (.018)	1	.296
	Female	141	115 (81.6%)	1.75 (.86 – 3.54)			1.51 (.70 – 3.25)	
Sexuality	Heterosexual	165	124 (75.2%)	1	.021***	.040 (.062)	1	.018***
	Non - Heterosexual	36	34 (94.4 %)	5.62 (1.30 – 24.4)			6.35 (1.38 – 29.21)	
Age	18 – 25	99	78 (78.8%)	1	.244	.015 (.023)	1	.171
	26 – 30	44	38 (86.4 %)	1.71 (.64 – 4.57)			1.67 (.58 – 4.83)	
	31 - 63	58	42 (72.4 %)	.71 (.33 – 1.50)			.59 (.26 – 1.34)	
Ethnicity	White	92	74 (46.8%)	1	.562	.002 (.003)	1	.954
	Non-White	109	84 (53.2%)	.82 (.41 – 1.62)			1.02 (.47 – 2.22)	
ToM**				1.10 (1.03 – 1.17)	.005*	.037 (.056)	1.17 (1.03 – 1.21)	.008***
SE**				.98 (.87 – 1.10)	.735	.001 (.001)	.86 (.71 – 1.04)	.110
RPPS**				.85 (.72 – 1.00)	.052	.018 (.028)	1.06 (.89 – 1.26)	.553

*Odds Ratios ** Confidence Intervals ***Significant p <. 05 ****Variables are continuous

Table 24:

Unadjusted and Adjusted Associations of all Independent Variables and Sending Image-Based Sexts

Variable	Category	N	N Sending Sexts (%)	Unadjusted OR* (95% CI**)	*p* - value	Pseudo R^2 Cox & Snell (Nagelkerke)	Adjusted OR (95% CI)	Adjusted *p* - value
Gender	Male	60	43 (71.7%)	1	.068	.016 (.023)	1	.361
	Female	141	115 (81.6%)	1.81 (.96 – 3.42)			1.38 (.69 - 2.75)	
Sexuality	Heterosexual	165	124 (75.2%)	1	.048***	.022 (.031)	1	.025***
	Non - Heterosexual	36	34 (94.4 %)	2.57 (1.01 – 6.54)			3.21 (1.16 – 8.92)	
Age	18 – 25	99	78 (78.8%)	1	.120	.021 (.029)	1	.075
	26 – 30	44	38 (86.4 %)	1.13 (.50 – 2.54)			1.27 (.53 – 3.05)	
	31 - 63	58	42 (72.4 %)	.53 (.27 – 1.05)			.49 (.24 -1.02)	
Ethnicity	White	92	65 (46.5%)	1	.673	.001 (.001)	1	.970
	Non-White	109	74 (53.2%)	.88 (.48 -1.60)			1.01 (.52 -1.99)	
ToM**				1.10 (1.02 – 1.16)	.004*	.040 (.056)	1.09 (1.01 – 1.17)	.025***
SE**				.90 (.81 – 1.00)	.059	.018 (.024)	1.01 (.86 – 1.19)	.862
RPPS**				.79 (.68 - .93)	.003 *	.042 (.059)	.91 (.81 -1.03)	.129

*Odds Ratios ** Confidence Intervals ***Significant p <. 05 ****Variables are continuous