Emerging Adults Recall of Pornography Use, Sexual Behaviour, and Sexting During Childhood and Adolescence

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Abstract

This thesis contributes to the research on sexual development by exploring the age progression of the first experience of sexual activities in both same-sex and opposite-sex partners. This information is related to pornography use, sexting, attachment style and sex education.

Firstly, the interactions between pornography use, sexual activities, and the transmission of self-image nudity during childhood and adolescence were explored, as recalled by emerging adults (EA) aged 18 to 25 years. In total, 3050 English-speaking participants (1627 males and 1423 females) completed an online questionnaire at three separate intervals from May 2016 to July 2018. Overall, 82.4% of males and 59.6% of females described themselves as heterosexual and were analysed separately from non-heterosexuals. Associations were found between viewing porn at less than 12 years of age and earlier age of first romantic relationship (except for heterosexual females), first showing genitals to another, first sexting, first experience with the opposite sex of all 7 sequential sexual activities from kissing to intercourse (except for heterosexual females), and primary school sex education (except non-heterosexual females). Regression analyses showed that first viewing porn under 12 years old was a predictor for under-age sex (less than 16 years of age) for heterosexual males only.

Across genders and sexualities, primary school sex education was found to be related to early onset of pornography use (under 12 years old). A relationship was also found between pornography use under 12 years old and early onset of sexting. Associations were found between early onset of sexting and underage sexual intercourse. This is suggestive of a pattern of linked behaviours following primary school sex education.

Secondly, the interactions between emotional attachments and age of first experience of sexual intercourse, sexting and viewing pornography, and frequency of viewing/using pornography were investigated. A sample of EA males and females (18 to 25 years old) were recruited using an online survey and were asked retrospective questions for age of first experience of a range of sexual activities with opposite or same-sex partners, first experience of using pornography use and first experience of sending a nude or semi-nude image of oneself to another person. This data was then analysed with regard to emotional attachment style. Of the 621 respondents analysed, 33% endorsed the 'fearful' response style, 29.3% 'secure', 24.3% 'preoccupied' and 13.4% 'dismissive'. The findings suggest that EA women who endorse a dismissive relationship style are more likely to have had their first sexual experience with the Opposite Sex at an earlier age than those who endorse a Secure or Fearful relationship style. Furthermore, the results suggest that females who endorse a Secure relationship style are more likely to have had their first experience of viewing

pornography at a later age than those who endorse a Preoccupied or Dismissive relationship style. The same results were not found for female's first experience with the same sex or for males, with opposite or same sex.

Thirdly, the use and application of the 12-item 'Problematic Pornography Use Scale' (PPUS) to assess an individual's self-reported behaviour over the last 6 months was evaluated. The factors measured by the PPUS are: (1) distress and functional problems, (2) excessive use, (3) control difficulties, and (4) use for escape/avoidance of negative emotions. The overall internal consistency, convergent and construct validity of the PPUS was high. However, concurrent and predictive validity may need further research and development with culturally sensitive norms for both males and females.

Fourthly, a systematic review was carried out to explore underage sex in adolescents and children, and the associated risk and protective factors. The search was conducted on six electronic databases as well as within the grey literature to identify quantitative studies which included males and females up to the age of 18 years old (or adults reporting retrospectively), with exposure to risk and protective factors for early onset of sexual intercourse (before 16 years of age), Altogether, 945 studies were identified for potential inclusion and 23 fulfilled the eligibility criteria to be included in the systematic review. Findings from 23 studies between

1996 and 2017 identified risk factors associated with underage sexual intercourse (under 16 years old).

The rapid increase of technological advances over the past 10 years, as well as the changing landscape of sexuality, provides policy and lawmakers with the challenge of addressing child and adolescent sexual activities which are occurring at a younger age. Sexting at an earlier age is linked to pornography use at an earlier age. This suggests that exposure to sexualised imagery is on the increase and is related to underage sex, and if unprotected sex, the consequence of an increasing number of teenage pregnancies. This may be damaging to the development of the individual.

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Chapter One: Introduction

The concept of sexuality is a complex and multifaceted phenomenon, studied across several different disciplines. Theories of sexuality, and more specifically sexual development, began with Sigmund Freud's Psychosexual theory. This chapter will provide an overview of some of the key theories and more contemporary perspectives in the study of sexuality. This chapter will consider the societal narratives around sexuality and sexual behaviour, demonstrating the changes in society's values and understanding, as well as how these narratives may have impacted the perception of what is considered 'Normal Sexual Behaviour'.

Sigmund Freud (1856-1939) purports the initial theory of 'psychosexual development' (Freud, 1905). This theory suggests that understanding a caregiver's response to a child's sexual and aggressive desires is essential to conceptualising personality development, as well as identifying the developmental trajectory that an individual will follow. Freud's theory of sexual development put forward the idea of children going through five stages (Oral, Anal, Phallic, Latent and Genital).

Each of Freud's proposed stages focuses on sexual activity and the pleasure received from areas of the body at each stage. Within the 'Oral Stage' (suggested to be from birth to one and a half years old) children are focused on the pleasures they receive from sucking and biting with their mouth. In the 'Anal Stage' (one and a half to three

years old), this focus shifts to the anus, as they begin toilet training and attempt to control their bowels. During the 'Phallic Stage' (three to five years of age), the focus shifts to genital stimulation and sexual identification. During this phase, Freud thought that children turn their interest to the opposite sex parent and present with resentment towards the same sex parent. Freud identifies this as 'The Oedipus Complex' for males. The comparative psychoanalytic term suggested for females is 'The Electra Complex'. Following this, it is suggested there is a Latency Stage (five to twelve years old) during which sexual interest is temporarily diminished. Finally, from the age of twelve years old and beyond, it is stated that children are thought to enter and remain in a final 'Genital Stage' in which adult sexual interests and activities are predominantly found.

By today's standards, Freud's psychosexual theory does not stand up to scientific rigour and is considered largely speculative, subjective, and not very accurate. However, this theory is still influential as this was the first stage development theory, which encouraged other theorists to use it as a starting place.

Eric Erikson (1902-1994) used Freud's work as a springboard for his theory about human development (Erikson, 1959). In contrast to Freud's focus on sexuality, Erikson focused on how people's sense of identity develops, and how people function in society. This theory is termed 'psychosocial theory'. Erikson's stages are: Trust and Mistrust, Autonomy and Shame/Doubt, Industry and Inferiority, Identity and Identity Confusion, Intimacy and Isolation, Generativity

and Stagnation, and finally Integrity and Despair. Each stage is associated, as with Freud's Psychosexual Theory, with a time of life and general age span. For each stage, Erikson puts forward types of stimulation that children need to master that stage and become productive and well-adjusted members of society, explaining the types of problems and developmental delays that can result when this stimulation does not occur.

More recently, Beyers & Seiffge-Krenke 's 2010 study provided support for Erikson's theory on the developmental ordering of identity and intimacy for 'youngsters in the 21st century'. The authors purported that their findings (intimacy development follows rather than precedes identity development) have important implications for the theory of emerging adulthood (Arnett, 2000) and suggest that commitment to an identity and to partnership do occur after a period of exploration. However, the time frame is longer than reported in the 1990s (Beyers & Seiffge-Krenke, 2010).

Schofield (1965) interviewed a sample of people born in 1946. They were interviewed in 1963 and again in 1970. Schofield (1965) reported that 14% of unmarried males and 5% of unmarried females by age 16 had experience of sexual intercourse. Farrell (1978) gives equivalent figures of 32% and 21%. For Fife-Schaw & Breakwell (1992) the figures for 16-year-olds of both sexes would appear to be much closer to 50%.

Definitions used in the Primary and Secondary Research Studies

Sexual development was defined as the path from no sexual contact with same or opposite sex persons, up to full sexual intercourse as per Schofield's 1965 conceptualisation.

Pornography was defined as semi-naked and naked images and films of people taking part in sexual activities or posing in a sexual way as described by the National Society for the Protection of Cruelty to Children (NSPCC), (Martellozzo et al., 2016).

 'Sexting' was defined as the exchange of explicit or nude self-generated images or videos shared through mobile phone communication or over the internet.

Emerging Adulthood (age 18-25 years) was selected as a period of particular interest as it is characterised by exploration of sexuality, romantic relationships and increased participation in sexual activities and risk-related behaviours (Arnett, 2000;2011). This age group also had the advantage of recent memories in relation to their sexual development through adolescence. The present sample will have been born between 1990-2000, incorporating 'Generation Y' and 'Generation Z'.

Those with a 'Nuclear' family dynamic were defined as having both biological parents present.

'Generation Y and Generation Z'

Generation Y (termed 'Millennials') are those born between 1980 and 1994/5, and Generation Z (termed 'Gen Z') are those born between 1995 and 2009. The romantics of today's emerging adults (mostly 'Millennials' or Gen Z-er's) look significantly different from their predecessors' relationships. Previously, the ages between 18 and 30 were viewed as the period where young people would make major decisions of marriage, occupation, and assume their position as an adult in society (Levinson, 1978). Scholars have noted that, in contrast to generations past, today's young people are delaying those major decisions, and spend their twenties preparing for their futures individually. According to Schulman and Connolly (2013), the romantic relationships of today's emerging adults are characterized by postponement of marriage and heavily influenced by individualistic ambitions. Many emerging adults believe it is important to travel extensively or to have an experience of self-discovery before settling down. Others postpone marriage until they have become financially secure. Most emerging adults today believe that it is important to 'test run' their relationships before marriage, and cohabit with their potential partner, adding another step into the path to marriage (Fincham & Cui, 2010). But emerging adults are not unique simply because of waiting to tie the knot or postponing the transition to adulthood. Popular culture portrays that while many young people in the West are waiting to marry, they are replacing stable, committed relationships with

"friends with benefits" and "harmless hook-ups" (defined as brief, uncommitted sexual encounters involving kissing to intercourse without an understood promise of a continued relationship) (Garcia, Reiber, Massey, Merriweather, 2012, p. 4). Books like "The Happy Hook Up: A Single Girl's Guide to Casual Sex" (Sherman & Tocantins, 2004) or "The Hookup Handbook: A Single Girl's Guide to Living it Up" (Rozler & Lavinthal, 2010) perpetuate this idea, and reflect Millennials' ideas about how to approach and behave in relationships during this relatively new stage of life. While recent research has suggested that "hook-up culture" might not be as prevalent as supposed (Monto & Carey, 2014, p. 1), other studies suggest that up to 80% of college students have engaged in a hook-up (Garcia, Reiber, Massey, Merriweather, 2012; Owen, Fincham, Moore, 2011). One study of undergraduate college students showed that both men and women had nearly double the number of hook-ups compared to first dates (Bradshaw, Kahn, & Saville, 2010).

A crucial distinction between all these cohorts are the different ways in which they communicate. Earlier generations had to rely on face-to-face interactions in relationships and as a result are more 'engaged' in their 'real-life' communities. The later generations rely largely on social media for connection, and create their communities online instead.

Research indicates changes in sexuality in 'Millennials' compared to 'Generation X' (born between 1966 and 1980) and further, to 'Baby Boomers' (born between 1946 and 1964). Twenge, Sherman and

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Wells' (2015) article examined changes in sexual attitudes between 1972 and 2012. They observed significant increases in acceptance of premarital sex and sexual activity between two adults of the same sex across generations. The authors argue that it is an oversimplification to say permissive attitudes are on the rise and suggest that as a society we are becoming more sophisticated in our collective attitude to sex. They also note "We seem to be less worried about the behaviour of consenting adults but continue to be concerned about situations that may involve deception (as in the case of extramarital sex) or where the participants are under the age of consent (as in the case of early teen sex)" (Lucke, 2015, p. 1). In light of the differences in sexuality demonstrated, those older than the selected 18-25 years old ('emerging adulthood') were excluded from analysis.

Alongside a more sophisticated perspective on sexuality, it appears there has been a reduction in sexual shame (or, conversely, an increase in sexual liberation). In 2016, the owner of several soft-core pornography 'cam' websites launched 'OnlyFans', where social media influencers and models could post unfiltered explicit content and earn money with nude images and pornographic videos. As of March 2020, OnlyFans has 70,000 content producers that make content for about 7.5 million users and counting (Brok, 2021). Sexualised media images (either in the form of sexting, or pornography) have the potential to be both promoters of, and threats to, young peoples' sexual empowerment. Sexual media has

the potential to help dispel sexual shame, provide education, and promote a diversity in how sexuality is expressed (Strossen 1993; Tiefer 1995). Equally, sexualised media images can have negative consequences for young people, for example revenge pornography, non-consensual sharing of explicit images, grooming, and poor mental health outcomes.

Gender

Social expectations, the more traditional goals of a mainstream 'hetero-normative' and 'gender stereotypical' culture, are less clearly defined. "Girls protected their virginity in order to attract a suitable husband and then become wives and mothers. Boys' lives were career-oriented, and it was expected they would sow their sexual wild oats prior to taking on their role of provider" (Temple-Smith, Moore and Rosenthal, 2016, p.7). This quote demonstrates the perception of what is traditionally considered 'normal' in the West. Gendered social expectations are harmful for both girls and boys - it is also important to counter the belief that only girls are targeted online (Davidson & Martellozzo, 2008).

The colloquial notion of males being 'more' sexually promiscuous, permissive, and being noted to have a higher incidence of masturbation than females is likely to have an impact on the expression of sexuality (Oliver and Shilby-Hyde, 1993). Epistemologically, Schofield's 1965 research is in line with the gendered social expectations and stereotypes that can be found

across society, especially Western society pre-1960's. The prevailing social attitude is demonstrated by the quote "men wanted to be seen as 'real men': the kind who had many partners and a lot of sexual experience. Women, on the other hand, wanted to be seen as having less sexual experience than they actually had, to match what is expected of women" (Ohio State University, 2013, p. 1). This belief that men and women are held to different standards in society in terms of their social conduct can be understood in the context of Queer Theory as part of "heteronormativity" (Rich, 1980, p. 631–660). According to the 'sexual double-standard' (Seabrook et al., 2016) boys and men are rewarded and praised for heterosexual sexual activity, whereas girls and women are derogated and stigmatized for similar behaviours (Zaikman and Marks, 2017).

Gómez Berrocal et al. (2019) discuss that the 'sexual double-standard' has been linked with many sex-related issues, such as sexual victimization (Sierra et al., 2011; Eaton and Matamala, 2014) sexual assaults (Moyano et al., 2017), victim-blaming attitudes (Gracia et al., 2018), higher risk of acquiring sexually transmitted infections (Ramiro-Sánchez et al., 2018) and lower sexual satisfaction (Santos-Iglesias et al., 2009).

Petersen & Hyde (2011) discuss from their findings that within-gender differences are larger than between-gender differences in reported sexual behaviors and attitudes. The authors also highlight that when gender disparities do exist, research

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suggests that they are a product of differences in societal power differentials, biological factors, and social pressures to respond according to assigned gender-roles.

Sexuality

According to the psychological literature, homosexuality and bisexuality were assumed to be mental illnesses for over a century (before being removed from the Diagnostic and Statistical Manual in 1973). More contemporary perspectives acknowledge sexuality as a complex interplay of genetic, hormonal, and environmental influences and something that is dynamic and fluid. Societal acceptance of non-heterosexual orientations such as homosexuality is lowest in Asian, African, and Eastern European countries (Pew Research Center, 2017).

Liau and colleagues examined online sex-seeking and sexual risk behaviour among men who have sex with men, and found homosexual men were 'more sexually preoccupied' and may take risks (Liau et al., 2006).

Finally, there was little attention to sexual behaviours with the same sex in the longitudinal studies reviewed here. Although the studies that include adolescents who identify as gay, lesbian, bisexual and unsure, who report sexual behaviour with/attraction to the same sex, are increasing in number (see e.g., Savin-Williams & Diamond, 2000), there remain few longitudinal studies that even identify how many of these young people were included. Of course,

this means that few studies have explicitly examined whether the correlates of sexual behaviour are the same among these adolescents compared to other adolescents.

Demographic Differences

Considering sexuality, there are a multitude of inter-relating factors that impact the development of identity and sexual identity. Sex can be considered to be a concept that transcends boundaries of gender, race, culture, and socio-economic class – therefore is not immune from the negative and positive impacts of power relations within society. The study of sexuality cannot be separated from these social concepts without missing a great portion of experience, shaping, and how sexual behaviour is expressed. For example, religion has impacted the expression of sexual behaviour with regard to Abrahamic religious (especially Judeo-Christian) perspectives, reinforcing heteronormative and monogamous sexual standards. This, in turn, impacts the expectations of an individual's gender expression (such as whether they ascribe to the gender binary) which can also be dictated, in part, by their culture. Given the individual's socio-economic background, their access to resources such as education, healthcare, and technology can also make a difference in how their sexuality is expressed.

Fetishization of race (being attracted to someone only for their skin colour) is a form of objectification and reduces an individual to their skin colour alone. This process is understood by

the concept of 'othering' (that is, making someone feel 'other' than the dominant social group or societal expectation). This, whilst on the surface appearing potentially 'harmless' or 'a compliment', is reductionist, often involving projecting aspects of one's own identity struggles onto 'an other'. This demonstrates the way in which a dominant social group's power can have an impact on the way in which individuals treat each other, what is understood widely as a 'norm', and how behaviour is expressed. Examples of common racial fetishizations include the over-sexualisation of black women (slave owners justifying their actions by labelling women as 'hyper-sexual'), the domination fantasy associated with Asian Women (the assumed and stereotyped understanding, subordination, and permissiveness) and the concept of 'exotic' associated with Latino women. In all of the examples of fetishization listed above, being white is viewed as the 'default' – suggesting that anything outside of this is 'other', 'not the norm', or at one extreme of a continuum (e.g., 'submissive' or 'over-sexualised'). This impacts the way in which individuals from an array of cultural and religious backgrounds express gender and sexuality.

There is a lack of research looking into the interaction and influences of culture on sexual development. According to Dube and Savin-Williams (1999), a lack of empirical research may be due to the 'inherent difficulties of studying ethnic minorities'. French et al. (2005) found marked variations in relation to reproductive and sexual health attitudes and outcomes among Bangladeshi, Indian

and Jamaican young people in Britain. The authors also found that cultural factors, such as the amount of socialising, the role of religion, parental attitudes and beliefs, and peer-group adhesion and norms, were strong influences on young people within each of these ethnic groups. These factors were also found to impact how teenage pregnancy was viewed.

In the present study no data was explored in relation to class, ethnicity, race, or religion. Sexuality is artificially separated from other aspects of identity. However, it should be considered as part of an intersectional perspective.

Pornography Use

In 2017, Pornhub, one of the largest porn websites, received 28.5 billion visits, with users performing 50,000 searches per second on the site. In 2019, visitations to the website rose to 42 billion, with an average of 115 million visits per day. Pornhub reports an 8.7 billion increase in searches from 2018 to 2019 (Pornhub, 2017;2019). Pornography exposure may be more common today due to the 'triple-A engine': Access, Affordability, and Anonymity (Cooper, 1998).

A history of Pornography is difficult to establish, due to the subjective nature of what is considered pornographic. In many historical societies depictions of sexual behaviour can be found, including the Ancient Greeks, Romans, and 17th Century Japanese, amongst many others. Typically earlier forms of pornography were

in picture format, and woodblock printing. Within Europe, new technology, such as the printing press promoted more widespread access to pornographic material. Pornography has been utilised as a form of political and social protest, including sexual freedom for women and men, as well as practices of contraception use and abortion. Pornography continued to flourish throughout Britain and the United States during the Victorian era, mostly focussing on 'taboos' of the time. Pornography in the form of motion picture and film were more widely available from the 1920's, with an upsurge in popularity in the 1960's. The development of videocassettes in the 1980's, DVDs in the 1990's, and later the Internet, saw pornographic material becoming even more widely available, making the industry one of the most profitable on the Internet (Jenkins, 2020).

New technology has made pornography increasingly accessible to young people, and a growing evidence base has identified a relationship between viewing pornography and violent or abusive behaviour in young men. Findings from a large survey of 4,564 young people aged 14 to 17 in five European countries (Stanley, Barter, Wood, Aghatie, Larkins, Lanau and Överlien, 2018) illuminate the relationship between regular viewing of online pornography, sexual coercion, and abuse, and the sending and receiving of sexual images and messages, known as 'sexting'.

There is considerable concern about adolescents producing, consuming, and distributing sexual materials via mobile phone

communication. A high-school survey study (Vanden Abeele, Campbell, Eggermont, & Roe, 2014) examined key aspects of peer influence and the peer context in relation to two such practices: sexting and mobile porn use. The results of the study (N = 1,943) revealed that 6% of Flemish teens (11–20 years of age) have sent a sext, while 9% use mobile porn. Teens who were more popular with the other sex and with a greater need for popularity were more likely to report both behaviours. Boys' mobile porn use was also predicted by perceived peer pressure. Same-sex popularity was unrelated to boys' sexting behaviour and mobile porn use; for girls, a negative relationship was found.

Sexting

Several scholars have argued that adolescents' sexting behaviour might be influenced by their media use. However, empirical evidence of the link between media socialization and engagement in sexting behaviour remains scarce. Van Ouytsel, Ponnet, & Walrave (2014) investigated whether music videos and pornography consumption were able to predict a range of sexting behaviours among a sample of 329 adolescents. Findings indicated that sexting behaviours were significantly associated with the consumption of pornography, when controlling for age, gender, school track, and Internet use. These results were found for both adolescent boys and girls.

Associations have been found between sexting and increased impulsivity (Temple-Smith et al., 2016), and increased odds of sexting and high levels of sensation seeking (Scholes-Balog, 2016). Research has found that aspects related to the dark triad are associated with the likelihood of disseminating a sext. Specifically, having received a disseminated sext, having a strong positive attitude towards disseminating sexts as being funny, and/or more strongly normalising that sexts are usually disseminated or seen by others (Clancy et al., 2019). Morelli (2021) found that Machiavellianism has a role in predicting sexting behaviours. Delevi and Weisskirch (2011) additionally found personality correlates with sexting, reporting that extraversion predicted sexting by text messaging, and neuroticism and low agreeableness predicted sending a sexually suggestive photo, a photo in underwear or lingerie, or a nude photo.

Self-generated sexualised images of young people can be used in maltreatment or victimisation. There are two clear ways in which young people's sexual images of themselves can cause harm: First, the prevalence and accessibility of these images can make it easier for adult perpetrators to target, groom and potentially abuse young people. Second, these images provide material which other young people can use to bully or humiliate others (Martellozzo et al., 2016).

Findings from Drouin, Ross, & Tobin, (2015) suggest that those who had been coerced into sexting had usually been coerced by subtler

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tactics (e.g., repeated asking and being made to feel obligated) than more severe forms of coercion (e.g., physical threats). Nevertheless, the trauma related to these acts of coercion both at the time they occurred and now (looking back) were greater for sexting coercion than for physical sex coercion. Women noted significantly more trauma now (looking back) than at the time the events occurred for sexting coercion. Those who experienced more instances of sexting coercion also endorsed more symptoms of anxiety, depression, and generalized trauma. Finally, sexting coercion was related to both physical sex coercion and intimate partner violence, which suggests that sexting coercion may be a form of intimate partner violence, providing perpetrators with a new, digital route for physical and sexual co-victimization.

'Sexting' refers to the use of mobile phones with built-in cameras to produce and distribute images of oneself in a sexually provocative or revealing position. The potential danger that this trend poses to minors is huge. No one would disagree that the purposes and aims of child pornography laws are legitimate and necessary. Recently, however, these laws, which have the supposed aim of protecting children, are instead being used to punish children and dissuade the new phenomenon of 'sexting' in the West. Photographs produced by 'sexting' can be distributed to unintended third parties, often leading to embarrassment and harassment. Senders are in danger of being charged with possession and distribution of child pornography, regardless of the fact that they are minors, and the pictures are

often of themselves. Not only is charging minors with child pornography a rather new phenomenon, it appears to be a strategy that several states in America are adopting. This could be a strategy that legal professionals opt for in the United Kingdom.

Sexual Knowledge and Sex Education

School-based empowerment programmes to help children avoid sexual victimisation were created and widely disseminated in both the United States and Canada starting in the early 1980s. The focus of these educational programmes has primarily been to teach young children personal safety knowledge and skills through group-based instruction, usually conducted in schools. Reviews also conclude that child-focused educational programmes can build children's knowledge and self-protective skills without producing negative side effects (e.g., elevated anxiety, making false allegations, over-generalising to appropriate touches) and may produce positive effects (e.g., increased parent–child communication) (Wurtele, 2009)

Several characteristics of 'high-quality' programmes have been determined. Young children can learn personal safety skills if they are taught concrete concepts in a clear, developmentally appropriate way, and are given adequate time for learning, across multiple sessions and involving skill-building exercises.

For all their benefits, child-focused educational programmes have their limitations. They have been criticised for expecting children to

be solely responsible for their own protection, when 'the responsibility for the protection of minors lies with adults' (Zollner, Fuchs & Fegert, 2014, p. 5). Another limitation is that most programmes target the early childhood years and neglect the adolescent years. As educational programmes move from preschool to high school, educational approaches should prepare youth as they begin to experience sexual thoughts, feelings, and attractions to others; help them adjust to the biological and physical changes of puberty; and assist adolescents with the transition to establishing sexual identities and intimate relationships (Wurtele & Kenny, 2011)

Adolescence is an excellent opportunity to provide young people with universal sex education that promotes healthy sexual behaviour free of coercion and respectful of both partners' desire and consent (Lavoie, Thibodeau, Gagné & Hébert, 2010; Wurtele, 2009). Young people need help recognising, for example, that adult–teen sexual relationships are punishable crimes, regardless of whether the teen is 'in love' with the offender and 'consents' to what they may believe is a 'reciprocal' sexual relationship (Oudekerk, Farr & Reppucci, 2013; Tener, Walsh, Jones & Kinnish, 2014).

As adolescence is a key developmental risk period for the onset of sexual arousal to children (Smallbone, Marshall & Wortley, 2008), there needs to be more of a focus on stopping the development of sexual offending behaviours among youth. Educational approaches should prepare youth as they begin to experience sexual thoughts, feelings, and attractions to others, and emphasise that it is morally

and legally wrong to sexually experiment with or exploit children (Wurtele, 2009). In addition to targeting this age group, innovative ways to educate teens about sexuality and prevention of exploitation are sorely needed (e.g., using the internet or online interactive games).

Another criticism of child-focused prevention programmes has been the lack of attention and sensitivity to diverse populations and cultural differences of participants. Some programmes shown to be effective for building knowledge and skills among children in an average socio-economic environment (Hébert, Lavoie, Piché & Poitras, 2001) have been less effective in a multi-ethnic and underprivileged urban environment (Daigneault, Hébert, McDuff & Frappier, 2012).

To prevent technology-related sexual solicitation and victimisation of adolescents, teen-focused safety education programmes are sorely needed. Although almost half of US youth in one survey reported receiving prevention messages at school about online sexual solicitation (Mitchell, Jones, Finkelhor & Wolak, 2013), a recent review of internet safety education materials revealed that these programmes are of dubious quality and many of their safety recommendations have questionable protective logic (Jones, Mitchell & Walsh, 2014). Awareness-building strategies are needed to help youth recognise that emotionally manipulative adults exist, whether online or in-person, who will exploit their sexual curiosity and take advantage of their normal needs for affection, intimacy, and

romantic connections. The warning signs that they are being groomed online need to be described, covering such inappropriate sexual advances as being asked personal questions, talking about sex, being asked to send or receive sexually explicit images, or being told to keep the relationship a secret (Wurtele, 2012b).

Family Characteristics

Certain family characteristics have been found to increase the risk for adolescent sexual exploitation, both online and offline, along with commercial and non-commercial forms of abuse. Family variables found to increase the likelihood of sexual exploitation include family violence, parental substance use, witnessing or experiencing family abuse (emotional, sexual or physical), along with having only one biological parent and absence of family support or parental monitoring (Clarke, Clarke, Roe-Sepowitz & Fey, 2012; Martin et al., 2011; Noll, Shenk, Barnes & Haralson, 2013; Pérez-Fuentes et al., 2013; Roe-Sepowitz, 2012; Whittle et al., 2013; Wildsmith, Barry, Manlove & Vaughn, 2013).

Societal-level factors that might contribute to the sexual exploitation of youth include social norms, societal values, and shared beliefs and attitudes (Miller-Perrin & Wurtele, 2017; UNICEF, 2014). Unfortunately, very little research has addressed societal-level risk factors, despite the calls for prevention efforts targeting adults and systems within the broader macro-system (e.g., UNICEF, 2014).

Sexual Development

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Considering neural development during adolescence, an increase in reactivity to social stimuli may be related to pubertal changes in sensitivity to the hormones that stimulate reproductive organs, germ cell maturation, and secondary sex characteristics (for example, estradiol, progesterone and testosterone) in key brain areas (Ernst, Romeo, & Andersen, 2009; Romeo, Richardson, & Sisk, 2002). Tolman (2002) puts forward the idea of a 'dilemma of desire' in young women, linking the experience of 'developmental tension' between sexual control and sexual motivation with conflicting social narratives in films and magazines such as 'be sexy but not sexual', 'don't be a prude, but don't be a slut' of how a young female 'should' act with the biological and environmental changes she is experiencing.

The neural and hormonal basis for the development of sexual cognitions during puberty is unclear. Cognitive markers of sexual desire can be identified as sexual attractions and sexual thoughts, in individuals as young as 11 and 12 years old (Larsson & Svedin, 2002). Brain areas such as the nucleus accumbens and amygdala are implicated in processing social information. These neural networks are 'extensively reorganised' during puberty (Nelson, Leibenluft, McClure, & Pine, 2005). Changes in processing of social information associated with sexual and romantic cognitions are 'likely associated with' testosterone acting through androgen receptors in the limbic system and other associated areas of the brain (Ein-Dor & Hirschberger, 2012; Raznahan et al., 2010).

Underage Sex

Florsheim (2003) highlights that younger age at first unwanted sexual experience predicted earlier entry into wanted sexual experience. Florsheim discusses that, as with other risk behaviours (such as adolescent substance abuse) early entry into sexual intercourse may be a marker of a more negative developmental trajectory.

The legal Age of Consent varies from 11 to 21 years old from country to country around the world. In some countries, there is no legal age of consent, but all sexual relations are forbidden outside of marriage. The highest Age of Consent in the world is 21 in Bahrain. The second-highest age of consent is 20 in South Korea, while most other countries have an Age of Consent between 16 and 18.

The lowest Age of Consent in the world is 11, in Nigeria. The age of consent used for the present study was for the United Kingdom (16 years of age for both heterosexual and non-heterosexual sexual intercourse). As of December 2019, the act of non-heterosexual (homosexual) sexual intercourse is considered illegal in 73 countries across the world, with anti-homosexuality laws still being enforced. It is of note that the data collected within this research is from an online-English-speaking sample, therefore some of the participants in the study may be from a country with a lower age of consent. However, it was considered that globally, the legal age of consent in most of the countries is 16 years or above, as individuals of this age are considered to be mature and capable

of making informed decisions, and therefore an appropriate measure of legality with regard to sexual intercourse.

Pregnancy during adolescence is a complex phenomenon linked with various economic, educational, and behavioural circumstances. Many adolescent mothers have a socioeconomic profile that may contribute to poor attachment outcomes. This can (but not exclusively) include belonging to low socioeconomic classes or living in poverty, family history of unplanned and teenage pregnancy, high rates of school drop-out or interrupted education, and substance misuse (Wall-Wieler, Roos & Nickel, 2016). Adolescent mothers differ to most adult mothers developmentally as they are working to integrate the new roles and responsibilities of motherhood with their adolescent developmental tasks (Flanagan, McGrath, Meyer, & Garcia Coll, 1995; Daley, Sadler, & Reynolds, 2013; Sadler & Cowlin, 2003). As a result of this interrupted development (Whitman et al., 2001) many teenage mothers may not have the capacity to adopt parenting behaviours, without support, that enhance the infant-mother attachment bond.

'Problematic Pornography Use'

Egan & Parmar (2013) suggest that the greater use of pornography on the Internet may reflect a general vulnerability to compulsive problems related to basic disposition. The present thesis opted not to directly explore problematic pornography use, despite measuring frequency and characteristics associated with

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pornography use, but opted to explore this within the critique of 'The Problematic Pornography Use Scale' (Chapter 4).

Thesis Aims and Objectives

This thesis contributes to the research on sexual development by exploring the age progression of the first experience of sexual activities, as described by Schofield (1965), in both same-sex and opposite-sex partners. This information is related to pornography use, sexting, attachment style and sex education.

The rationale for the research within this thesis is to reduce the gaps in knowledge surrounding the influence of pornography, adolescent sexual development, sexting and their Associations.

Thesis Structure

After this Introduction to the topic (Chapter 1), Chapter 2 presents an empirical quantitative study based on online questionnaire responses from a sample of emerging adults aged 18 to 25 years. Recall for age of first experiences of pornography use, sexual behaviour, and sexting is explored.

Chapter 3 presents a second empirical online questionnaire quantitative study. The aim of the chapter is to investigate current emotional attachment style and emerging adult's recall of first experiences: sex, pornography, and sexting.

Chapter 4 provides a critique of the psychometric measure 'The Problematic Pornography Use Scale (PPUS)' and provides norms for an online English-speaking sample.

Chapter 5 presents a systematic literature review which aims to explore the Protective and Risk Factors for Underage Sex.

The final chapter of this thesis, Chapter 6, provides an overview of the overall findings of this thesis. It compares the current literature with the findings throughout the thesis, suggesting future directions for research, as well as providing a summary of the practical implications that can be drawn from this thesis.

Chapter Two: An Investigation into Recall of Pornography Use, Sexual Behaviour, and Sexting in Emerging Adults.

Abstract

This paper explores the interactions between pornography use, sexual activities, and the transmission of self-image nudity during childhood and adolescence as recalled by emerging adults aged 18 to 25 years. The English-speaking participants were recruited online to complete a questionnaire at three separate intervals from May 2016 to July 2018. Of the 4724 adult respondents, 3050 emerging adults (1627 males and 1423 females) were used in the analyses.

Regarding sexuality, 82.4% of males and 59.6% of females described themselves as heterosexual and were analysed separately from non-heterosexuals.

For all four sub-samples, associations were found between viewing porn at less than 12 years old and earlier age of first romantic relationship (except for heterosexual females), first showing genitals to another, first sexting, first experience with the opposite sex of all 7 sequential sexual activities from kissing to intercourse (except for heterosexual females), and primary school sex education (except non-heterosexual females). Regression analyses showed that first viewing porn under 12 years old was a predictor for under-age sex (less than 16 years old) for heterosexual males only.

Across genders and sexualities, primary school sex education was found to be related to early onset of pornography use (under 12 years old). A relationship was also found between pornography use under 12 years old and early onset of sexting. Associations were found between early onset of sexting and underage sexual intercourse. This is suggestive of a pattern of linked behaviours following primary school sex education. This could bring into question the importance of content and timing of sex education in schools and necessitates further investigation.

Introduction

Over the last 10-15 years, there has been an exponential increase in pornography use in the UK and worldwide (Szymanski & Stewart-Richardson, 2014; Petersen & Hyde, 2010). This has been largely due to accessibility, affordability and anonymity provided by the internet and via an increasing range of devices (smartphones, tablets, and laptops) (Cooper, Delmonico and Burg, 2000; Buzzell, 2005a). This rapid rise in pornography consumption presents concerns for the short and long-term effects on society, including sexual development of young people, attitudes and beliefs towards sex, and transmission of sexual images being normalised. This paper explores the interactions between pornography use, sexual activities, and the transmission of self-image nudity during childhood and adolescence as recalled by emerging adults aged 18 to 25 years.

Concerns related to sexual development include underage sex, expectations of what is 'appropriate sex' and excessive pornography use leading to harmful sexual behaviour or offending (Malamuth, Addison and Koss, 2000; Ashurst & McAlinden, 2015). Frequency of exposure to sexually explicit material has also been previously linked with compulsivity (To, Ngai, & Iu Kan, 2012). Transmission of self-image nudity via mediums such as 'snapchat' on smartphones (commonly referred to as 'sexting') by people under 18 years old is illegal.

Sexting

The prevalence of 'sexting' suggests many young people view it as a normal part of growing up or no more than 'flirting' (NSPCC, 2012; Hasinoff, 2014; 2015). This is reinforced to an extent by current UK police guidance (emphasis on safeguarding rather than criminalising young people) (Home Office, 2016; CPS, 2016). However, there is conflicting evidence regarding 'normality' of sexting from an EU report 'Risks and safety for children on the internet: the UK report'. This reports 12% of 11-16 year-olds in the UK who use the internet have received sexual messages and 4% have sent them (Livingstone, Haddon, Görzig and Ólafsson, 2011).

A qualitative study of children, young people, and sexting detailed in a report prepared for the National Society for the Protection of Cruelty to Children (NSPCC) highlights the need for policy change. This research provided insight into the potential risks od sexting,

especially to young females. Other notable highlights included the effect technology has had on modern youth, affecting children and adolescents with an increase in perceived sexual pressure concerning body image, viewing pornography and sexual performance (Ringrose, Livingstone & Harvey, 2012).

Pornography and Sexual Knowledge

The speed and size of the change in pornography use clearly presents challenges to authorities in providing guidance to parents, policing, child protection, and safeguarding, as a full picture of the implications has not yet been established. This highlights the urgency for research, such as the present study, to enable a sound basis for evidence-based decision-making.

In June 2016, a NSPCC commissioned report highlighted the impact of online pornography use on attitudes and beliefs of children and young people. The report is comprised of three research studies including a combination of focus groups and an online survey on pornography use for 11-16 year-olds (Martellozzo et al., 2016). Results from the survey indicate just over 50% of 11-16 year-olds had been exposed to online pornography, with 94% of them having seen online pornography by 14 years old. When asked how they felt when first viewing pornography, young people reported curiosity, shock and confusion. Reports detailed the shock and confusion subsides on repeated viewing. When asked about whether online pornography they had seen had taught them about safe sex, 94.5%

of 11-12 year-olds, 77.9% of 13-14 year-olds and 81.9% of 15-16 year-olds answered 'no'. Regarding sexting behaviours, a worrying one-in-five self-taken semi-naked and naked images of children seemed to derive from pressure or coercion. Of the children who took these photographs, 36% reported being asked to show these images to someone online. Those 11-16 year-olds who reported taking a fully nude image of themselves represented 3% of the sample (27 of the 1001 in the study). As noted in the report, with 2.7 million children aged 11-15 years in England alone, the proportions considered in this survey data may equate to 72,900 young people potentially taking fully naked images of themselves. This provides potential for the images to be circulated by devices being lost, stolen, or hacked.

Despite lack of research on young people's sexual expectations, growing evidence indicates young people are unhappy with the sex education they receive. They increasingly use pornography, expecting it to educate and give information regarding sexual practices and norms (Albury, 2014). In early studies of sexual behaviour (Ellis, 1948; Kinsey, 1953; Schofield 1965) it was unusual to experience oral sexual intercourse before vaginal sexual intercourse. Oral sexual intercourse was conceptualised as a more unconventional type of sexual activity. This has been found to change over time (Schwartz, 1999; Prinstein, Meade & Cohen, 2003).

Kubicek et al. (2010) found young gay men rely on pornography and the internet to acquire information about anal sex, its nature, and risks because it is not covered in sex education. Kendall (2004) raises concerns about consequences of this for young gay men, particularly with regard to hyper-masculinity portrayed in gay porn and how this may affect young men's developing identity and sexual expectations.

A Systematic review of pornography use in 2015 highlighted this research area is still very much in its infancy, and there is a requirement to examine the relationship between pornography use and risky sexual behaviours (Harkness, Mullan, & Blaszczynski, 2015). Frequent and problematic pornography use were related to more gender role conflict, more anxious and avoidant attachment styles, poor relationship quality and less sexual satisfaction (Szymanski & Stewart-Richardson, 2014).

Currently in the United Kingdom, sex education is not compulsory in primary schools. Secondary Schools (maintained by local authorities) are obligated to teach Sex and Relationship Education from age 11 onwards in England. It has been argued that 'Relationships Education' promotes wider child protection, including through content on internet-safety and all forms of bullying and harassment. The Relationships Education and Relationships and Sex Education Impact Assessment (Department of Education, 2019) suggests that there is evidence that 'Relationships Education' has the potential to influence young people's sexual behaviour 'such as

delaying initiation of sex, reducing the frequency of sex or the numbers of partners and increasing the use of contraceptives.' This report also refers to evidence that 'Relationships Education' has the potential to 'mitigate the risk of pornography influencing children and young people's engagement in risky behaviours'.

Skinner et al. (2015) established that externalising behaviours in girls are more strongly associated with first sexual intercourse than internalizing behaviours. A range of biological, social, and psychological precursors are associated with earlier age at first sexual intercourse. These precursors include early puberty, childhood adversity, low socioeconomic status, dysfunctional family relationships, absence of a biological father at home, poor school adjustment, adolescent depression, and low self-esteem.

Methodological Considerations

Age categories in years for first use of pornography ('Under 12' and '12 and Over') were used to establish use of pornography during primary and secondary school. This was also considered to be the time at which most teenagers have access to the internet, with 70% of over 12's having a social media profile. A third of over 12's say they have seen something worrying or nasty online, making them almost twice as likely as 8-11 year-olds (18%) to see this type of content (Ofcom, 2019, pp.20-25).

Categories for sexting and sexual intercourse (for opposite-sex and same-sex partners) were chosen in line with the age of consent in years in the United Kingdom ('Under 16' and '16 and over').

One of the challenges in gaining accurate data in this area is how detailed the line of questioning should be to adolescents. How much sexual knowledge should be assumed? How much detail should be explained when potentially the participant has little or no knowledge of these areas? Whilst it is important the information gathered is accurate, the effect on an adolescent of describing certain sexual activities in detail is something requiring careful consideration (Barbaree & Marshall, 2008). Remez (2000) also explored barriers to adolescents reporting sexual behaviours. The current study was designed as a retrospective survey for emerging adults (EA). Whilst this avoids the ethics of questioning adolescents, there may be reporting issues and memory bias associated with recall of sexual behaviours. Some research has suggested recall may be more accurate than first assumed (Orr, Fortenberry, Blythe, 1997; DiClemente, 2016). However, it is important to be mindful that although self-reports of sexual behaviour have been shown to be reliable, there is no guarantee this reporting is valid (Santelli et al. 2000).

What remains unexplored is the interaction between pornography use and exchange of self-image nudity, and the resulting impact it may have on sexual development.

Aims

This study develops the research on heterosexual and non-heterosexual development by Schofield (1965) by adapting the progression of sexual activities applied to both same-sex and opposite-sex partners, alongside investigation into the characteristics of pornography use. In the present study, sexual development was defined as the path of sexual activities from no sexual contact with the same sex or opposite sex, up to full sexual intercourse as per Schofield's 1965 conceptualisation. 'Sexting' as a sexual activity was defined as the exchange of explicit or nude self-generated images or videos shared through mobile phone communication or over the internet.

Pornography was defined as semi-naked and naked images and films of people taking part in sexual activities or posing in a sexual way as described by the NSPCC (Martellozzo et al., 2016).

Emerging Adulthood (age 18-25) was selected as a period of interest as it is characterised by exploration of sexuality, romantic relationships and increased participation in sexual activities and risk related behaviours (Arnett, 2000;2011). This age group also had the advantage of recent memories in relation to their sexual development through adolescence. Ethical approval was only granted for adults 18 years and over by the University of Nottingham School of Medicine Ethics committee.

Aims

The rationale for this study is to reduce the gaps in knowledge surrounding the influence of pornography use and is designed to address four hypotheses:

1) The age of onset of sexual activities will not be related to pornography use before 12 years (H1);

2) The age of onset of sending nude or semi-nude images of self (sexting) will (H2a) NOT be related to underage sexual intercourse (i.e. before 16) and (H2b) NOT be related to pornography use before 12 years;

3) Receiving sex education in primary school (i.e. before 12 years) will (H3a) NOT be related to onset of age sexual intercourse and (H3b) NOT be related to age of onset of pornography use;

4) Growing up living with both biological parents (two-parent 'nuclear' family) will (H4a) NOT be related to onset of age sexual intercourse and (H4b) NOT be related to age of onset of pornography use.

Methodology

Ethical approval was granted for adults 18 years and over to participate in this research, by the University of Nottingham School of Medicine Ethics committee. Participants were recruited via a link to the online survey via The University of Nottingham's 'Call for Participants' and social media (Facebook, Instagram, Twitter,

Reddit, and Tumblr). The participants were recruited at three separate intervals from 18th May 2016 to 31st July 2018. The sample comprised of English-speaking participants (which was to be expected as the survey was only available in English). The participants were not offered remuneration for their participation in the research.

Table 2.1 shows a comparison of respondents over the three datasets and overall. In total 4738 participants (62% of 7617 hits) completed the full questionnaires. Fourteen questionnaires were removed due to spoilt responses, leaving 4724 as the number of unspoilt questionnaire responses.

Of the 4724 adult respondents, 65.2% of the sample (3080) were the desired 'EAs' (aged 18-25) as per Arnett's definition. This developmental stage is demographically distinguishable from adolescence and young adulthood (Arnett, 2000; 2011). EA's were more likely to be able to make a good approximation of the ages of the activities asked about within the questionnaire, by the fact that they were closer to the ages they first engaged in those activities than the older adult (25+ years) group. The 1644 participants who were older than 25 years were removed to leave the 3080 'EA' participants aged between 18 and 25 years for analysis. Additionally, 1% of the remaining sample (30 respondents) identified with a gender other than male or female so were excluded from analysis, leaving 3050 respondents as the final number analysed.

Table 2.1: Comparison of Datasets

	Dataset 1	Dataset 2	Dataset 3	Overall
Date sample collected	18/5/16 to 22/6/16	3/12/17 to 3/3/18	24/4/18 to 31/7/18	18/5/16 to 31/7/18
No. of hits	3074	2692	1851	7617
No. of completed questionnaires	2655	1028	1055	4738
No. of spoilt questionnaires	8	1	5	14
No. of EA respondents for analysis	1787	609	654	3050
No. of EA 'heterosexuals'	1341 (75%)	397 (65%)	450 (68.8%)	2188 (71.7%)[1]
No. of EA 'heterosexual' males	841 (47%)	210 (34.5%)	289 (44.2%)	1340 (43.9%)
No. of EA 'Heterosexual' females	500 (28.%)	187 (30.7%)	161 (24.6%)	848 (27.8%)
No. of EA 'non-heterosexuals'[2]	446 (25%)	212 (34.8%)	204 (31.2%)	862 (28.3%)
No. of EA 'non-heterosexual' males	154 (8.6%)	63 (10.3%)	70 (10.7%)	287 (9.4%)
No. of EA 'non-heterosexual' females	292 (16.3%)	149 (24.5%)	134 (20.5%)	575 (18.9%)

[1] All percentages here are a percentage of the respective number of EA respondents for analysis. [2] All sexualities other than heterosexual were recoded and combined as non-heterosexual for analysis

Brief analysis was done to look at the spread of the sample between

the three data sets collected. The mean age of the combined

dataset was 21.21 years, with a standard deviation of 2.25 years, a

median age of 21 years and a range of 18-25 years. The mean ages of the individual datasets were not significantly different at 21.26, 21.09, and 21.18 years respectively.

Design

A retrospective survey was used to test the relationship between sexual development, pornography use and sexting. The main variables in the study were age of onset of pornography use, frequency of pornography use and age of onset of 19 sexual activities, including sending and receiving self-image nudity. Additional demographic variables were gender, current age, occupation, sexuality, and family dynamic.

Attempts to control extraneous variables of context and prejudice within the sexual development questions were made by including same-sex and opposite-sex questions to account for multiple sexualities. The questions were presented in this order: demographic, sexual development, sexting and pornography use. The questions concerning occupation, ethnicity and family dynamic accommodated 'other' and 'if other please state' responses to be inclusive. Similarly, with sexual orientation, the labels 'Bisexual, Heterosexual, Homosexual and Lesbian' were offered, and participants were asked to consider which of these options they identified with the most. This survey did not consider asexuality but did allow for the participants to offer 'N/A' as an answer if they had not experienced a sexual activity.

Materials

The survey (see Appendices 2A and 2B) was created via the online host 'Bristol Online Survey', a private research platform used by The University of Nottingham.

Demographic questions were asked regarding the gender, sexual orientation, ethnicity, occupation, family dynamic and age of first romantic relationship.

Sexual development questions were developed to expand upon previous research into sexual activity of young people by Schofield (1965). Responses were recorded as an approximation of age at which each experience (with opposite-sex or same-sex partners) occurred for the first time for that person.

Exchange of self-image nudity (sexting) questions centred on characteristics of use, such as who the images were shared with, the platform used to transmit images, and whether they were recognisable in the images.

'Pornography use' questions recorded approximations of age of onset, frequency of use, location of use, whether pornography was used alone or with others, and what categories were used.

Question types included multi-choice answer (with an 'Other' response where appropriate), Yes/No/I don't know responses and age-approximation questions.

Procedure

Before the survey was distributed, ethical clearance was granted by The University of Nottingham to ensure data were in keeping with the ethical guidelines of The British Psychological Society and the University Board of Ethics. On clicking the link to the survey, participants were presented with a summary of the research aims, confidentiality statement and information concerning their rights of withdrawal from the study.

The exclusion criteria (English speaking and over 18's only) were stated in the introductory information followed by forced-response tick box stating the participant had given informed consent to take part and was aged 18 or over.

Upon completion of the survey, participants were presented with a debrief of the study, repetition of contact details of the researcher and references for accessing relevant support (GP, counsellor, or Samaritan's helpline) if they found the survey affected or upset them.

Treatment of Data

Some measures were recoded for analysis. The variables recoded were: Sexuality (Heterosexual and Non-heterosexual), Occupational Status (Student and Non-Student), Sex Education (Primary and Secondary), Pornography Use (age 'under 12 years' and age '12 years and over'), Frequency of Pornography Use

(Daily/Weekly Use and Less-than-weekly Use), Opposite-sex Sexual Intercourse (Ages 9-15 years and 16-25 years) and Same-sex Sexual Intercourse (Ages 8-15 years and 16-25 years).

SPSS version 24.0 was used to carry out statistical analysis. A MANOVA analysis was attempted, but this resulted in considerable reduction in sample size due to the nature of the data. Therefore, the analyses for this study were conducted in a sequential format, using non-parametric methods for testing the research questions. Due to significant differences for gender and sexuality found in several of the variables measured (Tables 2.2 and 2.3) analyses were run separately for EA males and EA females, and each gender split into heterosexual findings and non-heterosexual findings.

Chi squared tests were used to examine associations between categorical variables and t-tests were used to explore the relation between a categorical variable and a continuous variable. Logistic regression was used to explore underage sex (less than 16 years) as a criterion variable and which predictor variables could correctly classify respondents into illegal and legal sex.

A bias for non-heterosexuals was found in the online sample collected, with 28.3% of the sample reporting their sexual identity was Gay, Lesbian, Bisexual or Other compared to the 2.64% UK 'norm' reported by the Office of National Statistics (ONS). This was especially found to be the case for females within this sample (18.9%) compared to 2.38% expected in UK population (ONS,

2017). Thus, respondents were analysed separately in terms of their sexuality.

Results

Descriptive Statistics - Univariate Analysis

It is of note, in contrast to the data collected on those who identified as heterosexuals, a higher proportion of females identified as non-heterosexual, endorsing responses of 'Bisexual', 'Lesbian', or 'Other' (66.7% of non-heterosexuals were female, and 33.3% were male). Overall, 79.5% of non-heterosexuals stated they were bisexual. Many non-heterosexuals within the sample, as with heterosexuals, were students (64.6%), and lived with both parents growing up (70.1%). Comparatively, 20.1% of non-heterosexuals in the sample were 18 years old, compared with 14.4% of heterosexuals. The mean age for non-heterosexuals within the sample was 21 years with a standard deviation of 2.30 years, and for heterosexuals was 21.30 years with a standard deviation of 2.20 years.

Heterosexuals. Appendix 2 shows sexting characteristics for heterosexuals within the sample. Overall, 78.5% of heterosexuals (82.5% of females and 75.9% of males) responded that they had engaged in sending and receiving nude or semi-nude images (sexting). Of those that answered the 'age first taken a nude or semi-nude image' question, 58% had taken a nude or semi-nude image of themselves under the age of 18 years old (55.6% males

and 61.2% females), and 51% sent a nude or semi-nude image of themselves under the age of 18 years old (49% males and 53.8% females). Most heterosexuals sent this first image to a boyfriend or girlfriend (69.8%). The most used mechanisms for sending a nude or semi-nude image were by text (35.3%) and Snapchat (26.3%). The content of the first image was most likely to be a picture of nude genitalia for males (40.1%) and nude breasts for females (35.1%). Most (71.4%) of heterosexuals reported that they were not recognisable in the image they sent, with 62.1% suggesting this image was not shared with other people, and 34.8% reporting that they did not know if the nude or semi-nude image was shared. Overall, 66.2% stated that other people did not have access to the sexting image other than the intended recipient, with 29.7% responding that they did not know if other people had access to the image.

Appendix 2D shows Pornography Use characteristics for heterosexuals within the sample. This shows that 97.2% of heterosexuals reported that they had used pornography (ever), 51.1% using pornography once per week or more, and 85.6% reporting that they currently used pornography. Additionally, 93.1% of the sample reported first viewing pornography under the age of 18 years old (99.1% of males and 82.9% of females). There is a difference between males and females in the frequency of pornography use with 92.8% of males using pornography at a frequency of weekly or greater compared to 46.4% of females.

For heterosexuals, most viewed pornography using an 'Internet Browser via Laptop or Computer' (35.5%), followed by 'Internet Browser via Mobile Phone' (27.1%). Overall, 90.9% reported watching pornography alone. A majority (79.7%) reported they thought pornography influences expectations of sexual behaviour, with 66.3% reporting that they thought pornography was addictive. The most frequent response for genre of pornography watched was 'Penetrative Sex' (1488 responses across both genders). Males' second most popular genre with 770 responses was the 'Teen' genre. Females' second most popular genre was 'BDSM (Bondage, Ritualistic Sex, Rough)' with 279 responses.

Non- Heterosexuals. Appendix 2C shows sexting characteristics for non-heterosexuals within the sample. Overall, 84.5% of non-heterosexuals (78.4% males and 87.5% females) reported that they had engaged in sending and receiving nude or semi-nude images (sexting). Of those that answered the 'age first taken a nude or semi-nude image' question, 66% had taken a nude or semi-nude image of themselves under the age of 18 years old, and 57.8% sent a nude or semi-nude age under the age of 18 years old. Many non-heterosexuals sent this first image to a boyfriend or girlfriend (62.3%). A proportion (24.2%) of non-heterosexual males reported the recipient of their first nude or semi-nude image of themselves was a stranger, in contrast to 14.7% of non-heterosexual females. The most used mechanisms for sending a nude or semi-nude image were by text (34.1%) and Snapchat

(19.7%). The content of the first image was most likely to be a picture of nude genitalia for males (45.5%) and nude breasts for females (38.2%). Altogether, 71.2% of non-heterosexuals reported that they were not recognisable in the image they sent. Around half (53.2%) indicated that this image was not shared with other people with 41.3% reporting they did not know if the nude or semi-nude image was shared. Overall, 54.4% stated that other people did not have access to this nude or semi-nude image other than the intended recipient, and 38.6% responded that they did not know if other people had access to the image.

Most (84.5%) non-heterosexuals reported that they had sent or received a nude or semi-nude image compared to 78.5% of heterosexuals. More non-heterosexuals reporting taking (66% under 18 years old) and sending (57.8% under 18 years old) nude or semi-nude images than heterosexuals (58% and 51% respectively). A proportion (9.5%) of heterosexuals reported the recipient of their first nude or semi-nude image of themselves was a stranger, in contrast to 17.6% for non-heterosexuals. The most notable difference for the 'stranger' response was between heterosexual males (9.2%) and non-heterosexual males (24.2%).

Appendix 2D shows pornography use characteristics for non-heterosexuals within the sample. Overall, 97.9% of non-heterosexuals reported that they had used pornography (ever), 89.1% reporting that they currently used pornography and 74.3% using pornography weekly or greater. There was a difference

between males and females in the frequency of pornography use with 92.3% of males using pornography at a frequency of weekly or greater compared to 65.3% of females. Overall, 93.9% of non-heterosexuals reported first viewing pornography under the age of 18 years old.

For non-heterosexuals, most viewed pornography using an 'Internet Browser via Laptop or Computer' (32.7%), followed by 'Internet Browser via Mobile Phone' (26.7%). As a group, 86.7% reported watching pornography alone. Altogether 81.6% of non-heterosexuals reported they thought pornography influences expectations of sexual behaviour, with 66.4% reporting that they thought pornography was addictive. The most frequent response for genre of pornography watched was 'Penetrative Sex' (541 responses across both genders). The second most popular genre for non-heterosexual males with 164 responses was the 'Gay (Male)' genre. Females' second most popular genre was 'BDSM (Bondage, Ritualistic Sex, Rough)' with 288 responses.

Just under half (46.4%) of heterosexual females reported weekly or greater frequency of pornography use compared to 65.3% of female non-heterosexuals. Overall, 82.9% heterosexual females reported first viewing pornography under the age of 18 years old compared to 91.50% of non-heterosexual females. Both non-heterosexual and heterosexual females' second most popular genre of pornography watched was 'BDSM (Bondage, Ritualistic Sex, Rough)'.

Heterosexual and non-heterosexual males reported similar results for pornography use and age of first experience of viewing pornography.

Inferential Statistics

Chi Square Analysis

Chi Square tests of independence were run to explore the differences between males and females across the variables measured (see Table 2.2). The variables included in analysis were, 'occupational status', 'family dynamic', 'sex education', 'first opposite-sex intercourse legality', 'first same-sex intercourse legality', 'sexting', 'first sexting age', 'first sexting recognisable', 'first sexting content', 'first sexting recipient', 'first sexting recipient share image', ever used pornography, 'currently use pornography', 'first pornography use age', 'frequency of porn use', 'pornography influences expectations', and 'pornography addictive'. A Bonferroni correction was used due to the number of tests used in analysis, significance levels for p values were adjusted accordingly.

Heterosexuals. Results of Chi-square tests of independence for gender for EA heterosexuals revealed significant differences between male and female heterosexuals for eight variables. Results are shown in detail in Table 2.2.

'Frequency of pornography use' ($X2$ (1, N =2127) =580.65, p <.00006 (equivalent to p<.001), with a large effect size) indicating

significantly more heterosexual males than heterosexual females use pornography frequently (i.e. on a daily to weekly basis). Heterosexual females commonly reported using pornography on a less-than-weekly basis.

'First use of pornography age' ($X2$ (1, N =2120) =29.30, p <.00006, with a medium effect size) indicating that significantly more heterosexual males used pornography under the age of 12 than heterosexual females. For both heterosexual males and females, a majority reported using pornography for the first time under 12 years old.

'Pornography influences expectations' ($X2$ (1, N =2127) =19.41, p <.00006, with a small effect size) indicating that significantly more heterosexual females than heterosexual males report believing that pornography influences expectations of sexual activity. For both heterosexual males and females, a majority reported that they believe pornography influences expectations of sexual activity.

Table 2.2: Results of Chi-square Tests of Independence for Gender for Emerging Adult (aged 18-25) Heterosexuals and Non-heterosexuals by Occupational Status, Family Dynamic, Sex Education, First Sexual Intercourse Legality (Opposite & Same sex), Sexting and Pornography Use.

Variables		Heterosexuals				Non-heterosexuals			
		Gender		$\chi 2$	Effect Size (Φ)	Gender		$\chi 2$	Effect Size (Φ)
		Male	Female			Male	Female		
Occupational Status	Student	829 (61.9)	555 (65.4)	2.87	Small (-.04)	190 (66.2)	367 (63.8)	0.47	Small (.02)
	Non-Student	511 (38.1)	293 (34.6)			97 (33.8)	208 (36.2)		
Family Dynamic	Nuclear Family	1045 (78.0)	673 (79.4)	.59	Small (-.02)	218 (76.0)	386 (67.1)	7.11	Small (.09)
	Non-Nuclear Family	295 (22.0)	175 (20.6)			69 (24.0)	189 (32.9)		
Sex Education	Primary School	584 (46.6)	440 (54.8)	13.00**	Small (-.08)	138 (51.3)	309 (58.3)	3.55	Small (-.07)
	Secondary School	668 (53.4)	363 (45.2)			131 (48.7)	221 (41.7)		
First Opposite-Sex Intercourse Legality	Under 16	150 (14.3)	121 (16.2)	1.24	Small (-.03)	32 (20.4)	117 (24.7)	1.21	Small (-.04)
	16 and Over	901 (85.7)	627 (83.8)			125 (79.6)	357 (75.3)		
First Same-Sex Intercourse Legality	Under 16	6 (17.1)	16 (28.6)	1.54	Small (-.13)	17 (12.6)	62 (23.6)	6.76	Small (-.13)
	16 and Over	29 (82.9)	40 (71.4)			118 (87.4)	201 (76.4)		
Sexting	Yes	1017 (75.9)	700 (82.5)	13.60**	Small (-.08)	225 (78.4)	503 (87.5)	12.03**	Small (-.12)
	No	323 (24.1)	148 (17.5)			62 (21.6)	72 (12.5)		
First Sexting Age	Under 16	165 (18.2)	163 (24.0)	8.09**	Small (-.07)	54 (26.1)	165 (33.8)	4.02	Small (-.08)
	16 and Over	742 (81.8)	515 (76.0)			153 (73.9)	323 (66.2)		
First Sexting Recognisable	Yes	262 (26.5)	219 (31.4)	4.76	Small (-.05)	44 (20.0)	163 (32.7)	11.95**	Small (-.13)
	No	725 (73.5)	478 (68.6)			176 (80.0)	336 (67.3)		
First Sexting Content	Nudity	97 (7.2)	38 (4.5)	6.82	Small (.06)	24 (8.4)	23 (4.0)	7.07	Small (.04)
	Clothed/Other	1243 (92.8)	810 (95.5)			263 (91.6)	552 (96.0)		
First Sexting Recipient	Stranger	90 (6.7)	69 (8.1)	1.56	Small (-.03)	53 (18.5)	73 (12.7)	5.12	Small (-.18)
	Known/ Modelling/Other	1250 (93.3)	779 (91.9)			234 (81.5)	502 (87.3)		
First Sexting Recipient Share Image	Yes	30 (2.2)	23 (2.7)	.49	Small (-.02)	12 (4.2)	28 (4.9)	0.21	Small (-.02)
	No/I Don't Know	1310 (97.8)	825 (97.3)			275 (95.8)	547 (95.1)		

Variables		Heterosexuals				Non-heterosexuals			
		Gender		χ 2	Effect Size (Φ)	Gender		χ 2	Effect Size (Φ)
		Male	Female			Male	Female		
Ever Used Pornography	Yes	1335 (99.6)	792 (93.4)	74.39***	Small (.18)	286 (99.7)	558 (97.0)	6.37	Small (.09)
	No	5 (0.4)	56 (6.6)			1 (0.3)	17 (3.0)		
Currently Use Pornography	Yes	1234 (92.1)	639 (75.4)	118.03***	Small (.23)	276 (96.2)	492 (85.6)	22.15***	Small (-.16)
	No	106 (7.9)	209 (24.6)			11 (3.8)	83 (14.4)		
First Pornography Use Age	Under 12	386 (29.0)	146 (18.5)	29.30***	Small (.12)	267 (94.0)	442 (79.9)	28.74***	Small (.19)
	12 and Over	944 (71.0)	644 (81.5)			17 (6.0)	111 (20.1)		
Frequency of Porn Use	Daily/Weekly	1240 (92.9)	368 (46.5)	580.65***	Large (.52)	264 (92.3)	364 (65.2)	72.79***	Small (.29)
	Less-than-Weekly	95 (7.1)	424 (53.5)			22 (7.7)	194 (34.8)		
Pornography Influences Expectations?	Yes	1025 (76.8)	671 (84.7)	19.41***	Small (-.1)	232 (81.1)	457 (81.9)	0.08	Small (-.01)
	No	310 (23.2)	121 (15.3)			54 (18.9)	101 (18.1)		
Pornography Addictive?	Yes	904 (67.7)	507 (64.0)	3.05	Small (-.04)	188 (65.7)	372 (66.7)	0.07	Small (-.01)
	No	431 (32.3)	285 (36.0)			98 (34.4)	186 (33.3)		

Note: df = 1, Numbers in parentheses indicate column percentages. Testing was conducted using Bonferroni adjusted alpha levels of .003 per test (.05/16; .01/16; 0.001/16)

* p <.003, ** p <.0006, *** p <.00006

Table 2.3: Results of Chi-square Tests of Independence for Sexuality for Emerging Adults (aged 18-25) by Gender, Occupational Status, Family Dynamic, Sex Education, First Sexual Intercourse Legality (Opposite & Same sex), Sexting and Pornography use.

Variables		Sexuality		χ 2	Effect Size (Φ)
		Heterosexual	Non-Heterosexual		
Gender	Male	1340 (61.2)	287 (33.3)	194.08***	Small (.25)
	Female	848 (38.8)	575 (66.7)		
Occupational Status	Student	1384 (63.3)	557 (64.6)	.497	Small (-.01)
	Non-Student	804 (36.7)	305 (35.4)		
Family Dynamic	Nuclear Family	1718 (78.5)	604 (70.1)	24.30***	Small (.09)
	Non-Nuclear Family	470 (21.5)	258 (29.9)		
Sex Education	Primary School	1024 (49.8)	447 (55.9)	8.61*	Small (-.06)
	Secondary School	1031 (50.2)	352 (44.1)		
First Opposite-Sex Intercourse Legality	Under 16	271 (15.1)	149 (23.6)	23.88***	Small (-.10)
	16 and Over	1528 (84.9)	482 (76.4)		
First Same-Sex Intercourse Legality	Under 16	22 (24.2)	79 (19.8)	.85	Small (.04)
	16 and Over	69 (75.8)	319 (80.2)		
Sexting	Yes	1717 (78.5)	728 (84.5)	13.91**	Small (-.07)
	No	471 (21.5)	134 (15.5)		
First Sexting Age	Under 16	328 (15.0)	219 (25.4)	45.58***	Small (-.12)
	16 and Over	1860 (85.0)	643 (74.6)		
First Sexting Recognisable	Yes	481 (28.6)	207 (28.8)	.01	Small (-.00)
	No	1203 (71.4)	512 (71.2)		
First Sexting Content	Nudity	1087 (64.3)	450 (62.5)	.72	Small (.02)
	Clothed/Other	603 (35.7)	270 (37.5)		
First Sexting Recipient	Stranger	159 (9.5)	126 (17.6)	31.33***	Small (-.11)
	Known/ Modelling/Other	1515 (90.5)	590 (82.4)		
First Sexting Recipient Share Image	Yes	53 (3.1)	40 (5.5)	8.10	Small (-.06)
	No/I Don't Know	1664 (96.9)	688 (94.5)		
Ever Used Pornography	Yes	2127 (97.2)	844 (97.9)	1.20	Small (-.02)
	No	61 (2.8)	18 (2.1)		
Currently Use Pornography	Yes	1873 (85.6)	768 (89.1)	6.49	Small (-.05)
	No	315 (14.4)	94 (10.9)		
First Pornography Use Age	Under 12	532 (25.1)	232 (27.7)	2.16	Small (-.03)
	12 and Over	1588 (74.9)	605 (72.3)		
Frequency of Porn Use	Daily/Weekly	1608 (75.6)	628 (74.4)	.46	Small (.01)
	Less-than-Weekly	519 (24.4)	216 (25.6)		
Pornography Influences Expectations?	Yes	1696 (79.7)	689 (81.6)	1.38	Small (-.02)
	No	431 (20.3)	(18.4)		
Pornography Addictive?	Yes	1411 (66.3)	560 (66.4)	.00	Small (.00)
	No	716 (33.7)	284 (33.6)		

Note: df = 1, Numbers in parentheses indicate column percentages. Testing was conducted using Bonferroni adjusted alpha levels of .003 per test (.05/16; .01/16; 0.001/16).
* p <.003, ** p <.0006, *** p <.00006

'Currently use pornography' ($X2$ (1, N =2188) =118.03, p <.00006, with a small effect size) indicating that significantly more heterosexual males report current use of pornography than heterosexual females. Most heterosexual males and females reported that they currently use pornography over those who reported no current use.

'Ever used pornography' ($X2$ (1, N =2188) =74.39, p <.00006, with a small effect size) indicating that significantly more heterosexual males report having ever used pornography than heterosexual females. For both heterosexual males and females, a majority reported that they had ever used pornography over those who reported that they had not.

'Sexting' ($X2$ (1, N =2188) =13.60, p <.0006 (equivalent to p<.01), with a small effect size) indicating that significantly more heterosexual females report having ever engaged in sexting than heterosexual males. For both heterosexual males and females, a majority reported that they had ever engaged in sexting over those who reported that they had not.

'Sex education' ($X2$ (1, N =2055) =13.00, p <.0006, with a small effect size) indicating that significantly more heterosexual females reported having received sex education in primary school than heterosexual males, who more commonly reported having received sex education in secondary school.

Non-Heterosexuals. Results of Chi-square tests of independence for gender for EA non-heterosexuals revealed significant differences between male and female non-heterosexuals for five variables. Results are shown in detail in Table 2.2.

'Frequency of pornography use' ($X2$ (1, N =844) =72.79, p <.00006 (equivalent to p<.001), with a small effect size) indicating significantly more non-heterosexual males than non-heterosexual females use pornography frequently (i.e. on a daily to weekly basis). For both non-heterosexual males and females, a majority reported that they used pornography on a daily to weekly basis.

'First use of pornography age' ($X2$ (1, N =837) =28.74, p <.00006, with a small effect size) indicating that significantly more non-heterosexual males used pornography under the age of 18 than non-heterosexual females. For both non-heterosexual males and females, a majority reported using pornography for the first time under 18 years old.

'Currently use pornography' ($X2$ (1, N =862) =22.15, p <.00006, with a small effect size) indicating that significantly more non-heterosexual males report current use of pornography than non-heterosexual females. A majority of both non-heterosexual males and females reported that they currently use pornography over those who reported no current use.

'Sexting' ($X2$ (1, N =862) =12.03, p <.0006 (equivalent to p<.01), with a small effect size) indicating that significantly more non-

heterosexual females report having ever engaged in sexting than non-heterosexual males. For both non-heterosexual males and females, a majority reported that they had ever engaged in sexting over those who reported that they had not.

'First Sexting Recognisable' (X2 (1, N =719) =11.95, p <.0006, with a small effect size) indicating that significantly more non-heterosexual females reported not being recognisable in the first sexting image they sent than non-heterosexual males. For both non-heterosexual males and females, a majority reported that they were not recognisable in the first sexting image they sent over those who reported that they had been recognisable.

Therefore, Males and females were analysed separately.

Independent Samples t-tests

Independent samples t-tests were performed to compare age of first viewing pornography (Under12/12 & over) with age of first experience of nineteen different sexual activities using the EA sample. These t-tests were undertaken separately for heterosexual males, heterosexual females, non-heterosexual males and non-heterosexual females with the results shown in Tables 2.2, 2.3, 2.4 and 2.5 respectively.

Independent samples t-tests were then performed to compare age of first sending a nude or semi-nude image with a) first sexual intercourse (Under 16/16 & Over) and b) age of first viewing

pornography (Under12/12 & over), to compare first receiving sex education (Primary/Secondary) with a) age of onset of sexual intercourse and b) age of onset of pornography use, and to compare family dynamic (Nuclear/Non-Nuclear) with a) age of onset of sexual intercourse and b) age of onset of pornography use.

Hedges' *g* was used as a measure of effect size as it is weighted according to the relative size of each sample (i.e. Under 12/12 & over) as the sample sizes were different.

Heterosexual Males Sexual Activity. Results of the independent samples t-tests for heterosexual males are shown in Table 2.4. There was a significant difference in the scores for 12 of the 19 sexual activities, with all 12 having small effect sizes. The significant results were 'First Romantic Relationship', 'Sex Education', 'Show Genitals', 'Kiss Member of Opposite Sex' 'Deeply Kiss Opposite Sex', 'Chest/Breast Over Clothes Opposite Sex', 'Chest/Breast Under Clothes Opposite Sex', 'Manipulate Genitals Opposite Sex', 'Oral Intercourse Opposite Sex', 'Take Nude/Semi-Nude Image' and 'Sent Nude/Semi-Nude Image'. All significant results showed being under 12 when first viewing pornography equates to a lower age of first experience of these sexual activities.

Heterosexual Females Sexual Activity. Results of the independent samples t-tests for heterosexual females are shown in Table 2.5. There was a significant difference in the scores for 9 of the 19 sexual activities, with one having a large effect size

('Manipulate Genitals Same Sex'), and one having a medium effect size ('Chest Breast Under Clothes Same Sex'). All significant results showed being under 12 when first viewing pornography equates to a lower age of first experience of each of these 9 sexual activities. Out of the significant results, five were same-sex activities and none were opposite sex activities.

Non-heterosexual Males Sexual Activity. Results of the independent samples t-tests for non-heterosexual males are shown in Table 2.6. There was a significant difference in the scores for sixteen of the nineteen sexual activities, with four having medium effect sizes ('Deeply Kiss Opposite Sex', 'Chest/Breast Over Clothes Opposite Sex', 'Chest/Breast Under Clothes Opposite Sex' and 'Take Nude/Semi-Nude Image of Self'). The three non-significant results were all same-sex sexual activities. Each of these significant results showed being under 12 when first viewing pornography equates to a lower age of first experience of these sexual activities.

Non-heterosexual Females Sexual Activity. Results of the independent samples t-tests for non-heterosexual females are shown in Table 2.7. There was a significant difference in the scores for 17 of the 19 sexual activities, with one having a medium effect sizes ('Take Nude/Semi-Nude Image of Self'). All significant results showed being under 12 when first viewing pornography equates to a lower age of first experience of each of these 17 sexual activities. The activities with a non-significant result were 'Sex Education' and 'Sexual Intercourse Same Sex'.

Table 2.4: Independent Samples t-tests - Mean Age of First Experience of Sexual Activity by Age of First Viewing Pornography for Heterosexual Males (aged 18-25)

Sexual Activity	Age of First Viewing Pornography			t	df	Effect Size (Hedges' *g*)
	N	Under 12	12 & Over			
1. First Romantic Relationship	1202	15.89 (2.80)	16.48 (2.49)	-3.41***	579.20	Small (0.21)
2. Sex Education	1267	11.28 (1.97)	11.94 (2.23)	-4.93***	1265	Small (0.33)
3. Show Genitals	1187	14.20 (4.41)	15.48 (3.96)	-4.72***	608.71	Small (0.29)
4. Kiss Member of Opposite Sex	1231	13.87 (4.17)	14.82 (3.59)	-3,76***	582.34	Small (0.23)
5. Kiss Member of Same Sex	276	15.66 (4.90)	16.57 (4.27)	-1.48	145.71	Small (0.19)
6. Deeply Kiss Opposite Sex	1185	15.57 (2.95)	16.28 (2.51)	-3.91***	544.73	Small (0.24)
7. Deeply Kiss Same Sex	91	17.67 (4.00)	17.51 (2.92)	.21	89	Small (0.04)
8. Chest/Breast Over Clothes Opposite Sex	1192	15.65 (2.76)	16.32 (2.41)	-3.94***	569.98	Small (0.24)
9. Chest/Breast Over Clothes Same Sex	143	14.69 (4.54)	15.52 (3.76)	-1.15	141	Small (0.18)
10. Chest/Breast Under Clothes Opposite Sex	1159	16.10 (2.75)	16.80 (2.36)	-4.09***	545.96	Small (0.25)
11. Chest/Breast Under Clothes Same Sex	88	15.26 (5.07)	16.48 (3.96)	-1.22	86	Small (0.24)
12. Manipulate Genitals Opposite Sex	1152	16.31 (2.94)	17.17 (2.29)	-4.79***	510.64	Small (0.29)
13. Manipulate Genitals Same Sex	89	14.73 (5.10)	16.55 (3.72)	-1.80	52.24	Small (0.35)
14. Sexual Intercourse Opposite Sex	1046	17.37 (2.38)	17.86 (2.17)	-3.10**	515.16	Small (0.21)
15. Sexual Intercourse Same Sex	35	17.75 (4.33)	18.65 (2.84)	-.74	33	Small (0.20)
16. Oral Intercourse Opposite Sex	1083	16.78 (2.69)	17.53 (2.24)	-4.39***	498.57	Small (0.28)
17. Oral Intercourse Same Sex	74	15.22 (4.65)	16.91 (3.68)	-1.73	72	Small (0.36)
18. Take Nude/Semi-Nude Image of Self	917	16.51 (2.85)	17.59 (2.48)	-5.49***	455.17	Small (0.38)
19. Sent Nude/Semi-Nude Image of Self	900	17.16 (2.76)	17.96 (2.47)	-4.29***	898	Small (0.29)

Note. * = p< .05, ** = p< .01, *** = p< .001 (Sig. 2 tailed) Standard Deviations appear in parentheses after means. The outcome variables were found to be normally distributed and equal variances are assumed based upon results of Levene's test for equality of variances, with the exception of the activities 1, 3, 4, 5, 6, 8, 10, 12, 13, 14, 16 and 18 where Levene's test was violated thus a t-statistic not assuming homogeneity of variance was computed.

Table 2.5: Independent Samples t-tests - Mean Age of First Experience of Sexual Activity by Age of First Viewing Pornography for Heterosexual Females (aged 18-25)

Sexual Activity	Age of First Viewing Pornography			t	df	Effect Size (Hedges' g)
	N	Under 12	12 & Over			
1. First Romantic Relationship	759	16.15 (2.70)	16.26 (2.39)	-.49	757	Small (0.04)
2. Sex Education	757	10.96 (2.59)	11.54 (2.11)	-2.85**	755	Small (0.23)
3. Show Genitals	761	15.19 (4.38)	16.03 (3.35)	-2.14*	183.94	Small (0.20)
4. Kiss Member of Opposite Sex	768	14.31 (3.82)	14.67 (3.41)	-1.11	766	Small (0.10)
5. Kiss Member of Same Sex	437	13.89 (4.35)	15.51 (3.99)	-3.21**	435	Small (0.38)
6. Deeply Kiss Opposite Sex	756	16.02 (2.73)	15.97 (2.34)	.20	188.21	Small (0.02)
7. Deeply Kiss Same Sex	264	15.28 (3.24)	16.64 (2.91)	-2.90**	262	Small (0.43)
8. Chest/Breast Over Clothes Opposite Sex	738	16.01 (2.67)	16.07 (2.34)	-.26	736	Small (0.02)
9. Chest/Breast Over Clothes Same Sex	234	14.38 (3.74)	15.84 (3.03)	-2.37*	53.34	Small (0.40)
10. Chest/Breast Under Clothes Opposite Sex	724	16.53 (2.43)	16.62 (2.19)	-.44	722	Small (0.04)
11. Chest/Breast Under Clothes Same Sex	132	14.15 (3.88)	16.48 (2.79)	-3.52**	130	Medium (0.62)
12. Manipulate Genitals Opposite Sex	748	16.63 (2.49)	16.85 (2.25)	-1.04	746	Small (0.09)
13. Manipulate Genitals Same Sex	93	12.45 (4.40)	17.01 (3.51)	-4.88***	91	Large (1.05)
14. Sexual Intercourse Opposite Sex	702	17.37 (2.16)	17.53 (2.19)	-.77	700	Small (0.07)
15. Sexual Intercourse Same Sex	55	15.56 (4.69)	17.93 (2.94)	-2.00	53	Medium (0.52)
16. Oral Intercourse Opposite Sex	725	17.12 (2.34)	17.19 (2.20)	-.37	723	Small (0.03)
17. Oral Intercourse Same Sex	51	15.00 (5.03)	17.73 (3.22)	-1.92	49	Medium (0.55)
18. Take Nude/Semi-Nude Image of Self	642	16.06 (2.73)	16.92 (2.38)	-3.47**	640	Small (0.32)
19. Sent Nude/Semi-Nude Image of Self	636	16.68 (2.66)	17.41 (2.49)	-2.82**	634	Small (0.28)

Note. * = p< .05, ** = p< .01, *** = p< .001 (Sig. 2 tailed) Standard Deviations appear in parentheses after means. The outcome variables were found to be normally distributed and equal variances are assumed based upon results of Levene's test for equality of variances, with the exception of activity 3, 6, and 9 where Levene's test was violated thus a t-statistic not assuming homogeneity of variance was computed.

Table 2.6: Independent Samples t-tests - Mean Age of First Experience of Sexual Activity by Age of First Viewing Pornography for Non-Heterosexual Males (aged 18-25)

Sexual Activity	Age of First Viewing Pornography			t	df	Effect Size (Hedges' g)
	N	Under 12	12 & Over			
1. First Romantic Relationship	242	15.64 (2.57)	16.40 (2.59)	-2.04*	240	Small (0.29)
2. Sex Education	270	11.08 (2.16)	11.85 (2.08)	-2.71**	268	Small (0.36)
3. Show Genitals	246	13.06 (4.18)	14.70 (4.53)	-2.63**	244	Small (0.39)
4. Kiss Member of Opposite Sex	227	13.11 (3.29)	14.71 (3.78)	-2.99**	225	Small (0.48)
5. Kiss Member of Same Sex	192	15.57 (3.94)	16.95 (3.38)	-2.42*	190	Small (0.35)
6. Deeply Kiss Opposite Sex	200	15.17 (2.13)	16.30 (2.43)	-2.99**	198	Medium (0.53)
7. Deeply Kiss Same Sex	164	16.93 (2.72)	17.67 (2.80)	-1.47	162	Small (0.27)
8. Chest/Breast Over Clothes Opposite Sex	203	14.75 (2.27)	16.23 (2.74)	-3.69***	201	Medium (0.65)
9. Chest/Breast Over Clothes Same Sex	167	16.52 (2.80)	17.39 (2.83)	-1.72	165	Small (0.31)
10. Chest/Breast Under Clothes Opposite Sex	186	15.25 (2.16)	16.59 (2.69)	-3.26**	184	Medium (0.62)
11. Chest/Breast Under Clothes Same Sex	160	16.62 (2.64)	17.50 (3.21)	-1.53	158	Small (0.33)
12. Manipulate Genitals Opposite Sex	178	15.48 (2.48)	16.63 (2.68)	-2.65**	176	Small (0.46)
13. Manipulate Genitals Same Sex	168	15.59 (3.51)	17.28 (3.14)	-2.91**	166	Small (0.48)
14. Sexual Intercourse Opposite Sex	155	16.39 (2.51)	17.50 (2.18)	-2.74**	153	Small (0.44)
15. Sexual Intercourse Same Sex	133	16.80 (3.36)	18.20 (2.49)	-2.60*	131	Small (0.41)
16. Oral Intercourse Opposite Sex	164	16.15 (2.40)	17.10 (2.53)	-2.19*	162	Small (0.39)
17. Oral Intercourse Same Sex	161	16.36 (3.43)	17.56 (2.88)	-2.16*	159	Small (0.35)
18. Take Nude/Semi-Nude Image of Self	212	15.64 (2.16)	17.18 (2.52)	-4.25***	210	Medium (0.71)
19. Sent Nude/Semi-Nude Image of Self	206	16.19 (1.97)	17.64 (2.71)	-4.29***	156.21	Small (0.29)

Note. * = p< .05, ** = p< .01, *** = p< .001 (Sig. 2 tailed) Standard Deviations appear in parentheses after means. In all cases the outcome variables were found to be normally distributed and equal variances are assumed based upon results of Levene's test for equality of variances, with the exception of activity 19 where Levene's test was violated thus a t-statistic not assuming homogeneity of variance was computed.

Table 2.7: Independent Samples t-tests - Mean Age of First Experience of Sexual Activity by Age of First Viewing Pornography for Non-Heterosexual Females (aged 18-25)

Sexual Activity	Age of First Viewing Pornography			t	df	Effect Size (Hedges' *g*)
	N	Under 12	12 & Over			
1. First Romantic Relationship	529	14.77 (2.56)	15.57 (2.31)	-3.43***	527	Small (0.31)
2. Sex Education	517	11.07 (1.86)	11.29 (2.27)	-1.02	515	Small (0.12)
3. Show Genitals	513	13.58 (4.09)	15.11 (3.82)	-3.97***	511	Small (0.38)
4. Kiss Member of Opposite Sex	514	13.25 (3.61)	14.02 (3.55)	-2.18*	512	Small (0.21)
5. Kiss Member of Same Sex	455	13.80 (3.86)	15.62 (3.26)	-4.69***	199.41	Small (0.48)
6. Deeply Kiss Opposite Sex	498	14.65 (2.77)	15.60 (2.51)	-3.66***	496	Small (0.34)
7. Deeply Kiss Same Sex	398	15.31 (3.10)	16.34 (2.73)	-3.23**	396	Small (0.33)
8. Chest/Breast Over Clothes Opposite Sex	490	14.75 (2.76)	15.67 (2.43)	-3.60***	488	Small (0.34)
9. Chest/Breast Over Clothes Same Sex	409	15.19 (3.31)	16.20 (2.76)	-2.94**	186.51	Small (0.31)
10. Chest/Breast Under Clothes Opposite Sex	480	15.35 (2.65)	16.25 (2.28)	-3.71***	478	Small (0.34)
11. Chest/Breast Under Clothes Same Sex	341	15.34 (3.66)	16.83 (2.72)	-3.24***	155.08	Small (0.41)
12. Manipulate Genitals Opposite Sex	486	15.44 (2.72)	16.32 (2.45)	-3.47***	484	Small (0.33)
13. Manipulate Genitals Same Sex	291	15.44 (3.92)	17.02 (2.74)	-3.45***	127.52	Small (0.41)
14. Sexual Intercourse Opposite Sex	461	16.38 (2.34)	17.20 (2.26)	-3.40***	459	Small (0.35)
15. Sexual Intercourse Same Sex	257	16.85 (3.19)	17.48 (2.53)	-1.68	255	Small (0.20)
16. Oral Intercourse Opposite Sex	473	15.82 (2.64)	16.78 (2.43)	-3.75***	471	Small (0.37)
17. Oral Intercourse Same Sex	258	16.18 (3.62)	17.56 (2.48)	-3.10**	111.49	Small (0.39)
18. Take Nude/Semi-Nude Image of Self	481	14.84 (2.73)	16.68 (2.61)	-6.79***	479	Medium (0.68)
19. Sent Nude/Semi-Nude Image of Self	476	14.77 (2.56)	15.57 (2.31)	-4.06***	204.53	Small (0.31)

Note. * = p< .05, ** = p< .01, *** = p< .001 (Sig. 2 tailed) Standard Deviations appear in parentheses after means. In all cases the outcome variables were found to be normally distributed and equal variances are assumed based upon results of Levene's test for equality of variances, with the exception of activity 5, 9, 11, 13, 17 and 19 where Levene's test was violated thus a t-statistic not assuming homogeneity of variance was computed.

Heterosexual Males Sexting. An independent samples t-test was performed to compare age of first opposite-sex sexual intercourse (Under 16/16 & over) with age of first experience of sending nude or semi-nude image of self for heterosexual males. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test ($F_{(824)} = .58$, $p = .45$). There was a significant difference in scores for under 16 (M=16.12, SD=2.38) and 16 & over (M=18.08, SD=2.55; $t_{(824)} = -8.33$, $p < 0.001$, two-tailed). The magnitude of the difference in the means (mean difference = -1.97, 95% CI: -2.43, -1.50) and the effect size was medium (Hedges' $g = 0.77$).

An independent samples t-test was performed to compare age of first viewing pornography (Under 12/12 & over) with age of first experience of sending nude or semi-nude image of self for heterosexual males. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test ($F_{(898)} = 3.45$, $p = .06$). There was a significant difference in scores for under 12 (M=17.16, SD=2.76) and 12 & over (M=18.00, SD=2.47; $t_{(898)} = -4.29$, $p < 0.001$, two-tailed). The magnitude of the difference in the means (mean difference = -.80, 95% CI: -1.17, -.43) and the effect size was small (Hedges' $g = 0.33$).

Heterosexual Females Sexting. An independent samples t-test was performed to compare age of first opposite-sex sexual intercourse (Under 16/16 & over) with age of first experience of

sending nude or semi-nude image of self for heterosexual females. Equal variances were not assumed based upon results of Levene's test (F (173.58) =4.10, p=.04) thus a t-statistic not assuming homogeneity of variance was computed. There was a significant difference in scores for under 16 (M=15.56, SD=2.16) and 16 & over (M=17.69, SD=2.47; t (173.58) =-9.13, p<0.001, two-tailed). The magnitude of the difference in the means (mean difference = -2.12, 95% CI: -2.58, -1.66) and the effect size was large (Hedges' g = 0.88).

An independent samples t-test was performed to compare age of first viewing pornography (Under 12/12 & over) with age of first experience of sending nude or semi-nude image of self for heterosexual females. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test (F (634) =.06, p=.80). There was a significant difference in scores for under 12 (M=16.68, SD=2.66) and 12 & over (M=17.41, SD=2.49; t (634) =-2.82, p<0.01, two-tailed). The magnitude of the difference in the means (mean difference = -.73, 95% CI: -1.24, -.22) and the effect size was small (Hedges' g = 0.29).

Non-Heterosexual Males Sexting. An independent samples t-test was performed to compare age of first same-sex sexual intercourse (Under 16/16 & over) with age of first experience of sending nude or semi-nude image of self for non-heterosexual males. The outcome variable was found to be normally distributed

and equal variances are assumed based upon results of Levene's test (F (113) =4.08, p=.05). There was a significant difference in scores for under 16 (M=15.07, SD=1.58) and 16 & over (M=17.47, SD=2.49; t (113) =-3.62, p<0.001, two-tailed). The magnitude of the difference in the means (mean difference = -2.40, 95% CI: -3.72, -1.09) and the effect size was large (Hedges' g = 1.00).

An independent samples t-test was performed to compare age of first viewing pornography (Under 12/12 & over) with age of first experience of sending nude or semi-nude image of self for non-heterosexual males. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test (F (204) =2.55, p=.11). There was a significant difference in scores for under 12 (M=17.01, SD=2.43) and 12 & over (M=20.33, SD=3.14; t (898) =-4.51, p<0.001, two-tailed). The magnitude of the difference in the means (mean difference = -3.32, 95% CI: -4.78, -1.87) and the effect size was large (Hedges' g = 1.34).

Non-Heterosexual Females Sexting. An independent samples t-test was performed to compare age of first same-sex sexual intercourse (Under 16/16 & over) with age of first experience of sending nude or semi-nude image of self for non-heterosexual females. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test (F (232) =05, p=.83). There was a significant difference in scores for under 16 (M=15.36, SD=2.84) and 16 & over (M=16.52,

SD=2.76; t (113) =-3.39, p<0.01, two-tailed). The magnitude of the difference in the means (mean difference = -1.45, 95% CI: -2.30, -.61) and the effect size was small (Hedges' g = 0.42).

An independent samples t-test was performed to compare age of first viewing pornography (Under 12/12 & over) with age of first experience of sending nude or semi-nude image of self for non-heterosexual males. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test (F (474) =1.82, p=.18). There was a significant difference in scores for under 12 (M=16.58, SD=2.73) and 12 & over (M=18.13, SD=2.52; t (474) =-4.97, p<0.0001, two-tailed). The magnitude of the difference in the means (mean difference = -1.55, 95% CI: -2.17, -.94) and the effect size was medium (Hedges' g = 0.58).

Heterosexual Males Family Dynamic An independent samples t-test was performed to compare family dynamic whilst growing up (Nuclear/Non-Nuclear) with age of first sexual intercourse for heterosexual males. Equal variances were not assumed based upon results of Levene's test (F (318.24) =9.91, p<0.01) thus a t-statistic not assuming homogeneity of variance was computed. There was no significant difference in age, t (318.24) =1.24, p=.22, two-tailed) for nuclear family dynamic (M=17.76, SD=2.17) and non-nuclear family dynamic (M=17.54, SD=2.61).

An independent samples t-test was performed to compare family dynamic whilst growing up (Nuclear/Non-Nuclear) with age of onset of pornography use for heterosexual males. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test (F (1328) =.04, p=.85). There was a significant difference in age for nuclear family dynamic (M=12.49, SD=2.07) and non-nuclear family dynamic (M=11.87, SD=2.05; t (1328) =4.56, p<0.0001, two-tailed). The magnitude of the difference in the means (mean difference = .62, 95% CI: .35, .89) and the effect size was small (Hedges' *g* = 0.30).

Heterosexual Females Family Dynamic An independent samples t-test was performed to compare family dynamic whilst growing up (Nuclear/Non-Nuclear) with age of first sexual intercourse for heterosexual females. Equal variances were not assumed based upon results of Levene's test (F (225.01) =9.46, p<0.01) thus a t-statistic not assuming homogeneity of variance was computed. There was no significant difference in age, t (225.01) =1.69, p=.09, two-tailed) for nuclear family dynamic (M=17.59, SD=2.06) and non-nuclear family dynamic (M=17.23, SD=2.47).

An independent samples t-test was performed to compare family dynamic whilst growing up (Nuclear/Non-Nuclear) with age of onset of pornography use for heterosexual females. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test (F (788) =.01, p=.92).

There was a significant difference in age for nuclear family dynamic (M=14.33, SD=3.36) and non-nuclear family dynamic (M=13.73, SD=3.47; t (788) =2.01, p<0.05, two-tailed). The magnitude of the difference in the means (mean difference = .60, 95% CI: .01, 1.18) and the effect size was small (Hedges' g = 0.18).

Non-Heterosexual Males Family Dynamic An independent samples t-test was performed to compare family dynamic whilst growing up (Nuclear/Non-Nuclear) with age of first sexual intercourse for non-heterosexual males. Equal variances were not assumed based upon results of Levene's test (F (41.07) =7.60, p=.01) thus a t-statistic not assuming homogeneity of variance was computed. There was no significant difference in age, t (41.07) =1.56, p=.13, two-tailed) for nuclear family dynamic (M=18.10, SD=2.39) and non-nuclear family dynamic (M=17.03, SD=3.68).

An independent samples t-test was performed to compare family dynamic whilst growing up (Nuclear/Non-Nuclear) with age of onset of pornography use for non-heterosexual males. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test (F (282) =2.52, p=.11). There was no significant difference in age, t (282) =.28, p=.78, two-tailed) for nuclear family dynamic (M=12.31, SD=2.14) and non-nuclear family dynamic (M=12.22, SD=2.78).

Non-Heterosexual Females Family Dynamic An independent samples t-test was performed to compare family

dynamic whilst growing up (Nuclear/Non-Nuclear) with age of first sexual intercourse for non-heterosexual females. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test (F (261) =1.84, p=.18). There was no significant difference in age, t (261) =1.00, p=.32, two-tailed) for nuclear family dynamic (M=17.40, SD=2.59) and non-nuclear family dynamic (M=17.05, SD=2.95).

An independent samples t-test was performed to compare family dynamic whilst growing up (Nuclear/Non-Nuclear) with age of onset of pornography use for non-heterosexual females. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test (F (551) =1.33, p=.25). There was a significant difference in scores for nuclear family dynamic (M=13.56, SD=2.84) and non-nuclear family dynamic (M=12.44, SD=3.00; t (551) =4.32, p<0.0001, two-tailed). The magnitude of the difference in the means (mean difference = 1.13, 95% CI: .61, 1.64) and the effect size was small (Hedges' *g* = 0.40).

Heterosexual Males Sex Education. An independent samples t-test was performed to compare age of first receiving sex education (Primary/Secondary) with age of first sexual intercourse for heterosexual males. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test (F (986) =2.12, p=.15). There was no significant difference in age, t (986) =-1.35, p=.18, two-tailed) for

primary school (M=17.58, SD=2.31) and secondary school (M=17.77, SD=2.15) sex education.

An independent samples t-test was performed to compare age of first receiving sex education (Primary/Secondary) with age of onset of pornography use for heterosexual males. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test (F (1241) =.08, p=.78). There was a significant difference in scores for primary school (M=12.06, SD=2.05) and secondary school (M=12.65, SD=1.99; t (1241) =-5.14, p<0.0001, two-tailed). The magnitude of the difference in the means (mean difference = -.59, 95% CI: -.82, -.36) and the effect size was small (Hedges' g = 0.29).

Heterosexual Females Sex Education. An independent samples t-test was performed to compare age of first receiving sex education (Primary/Secondary) with age of first sexual intercourse for heterosexual females. Equal variances were not assumed based upon results of Levene's test F (706.78) =5.86, p=.02) thus a t-statistic not assuming homogeneity of variance was computed. There was no significant difference in age, t (706.78) =-1.20, p=.23, two-tailed) for primary school (M=17.41, SD=2.33) and secondary school (M=17.61, SD=1.99) sex education.

An independent samples t-test was performed to compare age of first receiving sex education (Primary/Secondary) with age of onset of pornography use for heterosexual females. The outcome variable

was found to be normally distributed and equal variances are assumed based upon results of Levene's test (F (744) =.81, p=.37). There was a significant difference in scores for primary school (M=13.88, SD=3.41) and secondary school (M=14.62, SD=3.26; t (744) =-3.03, p<0.01, two-tailed). The magnitude of the difference in the means (mean difference = -.74, 95% CI: -1.23, -.26) and the effect size was small (Hedges' g = 0.22).

Non-Heterosexual Males Sex Education. An independent samples t-test was performed to compare age of first receiving sex education (Primary/Secondary) with age of first sexual intercourse for non-heterosexual males. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test (F (128) =.08, p=.78). There was no significant difference in age, t (128) =-.20, p=.84, two-tailed) for primary school (M=17.71, SD=2.76) and secondary school (M=17.81, SD=2.85) sex education.

An independent samples t-test was performed to compare age of first receiving sex education (Primary/Secondary) with age of onset of pornography use for non-heterosexual males. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test (F (264) =1.21, p=.27). There was a significant difference in scores for primary school (M=11.88, SD=1.92) and secondary school (M=12.75, SD=2.45; t (264) =-3.23, p<0.01, two-tailed). The magnitude of

the difference in the means (mean difference = -.87, 95% CI: -1.40, -.34) and the effect size was small (Hedges' g = 0.40).

Non-Heterosexual Females Sex Education. An independent samples t-test was performed to compare age of first receiving sex education (Primary/Secondary) with age of first sexual intercourse for non-heterosexual females. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test (F (245) =1.24, p=.27). There was no significant difference in age, t (245) =-1.47, p=.14, two-tailed) for primary school (M=17.12, SD=2.84) and secondary school (M=17.63, SD=2.60) sex education.

An independent samples t-test was performed to compare age of first receiving sex education (Primary/Secondary) with age of onset of pornography use for non-heterosexual males. The outcome variable was found to be normally distributed and equal variances are assumed based upon results of Levene's test (F (508) =1.13, p=.29). There was no significant difference in age, t (508) =-1.55, p=.12, two-tailed) for primary school (M=12.97, SD=2.79) and secondary school (M=13.37, SD=2.92) sex education.

Multi-Variate Analysis

Binary Logistic Regression

Heterosexual Males. Variables that were identified to have significant associations for heterosexual males that have sexual

intercourse with the opposite sex under the age of 16 years old (illegal) or 16 years and over (legal) are shown in Appendix 2E. A binary logistic regression analysis was conducted using these variables to predict the categorical outcome of opposite-sex sexual intercourse legality ('under 16 years old' or '16 years old and over') for heterosexual males. Categorical predictors used were occupation (student or non-student), family dynamic (nuclear family or non-nuclear family), age of sex education (primary or secondary), ever sent or received nude/semi-nude image (yes or no), age first sent nude/semi-nude image (under 16 or 16 and over), first sexting image sent content (nudity or clothed/other), recipient of first sent sexting image (stranger or known/other), age first view pornography (under 12 or 12 and over), and pornography influence sexual activity expectations (yes or no). Continuous predictors used were age first take nude/semi-nude image of self, age first sent nude/semi-nude image of self and age first view pornography.

Assumption Tests. The dependent variable (opposite-sex legality) was measured on a dichotomous scale ('under 16 years old' and '16 years old and over'). There were three continuous independent variables and nine categorical independent variables. There was independence of observations (each participant counted as a single observation) and the dependant variable (opposite sex legality) had mutually exclusive and exhaustive categories ('under 16 years old' and '16 years old and over'). Assumptions for a large sample size were met.

Linearity of the logit was tested for using the Box-Tidwell (1962) procedure in SPSS for the three continuous predictors. All three interactions have significance values greater than .05, indicating that the assumption of linearity of the logit has been met for the continuous variables 'Age First Take Nude/Semi-nude Image of Self', 'Age First Send Nude/Semi-nude Image of Self' and 'Age First View Pornography'.

The continuous predictor variable 'age first take nude/semi-nude image of self' was removed as it was found to have collinearity with 'age first sent nude/semi-nude image of self' leaving a total of two continuous and nine categorical predictor variables for analysis.

Heterosexual Males Model. A test of the full model against a constant only model was statistically significant, $X^2 (10) =127.58$, *p*<.0001. This indicates the predictors as a set reliably distinguished between 'under 16' and '16 and over' opposite-sex sexual intercourse. Nagelkerke's R^2 of .25 indicated the model explains roughly 25% of the variation in the outcome. Prediction success overall is shown in Table 2.9. The Wald criterion (see Table 2.8) demonstrated the continuous variable 'age first sent nude/semi-nude image of self' (*p* <.001), and the categorical variables 'recipient of first sexting image' (*p* <.01), and 'age first sexting' (*p* <.01) made the most significant contributions to the prediction of opposite-sex sexual intercourse legality for heterosexual males. Those who sent their first nude or semi-nude image at 16 years old and over were 2.67 times more likely to have sexual intercourse

with the opposite sex over the age of 16 years old. Occupation, age first viewed pornography and pornography influence sexual activity expectations were not significant predictors.

Table 2.8: Binary Logistic Regression: Variables in the Equation for Heterosexual Males (aged 18-25) (N=1051)

Variable (predictor)	β	SE β	Wald	df	Sig.	Exp(B)
Occupation	-0.41	0.21	3.61	1	0.06	0.67
Family Dynamic	0.55	0.25	4.82	1	0.03	1.73
Sex Education	0.55	0.22	6.49	1	0.01	1.74
Sexting	Not included in the Model					
Age First Sexting	0.98	0.34	8.52	1	0.00	2.67
Content of First Sexting Image	0.64	0.31	4.35	1	0.04	1.90
First Sexting Image Recipient	-1.69	0.58	8.64	1	0.00	0.18
Age First View Pornography	-0.37	0.36	1.07	1	0.30	0.69
Pornography Influences Expectations of Sexual Activity?	-0.44	0.24	3.46	1	0.06	0.64
Age first Sent Nude-Semi Nude Image	0.20	0.07	9.21	1	0.00	1.22
Age first Viewed Pornography	0.24	0.09	6.69	1	0.01	1.27

Table 2.9: Accuracy of Logistic Regression in Classifying Under-Age (illegal) Opposite Sex Sexual Intercourse for Heterosexual Males (aged 18-25) (N=1051)

Observed	Predicted		Total	% Correct
	Under 16	16 and Over		
(0) Under 16	32 (a)	101 (c)	133	24.1
(1) 16 and Over	19 (b)	621 (d)	640	97.0
Total	51	722		
Overall % Correct				84.5

Note: Sensitivity = a/(a+c) % = 24.1%. Specificity = d/(b+d) % = 97.0%.

False Negative = b/(b+a) % = 37.3%. False Positive = c/(c+d) % = 14.0%.

Heterosexual Females. Variables that were identified to have significant associations for heterosexual females that have sexual intercourse with the opposite sex under the age of 16 years old (illegal) or 16 years and over are shown in Appendix 2E. A binary logistic regression analysis was conducted using these variables to predict the categorical outcome of opposite-sex sexual intercourse legality ('under 16 years old' or '16 years old and over') for heterosexual females. Categorical predictors used were age of dynamic (nuclear family or non-nuclear family), age first send nude-semi-nude image of self (under 16 or 16 and over), and recipient share first sexting image (yes or no). Continuous predictors used were age first take nude/semi-nude image of self, age first send nude/semi-nude image of self and age first view pornography.

***Assumption Tests*.** The dependent variable (opposite-sex legality) was measured on a dichotomous scale ('under 16 years old' and '16 years old and over'). There were three continuous independent variables and nine categorical independent variables. There was independence of observations (each participant counted as a single observation) and the dependant variable (opposite sex legality) had mutually exclusive and exhaustive categories ('under 16 years old' and '16 years old and over'). Assumptions for a large sample size were met.

Linearity of the logit was tested for using the Box-Tidwell (1962) procedure in SPSS for the three continuous predictors. Two of the

interactions have significance values greater than .05, indicating that the assumption of linearity of the logit has been met for the continuous variables 'Age First Take Nude/Semi-nude Image of Self' and 'Age First Send Nude/Semi-nude Image of Self''. The assumption of linearity of logit was violated for 'Age First View Pornography' (p<.05). The natural log of this variable was used in place of the original to resolve this issue.

The continuous predictor variable 'age first take nude/semi-nude image of self' was removed as it was found to have collinearity with 'age first sent nude/semi-nude image of self' leaving a total of two continuous and nine categorical predictor variables for analysis.

    Heterosexual Females Model. A test of the full model against a constant only model was statistically significant, X^2 (5) =77.04, *p*<.0001. This indicates the predictors as a set reliably distinguished between 'under 16' and '16 and over' opposite-sex sexual intercourse. Nagelkerke's R^2 of .20 indicated the model explains roughly 20% of the variation in the outcome. Prediction success overall is shown in Table 2.11. The Wald criterion (see table 2.10) demonstrated the continuous variable 'age first sent nude/semi-nude image of self' (*p* <.0001) and the categorical variable 'family dynamic' (*p* <.01) made significant contributions to the prediction of opposite-sex sexual intercourse legality for heterosexual females. Those who had both parents growing up were 2.287 times more likely to have sexual intercourse with the opposite sex over the age of 16 years old. The categorical variables 'age first

sexting' and 'Recipient Share First Sexting Image', and the

continuous variable 'Age first Viewed Pornography' were not

significant predictors.

Table 2.10: Binary Logistic Regression: Variables in the Equation for Heterosexual Females (aged 18-25) (N=748)

Variable (predictor)	β	*SE* β	Wald	*df*	Sig.	Exp(B)
Family Dynamic	0.827	0.261	10.062	1	0.002	2.287
Age First Sexting	-0.053	0.364	0.021	1	0.885	0.949
Recipient Share First Sexting Image	0.461	0.495	0.864	1	0.353	1.585
Age first Sent Nude-Semi Nude Image	0.429	0.090	22.698	1	$p < 0.001$	1.535
Age first Viewed Pornography	-0.643	0.473	1.851	1	0.174	0.526

Table 2.11: Accuracy of Logistic Regression in Classifying Under-Age (illegal) Opposite Sex Sexual Intercourse for Heterosexual Females (aged 18-25) (N=748)

Observed	Predicted		Total	% Correct
	Under 16	16 and Over		
(0) Under 16	14 (a)	92 (c)	106	13.2
(1) 16 and Over	8 (b)	487 (d)	495	98.4
Total	22	579		
Overall % Correct				83.4

Note: Sensitivity = a/(a+c) % = 13.2%. Specificity = d/(b+d) % = 98.4%.

False Negative = b/(b+a) % = 36.4%. False Positive = c/(c+d) % = 15.9%.

Non-heterosexual Males. Variables that were identified to

have significant associations for non-heterosexual males that have

sexual intercourse with the same sex under the age of 16 years old

(illegal) or 16 years and over are shown in Appendix 2E.A binary

logistic regression analysis was conducted using these variables to

predict the categorical outcome of same-sex sexual intercourse

legality ('under 16 years old' or '16 years old and over') for non-heterosexual males. Categorical predictors used were age of dynamic (nuclear family or non-nuclear family), and age first send nude-semi-nude image of self (under 16 or 16 and over). Continuous predictors used were age first take nude/semi-nude image of self, age first send nude/semi-nude image of self and age first view pornography.

Assumption Tests. The dependent variable (same-sex legality) was measured on a dichotomous scale ('under 16 years old' and '16 years old and over'). There were three continuous independent variables and nine categorical independent variables. There was independence of observations (each participant counted as a single observation) and the dependant variable (opposite sex legality) had mutually exclusive and exhaustive categories ('under 16 years old' and '16 years old and over'). Assumptions for a large sample size were not met for frequency of porn use and recipient share first sexting image as they each had less than 10 cases in the least frequent outcome. These two variables were removed from the analysis for non-heterosexual males.

Linearity of the logit was tested for using the Box-Tidwell (1962) procedure in SPSS for the three continuous predictors. All three interactions have significance values greater than .05, indicating that the assumption of linearity of the logit has been met for the continuous variables 'Age First Take Nude/Semi-nude Image of

Self', 'Age First Send Nude/Semi-nude Image of Self' and 'Age First View Pornography'.

The continuous predictor variable 'age first take nude/semi-nude image of self' was removed as it was found to have collinearity with 'age first sent nude/semi-nude image of self' leaving a total of two continuous and seven categorical predictor variables for analysis.

Non-heterosexual Males Model. A test of the full model against a constant only model was statistically significant, X^2 (4) =24.74, $p<.0001$. This indicates the predictors as a set reliably distinguished between 'under 16' and '16 and over' same-sex sexual intercourse. Nagelkerke's R^2 of .36 indicated the model explains roughly 36% of the variation in the outcome. Prediction success overall is shown in Table 2.13. The Wald criterion (see Table 2.12) demonstrated 'family dynamic' ($p <.05$) made a significant contribution to the prediction of same-sex sexual intercourse legality for non-heterosexual males. Those who had both parents growing up were 5 times more likely to have sexual intercourse with the same sex over the age of 16 years old. The categorical variable 'age first sexting' and the continuous variables 'send nude or semi-nude image of self' and 'Age first Viewed Pornography' were not significant predictors.

Table 2.12: Binary Logistic Regression: Variables in the Equation for Non-Heterosexual Males (aged 18-25) (N=135)

Variable (predictor)	β	*SE* β	Wald	*df*	Sig.	Exp(B)
Family Dynamic	1.609	0.657	6.004	1	0.014	5.000
Age First Sexting	0.743	1.145	0.421	1	0.517	2.102
Age first Sent Nude-Semi Nude Image	0.299	0.307	0.953	1	0.329	1.349
Age first Viewed Pornography	0.259	0.173	2.246	1	0.134	1.296

Table 2.13: Accuracy of Logistic Regression in Classifying Under-Age (illegal) Opposite Sex Sexual Intercourse for Non-Heterosexual Males (aged 18-25) (N=135)

Observed	Predicted		Total	% Correct
	Under 16	16 and Over		
(0) Under 16	5 (a)	10 (c)	15	33.3
(1) 16 and Over	3 (b)	96 (d)	99	97.0
Total	8	106		
Overall % Correct				88.6

Note: Sensitivity = a/(a+c) % = 33.3%. Specificity = d/(b+d) % = 97.0%.

False Negative = b/(b+a) % = 37.5%. False Positive = c/(c+d) % = 9.4%.

Non-heterosexual Females. Variables that were identified to have significant associations for non-heterosexual females that have sexual intercourse with the same sex under the age of 16 years old (illegal) or 16 years and over are shown in Appendix 2E. A binary logistic regression analysis was conducted using these variables to predict the categorical outcome of same-sex sexual intercourse legality ('under 16 years old' or '16 years old and over') for non-heterosexual females. Categorical predictors used were age of dynamic (nuclear family or non-nuclear family), age first send nude-semi-nude image of self (under 16 or 16 and over), and recipient share first sexting image (yes or no). Continuous

predictors used were age first take nude/semi-nude image of self, age first send nude/semi-nude image of self and age first view pornography.

Assumption Tests. The dependent variable (same-sex legality) was measured on a dichotomous scale ('under 16 years old' and '16 years old and over'). There were three continuous independent variables and nine categorical independent variables. There was independence of observations (each participant counted as a single observation) and the dependant variable (same-sex legality) had mutually exclusive and exhaustive categories ('under 16 years old' and '16 years old and over'). Assumptions for a large sample size were met.

Linearity of the logit was tested for using the Box-Tidwell (1962) procedure in SPSS for the three continuous predictors. All three interactions have significance values greater than .05, indicating that the assumption of linearity of the logit has been met for the continuous variables 'Age First Take Nude/Semi-nude Image of Self', 'Age First Send Nude/Semi-nude Image of Self' and 'Age First View Pornography'.

The continuous predictor variable 'age first take nude/semi-nude image of self' was removed as it was found to have collinearity with 'age first sent nude/semi-nude image of self' leaving a total of two continuous and nine categorical predictor variables for analysis.

Non-heterosexual Females Model. A test of the full model against a constant only model was statistically significant, X^2 (5) =25.86, $p<.0001$. This indicates the predictors as a set reliably distinguished between 'under 16' and '16 and over' same-sex sexual intercourse. Nagelkerke's R^2 of .16 indicated the model explains roughly 16% of the variation in the outcome. Prediction success is shown in Table 2.15. The Wald criterion (see Table 2.14) demonstrated the categorical variable 'recipient share first sexting image' ($p <.05$) and the continuous variable 'age first view pornography' ($p <.05$) made significant contributions to the prediction of same-sex sexual intercourse legality for non-heterosexual females. Those who had the recipient of their first sexting image as someone known to them were 3.847 times more likely to have sexual intercourse with the same sex over the age of 16 years old. The categorical variables 'family dynamic' and 'age first sexting' and the continuous variable 'send nude or semi-nude image of self' were not significant predictors.

Table 2.14: Binary Logistic Regression: Variables in the Equation for Non-Heterosexual Females (aged 18-25) (N=263)

Variable (predictor)	β	SE β	Wald	df	Sig.	Exp(B)
Family Dynamic	0.539	0.346	2.428	1	0.119	1.714
Age First Sexting	0.571	0.609	0.880	1	0.348	1.771
Recipient Share First Sexting Image	1.347	0.576	5.477	1	0.019	3.847
Age first Sent Nude-Semi Nude Image	0.052	0.111	0.224	1	0.636	1.054
Age first Viewed Pornography	0.133	0.065	4.222	1	0.040	1.142

Table 2.15: Accuracy of Logistic Regression in Classifying Under-Age (illegal) Opposite Sex Sexual Intercourse for Non-Heterosexual Females (aged 18-25) (N=263)

Observed	Predicted		Total	% Correct
	Under 16	16 and Over		
(0) Under 16	7 (a)	47 (c)	54	13.0
(1) 16 and Over	6 (b)	169 (d)	175	96.6
Total	13	216	229	
Overall % Correct				76.9

Note: Sensitivity = a/(a+c) % = 13.0%. Specificity = d/(b+d) % = 96.6%.

False Negative = b/(b+a) % = 46.2%. False Positive = c/(c+d) % = 21.8%.

Discussion

Summary of Findings

The rationale for this study is to reduce the gaps in knowledge surrounding the influence of pornography use and is designed to explore four primary hypotheses:

1. The age of onset of sexual activities will NOT be related to pornography use before 12 years (H1);

2. The age of onset of sending nude or semi-nude images of self (sexting) will (H2a) NOT be related to underage sexual intercourse (i.e. before 16) and (H2b) NOT be related pornography use before 12 years;

3. Growing up living with both biological parents (two parent family) will (H3a) NOT be related to age of onset of sexual intercourse and (H3b) NOT be related to age of onset of pornography use;

4. Receiving sex education in primary school (i.e. before 12 years) will (H4a) NOT be related to age of onset of sexual intercourse and (H4b) NOT be related to age of onset of pornography use.

Table 2.16: Summary Table of Relationships Found between Variables by Hypothesis and Sub-groups of the Sample

Hypothesis	Heterosexual Males	Heterosexual Females	Non-Heterosexual Males	Non-Heterosexual Females
(H1) Showing Genitals & Porn Use Under 12 years	✓	✓	✓	✓
(H1) Romantic Relationship & Porn Use Under 12 years	✓	x	✓	✓
(H1) Sex Education & Porn Use Under 12 years	✓	✓	✓	x
(H1) 7 Opposite Sex Sexual Activities & Porn Use Under 12 years	7/7	x	7/7	7/7
(H1) 7 Same Sex Sexual Activities & Porn Use Under 12 years	x	5/7	4/7	6/7
(H1) Sexting Variables (Take Nude Image & Send Nude Image) & Porn Use Under 12 years	2/2	2/2	2/2	2/2
(H2a) Age first Sexting & Sex Under 16 years	✓	✓	✓	✓
(H2b) Age first Sexting & Porn Use Under 12 years	✓	✓	✓	✓
(H3a) Non-Nuclear Family & Sex Under 16 years	x	x	x	x
(H3b) Non-Nuclear Family & Porn Use Under 12 years	✓	✓	x	✓
(H4a) Primary Sex Education & Sex Under 16 years	x	x	x	x
(H4b) Primary Sex Education & Porn Use Under 12 years	✓	✓	✓	x

Table 2.16 summarises relationships found for each hypothesis by gender and sexuality sub-groups. These relationships are further explained in turn below.

Hypothesis 1 (H1). The hypothesis that the age of onset of sexual activities will not be related to pornography use before 12 years (H1) was explored using independent samples t-tests. It was partially supported for heterosexual males (see Table Two), heterosexual females (see Table Three), non-heterosexual males (see Table Four) and non-heterosexual females (see Table Five).

For heterosexual males, no relationship was found between pornography use before 12 years and any same-sex sexual activities. A relationship was found for pornography use before 12 years with all seven opposite-sex sexual activities, age of first experience of showing genitals, romantic relationship, sex education and sexting occurring at an earlier age.

For heterosexual females, no relationship was found between pornography use before 12 years and any opposite-sex sexual activities or romantic relationship, or same-sex sexual intercourse or oral intercourse. A relationship was found for pornography use before 12 years with five of the same-sex sexual activities, age of first experience of showing genitals, sex education and sexting occurring at an earlier age.

For non-heterosexual males, no relationship was found between pornography use before 12 years and three of the same-sex sexual

activities. A relationship was found for pornography use before 12 years with all seven opposite-sex sexual activities, four same-sex sexual activities, age of first experience of showing genitals, romantic relationship, sex education and sexting occurring at an earlier age.

For non-heterosexual females, no relationship was found between pornography use before 12 years and sex education or same-sex sexual intercourse. A relationship was found for pornography use before 12 years with six of the same-sex sexual activities, all opposite-sex sexual activities, romantic relationship, age of first experience of showing genitals, and sexting occurring at an earlier age.

H1 was not found to be supported using regression analyses for heterosexual males for underage (illegal) sexual intercourse with the opposite sex – pornography use under the age of 12 years was found to be a predictor of sexual intercourse with the opposite sex under 16 years old. However, H1 was accepted using logistic regression analysis regarding underage (illegal) sexual intercourse for heterosexual females, or non-heterosexual males and females.

Hypothesis 2 (H2a & H2b). The hypothesis (H2a) that the age of onset of sending nude or semi-nude images of self (sexting) will not be related to underage sexual intercourse (i.e. before 16) was rejected with a relationship being found with an earlier age of

onset of sexting and underage sexual intercourse across sexuality and gender in the sample.

The hypothesis (H2b) that the age of onset of sending nude or semi-nude images of self (sexting) will not be related to pornography use before 12 years was rejected with a relationship being found with an earlier age of onset of sexting and pornography use before 12 years across sexuality and gender in the sample.

Hypothesis 3 (H3a & H3b). The hypothesis (H3a) that growing up living with both biological parents (two parent family) will not be related to age of onset of sexual intercourse was accepted.

The hypothesis (H3b) that growing up living with both biological parents (two parent family) will not be related to age of onset of pornography use was partially supported. No relationship was found for non-heterosexual males. A relationship was found for heterosexual males and females, and non-heterosexual females, where a younger age of onset of pornography use was associated with a non-nuclear family dynamic.

Hypothesis 4 (H4a & H4b). The hypothesis (H4a) that receiving sex education in primary school (i.e. before 12 years) will not be related to age of onset of sexual intercourse was accepted using t-test analysis across gender and sexuality.

The hypothesis (H4b) that receiving sex education in primary school (i.e. before 12 years) will not be related to age of onset of pornography use was partially supported. No relationship was found for non-heterosexual females. A relationship was found for heterosexual males and females, and non-heterosexual males, where a younger age of onset of pornography use was associated with receiving sex education in primary school.

Regression Analysis

The results of four binary logistic regression models demonstrated high specificity but low sensitivity. All models were better at predicting sexual intercourse over 16 years old (legal) with a lower false positive rate than false negative rate. This suggests that used in practice, these models would be good at correctly identifying those who were going on to have sexual intercourse over 16 years old (legally) but not as good at predicting those who were going on to have sexual intercourse under 16 years (illegally). Future research could identify further related variables to improve the sensitivity and predictive accuracy of these models.

Heterosexual Males and Females Comparison

H1 is partly supported for both heterosexual males and females, but for different combinations of sexual activities (see Tables 2.2 and 2.3). A key difference was that an association was found for heterosexual males who viewed pornography for the first time under 12 years old with all opposite-sex activities and first

romantic relationship, whereas no association was found for any opposite sex activities or romantic relationship for heterosexual females. Additionally, a relationship was found for heterosexual females who viewed pornography under 12 years, for some same-sex activities (other than sexual and oral intercourse). Both heterosexual males and females who viewed pornography for the first time under 12 years old reported an earlier age of first experience of showing genitals, sex education and sexting (taking and sending images).

H2a and H2b were rejected suggesting that early onset of sexting relates to underage sexual intercourse for male and female heterosexuals, as well as using porn under the age of 12.

H3a was accepted for both heterosexual males and females.

H3b was rejected as a relationship was found for heterosexual males and females between a younger age of onset of pornography use and a non-nuclear family dynamic.

H4a was accepted for both heterosexual males and females.

H4b was rejected as a relationship was found for heterosexual males and females between a younger age of onset of pornography use and receiving sex education in primary school.

Chi square analysis revealed significant differences between male and female heterosexuals for seven variables (see Table 2.2). More heterosexual males were found to use pornography frequently, have

a younger age of first use of pornography, likely to believe pornography influences expectations of sexual activity, to report current use of pornography, and to report having ever used pornography than heterosexual females. Conversely, more heterosexual females reported having ever engaged in sexting, and having a younger age of sex education (in primary school as opposed to secondary school) than heterosexual males.

Regression models, although better at predicting legal sex for heterosexual male and females, were able to establish predictors of illegal (underage) sexual intercourse with the opposite sex. A younger age of first sending a nude/semi-nude image of oneself as well as growing up with a non-nuclear family were associated with an increased likelihood of illegal (under 16) opposite sex sexual intercourse for both heterosexual males and females.

Additionally, a younger age of first viewing pornography, primary school sex education, nudity in the first sexting image sent, and the recipient of the first sexting image being known to the sender were found to be associated with an increased likelihood of illegal opposite sex intercourse for heterosexual males. The same result was not found for heterosexual females.

In summary, for both heterosexual males and females, early onset of sexting was found to be related to underage sexual intercourse. A relationship between early onset of sexting and pornography use under 12 years old was found for both males and females, as well

as a relationship between early age of onset of pornography use and primary school sexual education.

Non-Heterosexual Males and Females Comparison

H1 is partly supported for non-heterosexual males and females (see Tables 2.4 and 2.5), with the majority of sexual activities in both cases being found to have significant associations with viewing pornography under the age of 12. This suggests that early experience of pornography has some influence on the sexual behaviour of both non-heterosexual males and females.

H2a and H2b were rejected suggesting that early onset of sexting relates to underage sexual intercourse for male and female non-heterosexuals, as well as using porn under the age of 12.

H3a was accepted for both non-heterosexual males and females.

H3b was rejected for non-heterosexual females, where a younger age of onset of pornography use was associated with a non-nuclear family dynamic. H3b was accepted for non-heterosexual males.

H4a was accepted for both non-heterosexual males and females.

H4b was rejected for non-heterosexual males, where a younger age of onset of pornography use was associated with receiving sex education in primary school. Hb was accepted for non-heterosexual females.

Results of Chi-square tests of independence for gender for non-heterosexuals revealed significant differences between male and female non-heterosexuals for five variables (see Table 2.2). More non-heterosexual males were found to use pornography frequently, have a younger age of first use of pornography, and to report current use of pornography than non-heterosexual females. More non-heterosexual females were found to report having ever engaged in sexting and not being recognisable in the first sexting image they sent than non-heterosexual males.

A majority of both non-heterosexual males and females reported frequent pornography use, current use of pornography, having ever engaged in sexting and not being recognisable in the first sexting image they sent.

Regression models, although better at predicting legal sex for non-heterosexual male and females, were able to establish predictors of illegal (underage) sexual intercourse with the same sex. A younger age of first sending a nude/semi-nude image of oneself, a younger age first viewing pornography, and growing up with a non-nuclear family were associated with an increased likelihood of illegal (under 16) same sex intercourse for both non-heterosexual males and females.

Additionally, for non-heterosexual females, knowing the recipient of the first sexting image sent was found to be associated with an increased likelihood of illegal (under 16) same sex sexual

intercourse. The same result was not found for non-heterosexual males.

In summary, for both non-heterosexual males and females, early onset of sexting was found to be associated with underage sexual intercourse. A relationship between early onset of sexting and pornography use under 12 years old was found for both males and females, as well as a relationship between early age of onset of pornography use and primary school sexual education.

Findings in Context

The findings of the current study provide support for previous research and help to build a clearer picture of what is considered the 'norm' for EA males and females, who identify themselves as both heterosexual and non-heterosexual, with regard to pornography use, sexual activity and sexting. The findings of this study support the assertion that there is an increasing use of pornography (Albury, 2014). Only 6.9% of heterosexuals and 6.1% of non-heterosexuals in this sample had not viewed pornography and 93.3% of the entire sample (both heterosexuals and non-heterosexuals) had viewed pornography by age 17 (under the age of guidance for access to pornography), a higher level of pornography access than reported in the June 2016 NSPCC report (Martellozzo et al., 2016).

This also supports the increase in the past 10-15 years (the time when the current sample would have been adolescents) in the use

of pornography (Szymanski & Stewart-Richardson, 2014; Petersen & Hyde, 2010). It is illegal for under 18's to watch online or buy pornography, so the law around pornography is clearly out of step with what is now commonplace. For under 18's it is primarily left to parents to prevent a child accessing pornography.

The findings on the taking and transmission of self-image nudity support the idea that sexting is considered a 'normal' part of growing up, with 80.2% of the entire sample having admitted to sending or receiving self-image nudity (NSPCC, 2012; Hasinoff, 2014; 2015). Alongside these findings, a substantial amount (60.4%) of those who admitted to taking semi-nude or nude image of themselves were under the age of 18 when they first did so, and 53.1% sent those images under the age of 18 years old for the first time. This conflicts with the lower rates of sexting reported by Livingstone, Haddon, Görzig and Ólafsson, (2011).

As Hasinoff (2014;2015) points out, the 'panic' around sexting can have an impact. Young girls being positioned as 'hapless' victims can impact the agency of these women. As such, it is important to stress the potential benefits as well as risks of sexting. Policy should aim to maximise benefits and minimise risk. Whilst there may be benefits of intimacy and improved interpersonal communication between consenting individuals, the boundaries of consent and duress are blurred and are a key issue in considering the safeguarding of young people.

The results of this study found support that oral sex typically occurs before sexual intercourse which agrees with past research (Schwartz, 1999; Prinstein, Meade & Cohen, 2003). The current study added to knowledge on this topic by finding this was consistent for both males and females, both with opposite-sex and same-sex partners.

Differences in sexual development patterns are shown in the current study, in contrast to historical research in this area. First experiences of sexual intercourse are reportedly earlier, with females' consistently starting sexual activities younger than males with both opposite-sex and same-sex partners (Ellis, 1948; Kinsey, 1953; Schofield 1965).

Heterosexual males and females who viewed pornography for the first time before the age of 18 years old were more likely to have had sexual intercourse at a younger age. This was also found with non-heterosexual females. No equivalent findings were found for non-heterosexual males supporting previous research into gender differences in arousal (Chivers, Rieger, Latty, & Bailey, 2004).

Findings from the current study about the frequency of pornography use by both heterosexual and non-heterosexual males are in line with previous research in this area (Harkness, Mullan, & Blaszczynski, 2015; To, Ngai, & Iu Kan, 2012). The current study adds to knowledge surrounding factors associated with frequent pornography use, indicating significantly more heterosexual males

than heterosexual females use pornography frequently (i.e. on a daily to weekly basis), heterosexual females most commonly reported using pornography on a less-than-weekly basis and significantly more non-heterosexual males than non-heterosexual females use pornography frequently (i.e. on a daily to weekly basis).

Limitations

Seeking to address ethical concerns of obtaining information on sexual activity directly from adolescents, this survey asked participants over the age of 18 to recall the approximate age at which they first undertook sexual activities. The contrast with previous research involving adolescents, suggests either adolescents are not admitting to certain sexual behaviours (possibly due to fear of consequences) or the EA are over-reporting (possibly due to wanting to appear socially desirable). Further work is needed here to examine these differences.

About 22.5% of the participants identified themselves as bisexual which is double reported as population norm. This may be due to the nature of this survey attracting those with interest in sexuality (Van Wyk & Geist, 1995). The sample for this research was self-selected and therefore is subject to bias.

The aims of this study did not include addressing the causality of pornography use and sexting but demonstrated the associations with sexual development. Future research should address causality

to obtain a full understanding to inform guidelines and practice in this area. This research did not consider consensual and non-consensual sexual activity, and future research in this area could provide context to some of the results found within this study.

This research is subject to the usual bias that comes with using self-report. There might be gender bias due to societal norms where it is more socially acceptable for males to be open about sex than females.

Conclusion

Across genders and sexualities, primary school sex education was found to be related to early onset of pornography use (under 12 years old). A relationship was also found between pornography use under 12 years old and early onset of sexting. Associations were found between early onset of sexting and underage sexual intercourse. This is suggestive of a pattern of linked behaviours following primary school sex education. This could bring into question the importance of content and timing of sex education in schools and necessitates further investigation.

Early onset of pornography use was also found to be related to earlier age of experience of certain sexual activities (opposite and same sex). Regression analysis revealed age of sexting was found to be related to an increased likelihood of early age (illegal) first

experience of sexual intercourse (i.e. under 16 years old, the age of consent in the United Kingdom) for both heterosexual and non-heterosexual males and females.

Due to these relationships arising from cross-sectional data, there is justification for conducting future longitudinal research to establish causality and more definitive answers on the implications of pornography use and sexting (e.g. offending behaviour and relationships).

One of the key questions arising is given the prevalence of pornography use and sexting within EA, is this just normal behaviour? If this is the case, then laws concerning the use of pornography and exchange of self-image nudity (particularly under the age of 18) need to be amended to reflect this, whilst taking account of safeguarding. At present this is happening without the law being enforced.

Chapter Three: An Exploration of Current Emotional Attachment Style and Emerging Adult's Recall of First Experiences: Sex, Pornography, and Sexting

Abstract

Over the past three decades there has been an exponential increase in the use of technology as well as dramatic changes in the expression and understanding of sexuality. These changes necessitate a contemporary understanding of the way individuals express themselves sexually, the impact of modern technology on sexuality, and the way this interacts with relationships, sexual attitudes, and behaviours. This study considered the interactions between emotional attachments and age of first experience of sexual intercourse, sexting and viewing pornography, and frequency of viewing/using pornography. A sample of EA males and females (18 to 25 years) were recruited using an online survey. They were asked retrospective questions for age of first experience of a range of sexual activities with opposite or same-sex partners, first experience of using pornography use and first experience of sending a nude or semi-nude image of oneself to another person. This data was then analysed in respect of the endorsed relationship style on the Relationships Questionnaire (Bartholomew and Horowitz, 1991) to give an approximation of attachment style. Of the 621 respondents analysed, 33% endorsed the 'fearful' response style, 29.3% 'secure', 24.3% 'preoccupied' and 13.4% 'dismissive'. Results suggest that the relationship style a female endorses is

related to age of first sexual experience with the opposite sex. Specifically, these results suggest that EA women who endorse a current dismissive relationship style are more likely to have had their first sexual experience with the Opposite Sex at an earlier age than those who endorse a Secure or Fearful relationship style. Furthermore, the results suggest that females who endorse a Secure relationship style are more likely to have had their first experience of viewing pornography at a later age than those who endorse a Preoccupied or Dismissive relationship style. The same results were not found for female's first experience with the same sex, or for males with the opposite or same sex. Results encourage further inspection (using more comprehensive methods of assessment) of the interactions between attachment, pornography use, sexting and sexual development, and justify further longitudinal research in this area.

Introduction

In the past three decades social norms around the expression of sexuality have changed a great deal, particularly in the West, with consequential changes in social expectations. This rapid change necessitates a contemporary understanding of sexual expression, and the requirement for a more detailed picture of the characteristics of the sexual behaviour of adolescents and young adults. The impact of modern technology on sexuality, changes in behaviours and beliefs, sexual risk-taking, underage sex and pregnancy, and sex education are important to consider in developing a more detailed picture of current sexual behaviour and practices. The period of adolescence and emerging adulthood is a key time for developing healthy sexual attitudes and behaviours, and it is this group who are most receptive to adopting new technology. It is important to consider changes in societal values, as well as how these narratives may have impacted the perception of what is considered 'normal', and conversely 'not-normal' sexual behaviour. Factors such as the frequency of pre-marital sex, the legalisation of homosexuality, practice of non-monogamous relationships (e.g. polyamory), binary and non-binary gender diversity, the rise of Feminist Theory, and the impact of technology and social media over the past few decades are key considerations that suggest changes in how people talk about, understand and practice sex.

Cultural factors such as whether a young person has been socialised into an individualistic or collectivist culture can impact how they conceptualise and behave in romantic relationships. Li *et al.* (2010) found that those from collectivist cultures generally appeared to demonstrate more conservative sexual attitudes and less commitment to 'romantic passion' than is common in western (more individualistic) societies. Seiffge-Krenke et al. (2010) puts forward the assertion that countries with high levels of disadvantage (where there is a strong emphasis on survival) are less likely to share the western focus on the importance of romantic relationships for young people as contributing to self-identity and self-worth. They went on to demonstrate that more romantic stress is experienced in young people in cultures that promote individuality and free partner choice (e.g. Middle and Southern Europe), suggesting that this may be due to the concept of finding a romantic partner being key to enabling separation and autonomy in these cultures as opposed to financial and job success, for example. It is important to note, that high rates of teen pregnancy are often found within low socioeconomic classes – therefore individuals who are from both individualistic cultures and low socioeconomic classes may experience both romantic stress and a higher likelihood of teen pregnancy, suggesting attachment outcomes for this group may be poorer.

Emotional Attachments

Attachment theory purports that infants form a bond with their caregivers, and the quality of this bond can shape later

relationships, especially close or intimate relationships. Development of one's attachment style is a process that continues through adolescence into early adulthood (Allen, Porter, McFarland, McElhaney, and Marsh, 2007; Van Der Vorst, Engels, Meeus, Dekovic, and Vermulst, 2006). During adolescence, individuals can develop new intimate relationships which shape their attachment style (Simpson, Collins, Tran, and Haydon, 2007). During this time, there is a juxtaposition of an increase in biological and cognitive capacities and capabilities with an increased environmental demand (e.g. starting a new school, the development of more sophisticated intimate relationships, and self-image concerns at the onset and duration of puberty).

Table 3.1: Attachment Patterns, Avoidance and Anxiety

Attachment Pattern	Intimate Relationship Experience		
	Abandonment Anxiety	Avoidance	Insecure
Secure	NO	NO	NO
Avoidant (Dismissive)	NO	YES	YES
Ambivalent (Preoccupied or Anxious)	YES	NO	YES
Disorganised (Fearful)	YES	YES	YES

Bartholomew & Horowitz (1991) developed four attachment categories (Secure, Preoccupied, Dismissive and Fearful) based upon the infant categories of secure, anxious-ambivalent, and avoidant attachment styles (See Table 3.1) Secure attachment is characterised by finding pleasure in seeking intimate relationships and experiencing low avoidance/low anxiety about being

abandoned. Individuals with preoccupied attachment experience higher levels of anxiety when compared to other attachment styles when being away from their intimate relationships, primarily worrying about being abandoned (thus demonstrating low avoidance). Those with a fearful attachment demonstrate high levels of both avoidance and anxiety within relationships. Avoidant (also referred to as Dismissive) attached persons demonstrate high levels of avoidance and experience low levels of anxiety, therefore feel comfortable in developing intimate relationships. Those with this attachment style report low levels of satisfaction in their relationships, as well as not worrying about being abandoned. These styles demonstrate different interactions in romantic relationships.

Relationships in adolescence can provide positive learning experiences about the self and relating to others. This contributes to the development of beliefs about the self, attractiveness, and self-worth (Zimmer-Gembeck, Siebenbruner and Collins, 2001, 2004). On the other hand, several family and ecological factors in childhood can negatively influence the development and maintenance of a secure attachment style. Incongruence between expectations and experience of relationships has been found to be positively associated with the risk of depression, suicide ideation and suicide attempts (Davila, 2008; Soller, 2014). It is important to note that break-ups are a common feature of adolescent relationships and the impact of this is not always severe or long-lasting.

Sexual Behaviour

Early first sexual intercourse is a risk factor for STIs, unplanned teen pregnancy and adverse health outcomes. Skinner et al. (2015) established that externalising behaviours in girls are more strongly associated with first sexual intercourse than internalising behaviours. A range of biological, social, and psychological precursors such as early puberty, childhood adversity, low socioeconomic status, dysfunctional family relationships, absence of a biological father at home, poor school adjustment, adolescent depression, and low self-esteem are associated with earlier age at first sexual intercourse.

Bogaert and Sadava (2002) found that young people who were anxiously attached had earlier first sexual intercourse, more likely to be unfaithful, perceived themselves less physically attractive and had more sexual partners than those with secure attachment styles. Leung, Moore, Karnilowicz and Lung (2011) also found that young people who had a secure attachment style were less stressed, more resilient to relationship break-ups and less likely to engage in a style of coping that was self-punishing and avoidant. Additionally, it has been suggested that those who demonstrate insecure attachment styles to their romantic partners at age 22 were more likely to have had insecure attachment styles with their parents or caregivers at the age of 14 (Pascuzzo, Cyr and Moss, 2013).

Sexting

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Adolescents with attachment anxiety (and in a relationship) are more likely to use texts as a form of sexual propositioning (Weisskirch & Delevi, 2011). A clear trend identified in modern western culture is the preferential use of non-vocal communication between young people (Lenhart, Ling, Campbell & Purcell, 2010; Drouin & Landgraff, 2012; Drouin, Vogel, Surbey, & Stills, 2013; Robinson & Stubberud, 2012). Sexting refers to the transmission of sexually explicit material via the internet (Weiss and Samenow, 2010). Often, the term refers to sending photos of individuals partly clothed in suggestive poses, or sending photos of genitals (Temple-Smith, Moore and Rosenthal, 2016).

Attachment anxiety has been found to predict positive attitudes towards sexting such as accepting it as normal, that it will enhance the relationship, and that partners will expect sexting. Sexting may be a novel form for expressing attachment anxiety (Weisskirch & Delevi 2011). Studies have shown that texting and sexting are relatively common in young adult romantic relationships, and texting and sexting are both significantly related to attachment style. However, whereas text messaging was more common among those with secure attachments (i.e., those with less attachment avoidance), sexting (both texts and pictures) was more common among those with insecure attachments, particularly those with higher attachment avoidance. (Drouin & Landgraff, 2012)

Research by Trub & Starks (2017) suggests that in young adult women in romantic relationships, attachment anxiety was

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associated with sexting through difficulty controlling impulses during moments of emotional distress. This research also revealed that sexting directly predicted condom-less sex and that attachment avoidance and anxiety were both found to be associated with sexting. Findings highlight the role of digital technology in understanding how people's negotiation of needs for attachment and emotional regulation might lead to risky sexual behaviour. This suggests that interventions targeting the interplay of attachment, emotional regulation and technology use may positively impact relational and behavioural health outcomes. There is a need to understand this interplay in more detail.

Anxious attachment has been found to be significantly related to frequency of consenting to unwanted sexting (Drouin & Tobin, 2014). In this 2014 study, consenting to sexting to avoid an argument was found to be a factor in the relationship between anxious attachment and consenting to unwanted sexting.

Pornography

Szymanski & Stewart-Richardson (2014) explored the relationship between attachment and pornography use. Their findings demonstrated that much of the research in this area is inconsistent, with most studies focusing on the impact of pornography use on romantic relationships. The use of sexually explicit material is substantially associated with masturbation (Hald 2006). Adolescents currently have access to a variety of sexually explicit media (e.g.,

television, internet, chat lines, books, magazines) with exposures often beginning at age 14 or earlier (Ybarra and Mitchell 2005; Štulhofer, Buško & Landripet, 2010). The increase in use of sexually explicit media amongst boys has been associated with timing of pubertal development (Skoog, Stattin & Kerr, 2009; Lofgren-Mårtenson and Månsson 2010). Bleakley, Hennessy & Fishbein (2011) found that teens often intentionally choose media for sexual content, with both frequency of pornography use, and problematic pornography use being related to greater gender role conflict, more avoidant and anxious attachment styles, poorer relationship quality, and less sexual satisfaction.

The NSPCC (2011) points out that it is important to understand the link between sexualised media, including pornography, and young people's behaviour in their intimate peer relationships. This understanding can be gained from more robust evidence around the relationship between young people's exposure to pornography and sexualised media, their perceptions of sex and their behaviour in relationships and their attitudes towards sex.

Aims and Hypotheses

This study seeks to explore the interactions between attachment and age of first experience of sexual intercourse, sexting and viewing pornography, and frequency of viewing/using pornography. This study will also explore the interactions between sexuality, sexting and pornography use.

Hypothesis 1. It was hypothesised that attachment style would be related to age at first experience of sexual intercourse, with secure attachment being related to later age at first experience of sexual intercourse.

The analysis considered this hypothesis for opposite-sex and same-sex sexual intercourse.

Hypothesis 2. It was hypothesised that attachment style would be related to age at first experience of sexting, with secure attachment being related to later age at first experience of sexting.

Hypothesis 3. It was hypothesised that attachment style would be related to age at first use of pornography, with secure attachment being related to later age at first use of pornography.

Hypothesis 4. It was hypothesised that attachment style would be related to frequency of current use of pornography, with secure attachment being related to less frequent use of pornography.

Methodology

Study Design

The purpose of this study was to inform current understanding and discussions around the associations between attachment style, sexual behaviour, sexting and pornography use.

The current study was part of a series of questionnaires that explored characteristics of pornography use, sexual development, sexting and associated concepts. This study utilised a retrospective survey to test the relationship between attachment style, pornography use, sexual intercourse, and sexting.

The main variables in the study were: Relationship Scales Questionnaire response (RQ; Bartholomew & Horowitz, 1991) to measure attachment style, age of first engaging in sexual intercourse, age of first experience of 'sexting' (sending self-image nudity), age of onset of pornography use and frequency of pornography use. Additional demographic variables were gender, current age, occupation, sexuality, and family dynamic.

Attempts to control extraneous variables of context and prejudice within the sexual development questions were made by including same-sex and opposite-sex questions to account for multiple sexualities. The questions were presented in this order: relationship style, demographic, sexual development, sexting and pornography use. The questions concerning gender, sexuality, occupation and

family dynamic accommodated 'other' and 'if other please state'
responses, to ensure inclusivity for all respondents. For sexual
orientation, the labels 'Bisexual, Heterosexual, Homosexual and
Lesbian' were offered, and respondents were asked to consider
which of these options they identified with most. This survey did not
include a predetermined 'asexuality' response, but did allow for the
respondents to offer 'N/A' as an answer if they had not had the
identified sexual experience.

Respondents

Ethical approval was granted for adults 18 years and over to
participate in this research, by the University of Nottingham School
of Medicine Ethics committee.

In total, there were 2692 hits on the questionnaire and 1028
respondents (38.2% of hits) completed the full questionnaire, with
over a quarter (28.4%) of hits 'giving up' on page 3 of the
questionnaire about Attachment Style. Six completed questionnaires
were removed due to spoilt responses, leaving 1022 as the final
number of unspoilt questionnaires to be analysed.

Of the 1022 adult respondents, 61% of the sample (621) were the
desired 'EAs' (aged 18-25) as per Arnett's definition. This
developmental stage was targeted because it is demographically
distinguishable from older adults over 25 years (Arnett, 2000;
2011). EA also were more likely to be able to make a good
approximation of the ages of the activities asked about their

adolescence within the questionnaire, by the fact that they are closer to the ages when they engaged in sexual activities for the first time. It was decided to remove the 401 respondents who were older than 25 years leaving the 621 'EA' respondents aged between 18 and 25 years for the analysis.

Respondents were a self-selected sample recruited via a link to the online survey via The University of Nottingham's 'Call for Respondents', social media (Facebook, Instagram, Twitter, Reddit, and Tumblr), The Division of Psychiatry & Applied Psychology at The University of Nottingham, and Students at the University of Birmingham with the aim of reaching both undergraduate and post-graduate students. The respondents were recruited from 3rd December 2017 to 3rd March 2018. The sample comprised of English-speaking respondents (which was to be expected as the survey was only available in English). The respondents were not offered remuneration for their participation in the research.

Procedure

Before the survey was distributed, ethical clearance was granted by The University of Nottingham to ensure data were in keeping with the ethical guidelines of The British Psychological Society and the University Board of Ethics. On clicking the link to the survey, respondents were presented with a summary of the research aims, confidentiality statement and information concerning their rights of withdrawal from the study.

The exclusion criteria (English speaking and over 18's only) were stated in the introductory information followed by forced-response tick box stating the participant had given informed consent to take part and was aged 18 years or over.

Upon completion of the survey, respondents were presented with a debrief of the study, repetition of contact details of the researcher and references for accessing relevant support (GP, counsellor, or Samaritan's helpline) if they found the survey affected or upset them.

Materials

The survey (see Appendix 3A) was created via the online host 'Bristol Online Survey', a private research platform used by The University of Nottingham.

'Relationship Style' questions were presented first within the questionnaire, following the consent and participant information sheet pages. Respondents were asked to read simple descriptions of four attachment prototypes: secure, preoccupied, dismissing, and fearful; and to mark the one which best described their own thoughts and feelings about close relationships (Bartholomew and Horowitz, 1991). Respondents were then asked to rate the four relationship descriptions on a 7-point scale considering how well or poorly the statement corresponded to their general relationships style from 1=Disagree Strongly, 4=Neutral/Mixed to 7=Agree Strongly.

Demographic questions were asked regarding the gender, sexual orientation, occupation, family dynamic and age of first romantic relationship.

Sexual development questions were developed to expand upon previous research into sexual activity of young people (Schofield, 1965). Responses were recorded as an approximation of age at which each experience (with opposite-sex or same-sex partners) occurred for the first time for that person.

Exchange of self-image nudity (sexting) questions centred on characteristics of use, such as who the images were shared with, the platform used to transmit images, and whether they were recognisable in the images.

'*Pornography use' questions* recorded approximations of age of onset, frequency and location of use, whether pornography was used alone or with others and what categories were used.

Question types included multi-choice answer (with an 'Other' response where appropriate), Yes/No/I don't know responses and age-approximation questions.

Data Analysis

Only 'Male' and 'Female' gender identifiers were included in gender-based analysis (604 respondents) as the number of 'Other' responses endorsed for the 'Gender' question (2.7% of responses) was low.

Some measures required re-coding due to low frequencies in certain categories and/or to facilitate analysis. The variables re-coded were Sexuality (re-coded to Heterosexual and Non-heterosexual), Family Dynamic (Both Parents and Family Breakdown), Occupational Status (Student and Non-Student) and Frequency of Pornography Use (re-coded to Daily/Weekly Use and Less-than-Weekly Use).

For additional analysis, Attachment Security was re-coded into 'Secure' and 'Insecure' with those who endorsed Preoccupied, Fearful and Dismissive relationship styles being coded as Insecure. Age of first experience of Opposite-sex Sexual Intercourse and Same-sex Sexual Intercourse were re-coded to 'Under 16' & '16 and Over', and Age of Onset of Pornography Use was re-coded to match British Board of Film Classification (BBFC) categories: 4-11 years 'PG', 12-14 years '12', 15-17 years '15' 18-25 years '18'.

SPSS version 24.0 was used to carry out statistical analysis. A MANOVA analysis was attempted, but this resulted in considerable reduction in sample size due to the nature of the data. Therefore, the analyses for this study were conducted in a sequential format, using non-parametric methods for testing the research questions. Due to significant gender differences found in several of the variables measured (see Data Analysis), analyses were run separately for EA Males and EA Females.

Study hypotheses H1 to H4 are stated in the Introduction. One-way between-subjects ANOVAs were used to explore H1, H2 and H3. Chi

squared tests examined the frequency of current use of pornography with relationship style endorsed (H4).

Results

Descriptive Statistics

Demographic Characteristics. The Study analysed a sample of 621 'EA' respondents aged between 18 and 25. The Mean age of the EA sample was 21.2 years (SD=2.2, Median age =21, IQR=4). The demographic composition of the sample is presented in Table 3.2.

Table 3.2 shows that 53.5% of respondents were female and 43.8% male. The 'other' 2.7% of responses for the gender question included: Agender, Genderqueer, Non-Binary, Transgender, Androgyne, and Questioning.

For sexuality, 63.6% were heterosexual and 36.4% non-heterosexual. Bisexuals comprised of 25.9% of the overall sample. The 'Other' 5.8% of responses for the sexuality question included: Asexual, Pansexual, Queer, Undecided, Grey-Asexual, Bi-curious, and Ace.

Table 3.2 also shows 67.3% of respondents were students and most of the sample (75.4%) lived with their parents while growing up.

Chi Square analyses were undertaken to explore the heterogeneity of the sample. This analysis indicated that males and females were

significantly different to each other across several demographic characteristics. Significant differences between males and females were found for the demographic characteristic variables of sexuality and family dynamic. This analysis included the categories 'Heterosexuals' and 'Non-heterosexuals' (e.g. homosexual, lesbian, bisexual and other sexualities reported), and 'Both Parents' and 'Family Breakdown' (including a combination of alternative family living arrangements).

Chi square analysis of the composition of the sample (including only males and females) indicated that women were significantly more likely than men to be in the 'Non-heterosexuals' category $(X^2$ (1, N = 604) =30.49, p < .001).

For the demographic of family dynamic, Chi square analysis of the composition of the sample (including only males and females) indicated that women were significantly more likely than men to be in the 'Family Breakdown' category $(X^2$ (1, N = 604) =4.434, p =.035).

There was no significant difference found between males and females for the occupational status categories of 'Student' and 'Non-Student'.

Due to the significant differences identified, males and females were analysed separately in the present study.

Relationship Style

Figure 3.1 demonstrates the spread of relationship styles within the whole EA sample. Of the 621 respondents, 33% endorsed the 'fearful' response style, 29.3% 'secure', 24.3% 'preoccupied' and 13.4% 'dismissive'.

Figure 3.1: Percentage of Sample in each Relationship Style Category

Relationship Style Endorsed (Total Sample)

Dismissive 14%
Secure 29%
Preoccupied 24%
Fearful 33%
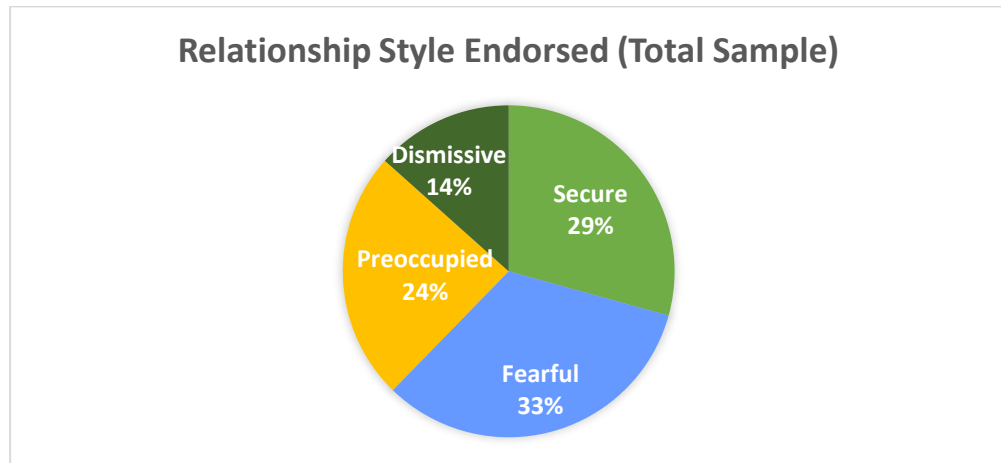
Table 3.2: *Demographic Characteristics/Descriptive Statistics for EA (N=621) *

Characteristics		N	%
Gender	Male	272	43.8%
	Female	332	53.5%
	Other (Agender 4, Genderqueer 3, Non-Binary 7, Transgender 1, Androgyne 1, Questioning 1)	17	2.7%
Sexuality	Heterosexual	395	63.6%
	Homosexual	17	2.7%
	Lesbian	12	1.9%
	Bisexual	161	25.9%
	Other (Asexual 13 Pansexual 12, Queer 4, Undecided 3 Gray-Asexual 2 Bi-curious 1 Ace 1)	36	5.8%
Occupational Status	Employed	167	26.9%
	Unemployed	36	5.8%
	Student	418	67.3%
Family Dynamic	Both Parents	468	75.4%
	Single Mother	78	12.6%
	Single Father	11	1.8%
	Father & Stepmother	4	0.6%
	Father & Stepfather	0	0%
	Mother & Stepfather	26	4.2%
	Mother & Stepmother	0	0%
	Adoptive/Foster Parents	4	0.6%
	Relative other than Parents	10	1.6%
	Other	20	3.2%
Relationship Questionnaire Style Endorsed	Secure	182	29.3%
	Fearful	205	33%
	Preoccupied	151	24.3%
	Dismissive	83	13.4%

Sexual Activities

Figure 3.2 demonstrates the mean ages at which respondents engaged in their first experience of each sexual activity. Figure 3.2 shows that for male respondents engaged in same sex relations, six of ten sexual activities (show genitals, feeling body over clothes, first romantic relation, feeling body under clothes, manipulating genitals and sexual intercourse), had a mean age of first experience later than the rest of the sample.

There was a clear and progressive pattern of sexual activities with opposite sex partners following the established progression with age and level of intimacy over time. This progressive pattern was not as clear with sexual activities with same-sex partners.

Figure 3.2: Graph of Mean Age of Sexual Activities for Same Sex and Opposite Sex by Gender
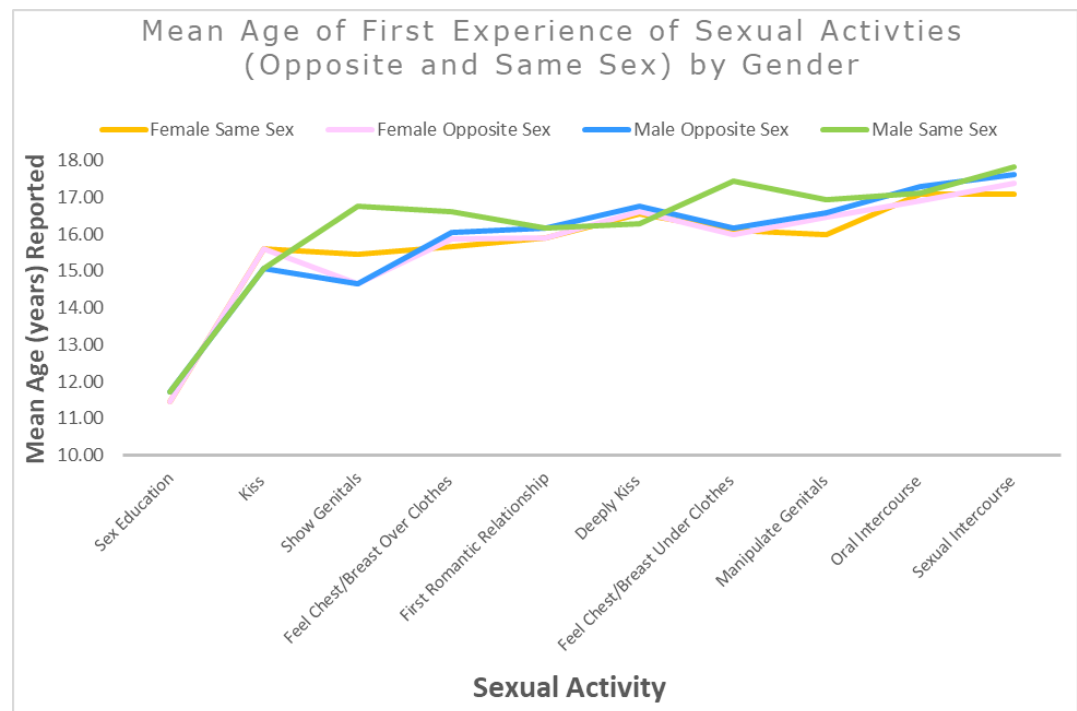
Sexting

No significant differences were found for sexting related to sexuality, occupation, or family dynamic. Table Three provides the sexting characteristics of the whole sample (N=621), Males (N=272) and Females (N=332). The mean age for the total sample of 'First Taking a Nude or Semi-Nude Image of Self' was 16 years and 'First Sending a Nude or Semi-Nude Image of Self' was 16.30 years. The mean age within this sample for 'First Taking a Nude or Semi-Nude Image of Others' was 17.30 years and 'First Sending a Nude or Semi-Nude Image of Others' was 17.50 years old. Over half of the sample had taken and sent their first nude or semi-nude images of themselves under 18 years old. Most of these images were sent to a boyfriend or girlfriend, most frequently by text message closely followed by Snapchat. The content of this first image was most commonly Nude breasts for females (38.1% compared to 5.8% for males), and Nude Genitalia for Males (43.2% compared to 3.7% for females). The persons taking and sending these images mostly considered themselves to be unrecognisable in the first image they 'sexted' of themselves.

Table 3.3: Characteristics of Sexting

Characteristics		Total		Female		Male	
		N	%	N	%	N	%
Sexting	Yes	488	78.6%	273	82.2%	206	75.7%
	No	133	21.4%	59	17.8%	66	24.3%
Age First Taken Nude/Semi-Nude Image of Self *(n=464)	Under 18 years old	283	61.%	166	61.7%	88	54.3%
	18 years old & over	181	39.%	103	38.3%	74	45.7%
Age First Sent Nude/Semi-Nude Image of Self *(n=458)	Under 18 years old	250	54.6%	151	56.4%	96	52.2%
	18 years old and over	208	45.4%	115	43.2%	88	47.8%
Recipient of First Nude/Semi-Nude Image of Self *(n=488)	Boyfriend/Girlfriend	328	67.2%	196	71.8%	128	62.1%
	Friend	69	14.1%	38	13.9%	31	15%
	Stranger	54	11.1%	25	9.2%	23	11.2%
	Agency/Modelling	0	0%	0	0%	0	0%
	Other (N/A 24, Other Form of Relationship 13)	37	7.6%	14	5.1%	24	11.7%
Mechanism for Sending First Nude/Semi-Nude Image of Self (Select All That Apply) *(Total Responses=551)	Facebook	35	7.2%	20	7.3%	15	7.3%
	Snapchat	161	33.0%	95	34.8%	63	30.6%
	Twitter	1	0.2%	1	0.4%	0	0%
	Instagram	1	0.2%	0	0	1	0.5%
	Kik	37	7.6%	17	6.2%	19	9.2%
	Tumblr	3	0.6%	3	1.1%	0	0%
	Skype	26	5.3%	18	6.6%	7	3.4%
	Text	188	38.5%	110	40.3%	75	36.4%
	Email	23	4.7%	13	4.8%	7	3.4%
	Other (Whatsapp 21, N/A 24, MSN/IM 10, Chatroom 3 Misc. Apps 14, Misc. Websites 4)	76	15.6%	33	12.1%	45	21.8%
Content of First Image *(n=488)	Sexual Pose without Clothes	54	11.1%	28	10.3%	26	12.6%
	Sexual Pose with Clothes on	57	11.7%	44	16.1%	13	6.3%
	Full Nude Photo	31	6.4%	9	3.3%	19	9.2%
	Nude Breast/Chest Only	117	24%	104	38.1%	12	5.8%
	Nude Genitals (Penis/Vagina) Only	100	20.5%	10	3.7%	89	43.2%
	Underwear/Swimwear	101	20.7%	71	26%	27	13.1%
	Other (N/A 23, Other Body Parts 1, Partially Exposed 2, 'All of the Above' 1, Sex Toys 1)	28	5.7%	7	2.6%	20	9.7%
Recognisable in the First Nude/Semi-Nude Image Sent of Self? *(n=488)	Yes	140	28.7%	92	33.7%	46	22.3%
	No	348	71.3%	181	66.3%	160	77.7%

Recipient Share Image with other people? *(n=488)	Yes	16	3.3%	11	4%	4	1.9%
	No	293	60%	159	58.2%	130	63.1%
	I don't know	179	36.7%	103	37.7%	72	35%
Did People Other Than the Recipient Access the Photo? *(n=488)	Yes	26	5.3%	18	6.6%	6	2.9%
	No	319	65.4%	172	63%	143	69.4%
	I don't know	143	29.3%	83	30.4%	57	27.7%

Pornography Use

No significant differences were found for pornography use related to sexuality, occupation, or family dynamic. Table 3.4 shows the pornography use characteristics of the whole sample (N=621), Female (N=332) and Males (N=272). The mean age of first experience of viewing pornography was 13.2 years old. Most respondents' first experience of viewing pornography was illegal (under 18 years old). Viewing pornography once per week or more was the most common frequency for both males and females (see Figure 4). 89.6% of Males viewed pornography at a frequency of at least once per week compared to 49.8% of Females. All Respondents mostly viewed pornography from an internet browser on a Laptop/Computer or Mobile Phone.

Generally, respondents watched pornography alone, thought that pornography is addictive, and that pornography influences expectations of sexual activity.

Table 3.4: Characteristics of Sample – Pornography Use

Characteristics		Total		Female		Male	
		N	%	N	%	N	%
Pornography Use (Ever)	Yes	597	96.1%	309	93.1%	271	99.6%
	No	24	3.9%	23	6.9%	1	0.4%
Current Frequency of Porn Use *(n=597)	More than Once a Day	44	7.4%	5	1.6%	38	14%
	Daily	74	12.4%	12	3.9%	61	22.5%
	Once per week or more	287	48%	137	44.3%	144	53.1%
	Once a fortnight	66	11.1%	53	17.2%	9	3.3%
	Monthly or less	126	21.1%	102	33%	19	7%
Age First Viewed Porn Rated 18 and over *(n=590)	4-11 (as if rated PG) -illegal	150	25.4%	61	19.9%	87	32.5%
	12-14 (as if rated 12) – illegal	267	45.3%	115	37.6%	143	53.4%
	15-17 (as if rated 15) – illegal	117	19.8%	81	26.5%	33	12.3%
	18 and Over (as if rated 18) – Legal	56	9.5%	49	16%	5	1.9%
Current Pornography Use	Yes	511	82.3%	259	78%	238	87.5%
	No	110	17.7%	73	22%	34	12.5%
Mechanism for viewing Pornography (Select All that Apply) (Total Responses: 1376)	Internet Browser via Laptop/Computer	502	84.1%	243	78.6%	246	90.8%
	Facebook	6	1.0%	0	0.0%	5	1.8%
	Instagram	17	2.8%	4	1.3%	13	4.8%
	Tumblr	217	36.3%	128	41.4%	78	28.8%
	Film/DVD	20	3.4%	8	2.6%	12	4.4%
	TV	12	2.0%	3	1.0%	9	3.3%
	Magazines (including 'Lads Mags')	18	3.0%	5	1.6%	13	4.8%
	Newspaper (e.g. 'Page 3')	3	0.5%	1	0.3%	2	0.7%
	Internet Browser via Tablet	115	19.3%	44	14.2%	70	25.8%
	Internet Browser via Mobile Phone	432	72.4%	223	72.2%	196	72.3%
	Other (Books/Literature 3, Mobile Apps 8, Reddit 16 Internet Browser via Other Medium 3, N/A 1, Friend's Mobile Device 2, Pre-downloaded/Saved Content 1)	34	5.7%	17	5.5%	17	6.3%
Do you watch Pornography Alone	Alone	560	93.8%	287	92.9%	257	94.8%
	With a Romantic Partner	31	5.2%	18	5.8%	13	4.8%

or with other people?	With a friend or friends	6	1%	4	1.3%	1.00	0.4%
	In Groups	N/A	0%	0	0%	0	0%
	Alone and with a Romantic Partner	N/A	0%	0	0%	0	0%
Do you think Pornography influences Expectations of Sexual Activity?	Yes	509	85.3%	270	87.4%	224	82.7%
	No	88	14.7%	39	12.6%	47	17.3%
Do you think Pornography is Addictive?	Yes	422	70.7%	208	67.3%	205	75.6%
	No	175	29.3%	101	32.7%	66	24.4%

Figures 3.3 and 3.4 illustrate the age spread of first experience of viewing pornography for females and males separately as their responses were significantly different (X^2 (3, N = 574) =61.42, p <.0001). The green segment of this figure indicates that only 16% of females and 2% of males watched pornography for the first time legally. Overall, 57.5% of females first viewed pornography before the age of 14 compared to 85.9% of males.

Figure 3.3: Age First Viewed Pornography for Females

Age First Viewed Pornography, by by BBFC Age Categories for Females (n=309)

- 4-11 (BBFC RATING PG)
- 12-14 (BBFC RATING 12)
- 15-17 (BBFC RATING 15)
- 18 AND OVER (BBFC RATING 18)
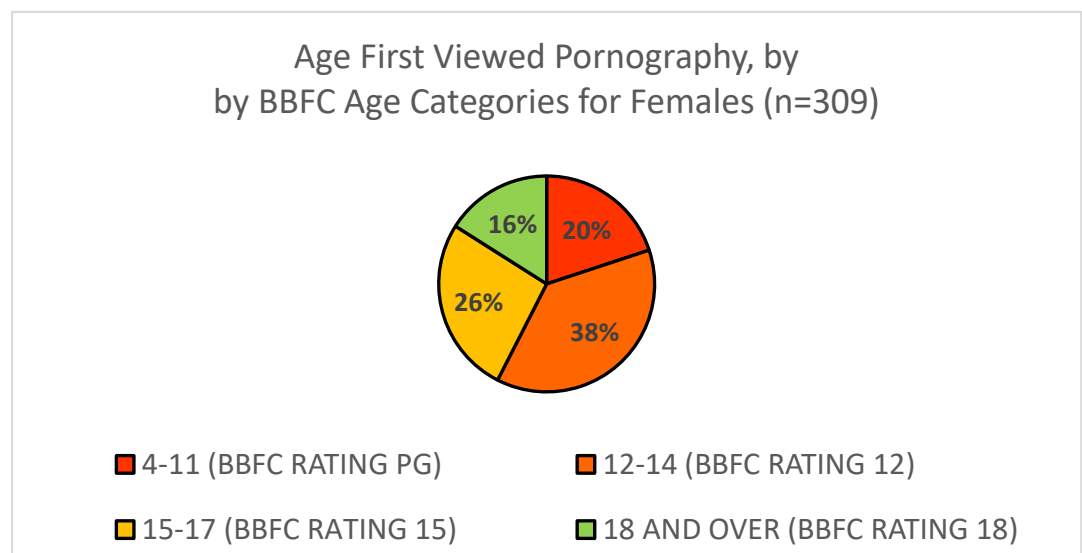
Figure 3.4: Age First Viewed Pornography for Males

Age First Viewed Pornography, by
by BBFC Age Categories for Males (n=271)

2%
12%
33%
53%

■ 4-11 (BBFC RATING PG)　　　■ 12-14 (BBFC RATING 12)
□ 15-17 (BBFC RATING 15)　　　■ 18 AND OVER (BBFC RATING 18)
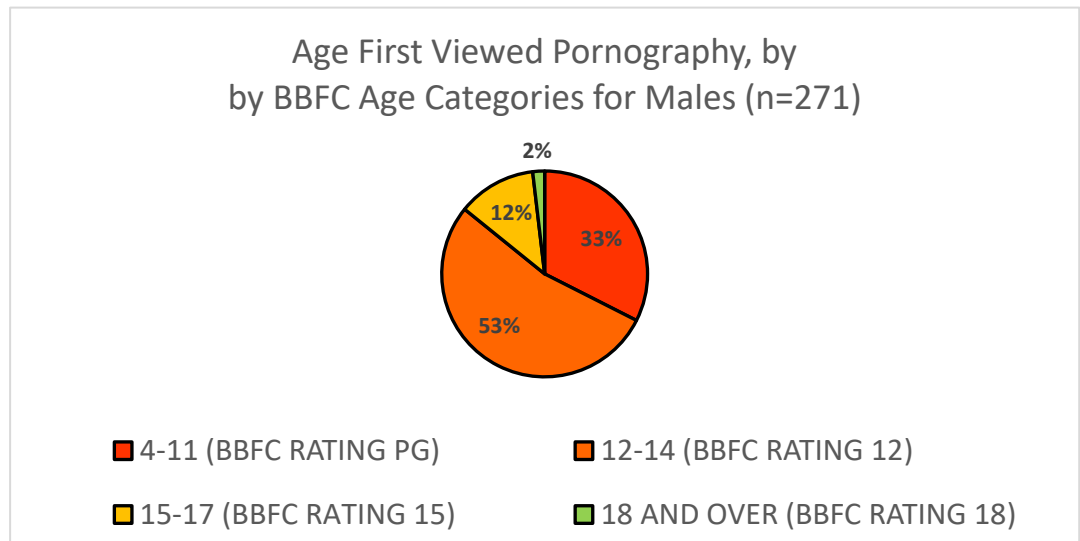
Figure 3.5: Frequency of Pornography Use

Of the 597 respondents who stated they watch
pornography…

Frequency of Pornography
Current Use

Monthly or less
Once per week or more
More than Once a Day

0　50　100　150　200　250　300　350
Number of Respondents

■ Respondents
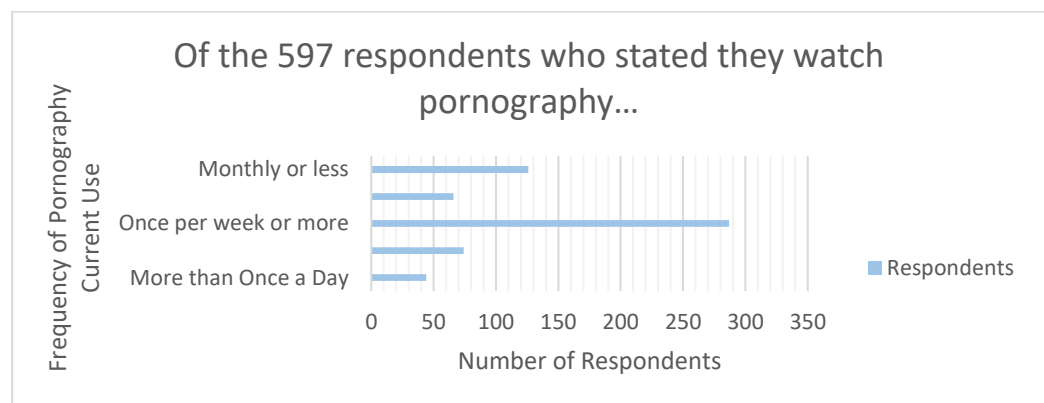
Figure 3.5 demonstrates the spread of responses for frequency of

pornography use. A chi squared analysis was conducted to explore

the relationship between frequency of current pornography use and

age at first viewing pornography. The relationship between these

variables was not significant. The findings from the current sample

are contradictory to the literature suggesting that these two

variables are related. This could suggest that early exposure of

pornography use is not necessarily linked to addiction to

pornography use.

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Inferential Statistics

H1a: Opposite-sex Females. A one-way between subjects' ANOVA was conducted to compare the age at first experience of sexual intercourse with the opposite sex for secure, fearful, preoccupied, and dismissive relationship styles. There was a significant association between relationship style and age at first sexual experience at the $p < .05$ level for the four relationship styles [$F (2, 272) = 3.36$, $p = 0.02$].

Post hoc comparisons using the Tukey HSD Test indicated that the mean age of first sexual intercourse with the opposite sex for the Dismissive relationship style (M=16.53, SD =1.70) was significantly different from the Secure relationship style (M =17.83, SD=2.10). However, the mean age for the preoccupied relationship style did not significantly differ from the secure, fearful or dismissive relationship styles. Taken together, these results suggest that the relationship style a female endorses is related to age of first sexual experience with the opposite sex. Specifically, these results suggest that females who endorse a dismissive relationship style are more likely to have had their first sexual experience with the opposite sex at an earlier age than those who endorse a secure relationship style.

This partly supports the hypothesis that attachment style would be related to age at first experience of sexual intercourse with the

opposite sex for females, with secure attachment being related to later age at first experience of sexual intercourse.

H1b: Same-sex Females. A one-way between subjects' ANOVA was conducted to compare the age at first experience of sexual intercourse with the same sex for secure, fearful, preoccupied, and dismissive relationship styles. There was no significant effect of relationship style endorsed with age at first sexual experience with the same sex for any of the four relationship styles [$F_{(3, 67)} = 0.31$, $p = 0.82$]

H1c: Opposite-sex Males. A one-way between subjects' ANOVA was conducted to compare the age at first experience of sexual intercourse with the opposite sex for secure, fearful, preoccupied, and dismissive relationship styles. There was no significant association between relationship style and age at first sexual experience at the $p < .05$ level for the four relationship styles [$F_{(3, 188)} = 2.31$, $p = 0.08$]. This does not support the hypothesis that attachment style would be related to age at first experience of sexual intercourse with the opposite sex for males.

H1d: Same-sex Males. A one-way between subjects' ANOVA was conducted to compare the age at first experience of sexual intercourse with the same sex for secure, fearful, preoccupied, and dismissive relationship styles. There was no significant effect of relationship style endorsed with age at first sexual experience with the same sex for any of the four relationship

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styles [F (3, 31) = 1.01 p =0.14] using Welch's F ratio due to the assumption of homogeneity of variance being violated (significant result for the Levene Statistic).

H2a: Sexting Females. A one-way between subjects' ANOVA was conducted to compare the age at first experience of sexting for secure, fearful, preoccupied, and dismissive relationship style. There was no significant effect of relationship style endorsed with age at first experience of sexting for any of the four relationship styles [F (3, 262) = 2.63, p =0.05].

H2b: Sexting Males. A one-way between subjects' ANOVA was conducted to compare the age at first experience of sexting for secure, fearful, preoccupied, and dismissive relationship style. There was no significant effect of relationship style endorsed with age at first experience of sexting for any of the four relationship styles [F (3, 180) = 0.56, p =0.65].

H3a: Pornography Females. A one-way between subjects' ANOVA was conducted to compare the age at first experience of viewing pornography for secure, fearful, preoccupied, and dismissive relationship style. There was a significant effect of relationship style endorsed with age at first experience of viewing pornography at the p <.05 level for the four relationship styles [F (3, 302) = 4.30, p =0.01].

Post hoc comparisons using the Tukey HSD Test indicated that the mean age for the Secure relationship style (M=14.90, SD =3.28)

was significantly different to that of the preoccupied relationship style (M =13.31, SD=3.47) and the dismissive relationship Style (M=13.03, SD=3.30). However, the fearful relationship style did not significantly differ in age of first experience of viewing pornography from the secure, preoccupied or dismissive relationship styles.

Taken together, these results suggest that the relationship style a person endorses is related to age of first experience of viewing pornography. Specifically, these results suggest that females who endorse a secure relationship style are more likely to have had their first experience of viewing pornography at a later age than those who endorse a preoccupied or dismissive relationship style.

This partly supports the hypothesis that attachment style would be related to age at first experience of viewing pornography, with secure attachment being related to later age at first experience of viewing pornography.

H3b: Pornography Males. A one-way between subjects' ANOVA was conducted to compare the age at first experience of viewing pornography for secure, fearful, preoccupied, and dismissive relationship style. There was no significant effect of relationship style endorsed with age at first experience of viewing pornography at the p <.05 level for the four relationship styles [F (3, 264) = 843, p =472].

This does not support the hypothesis that attachment style would be related to age at first experience of viewing pornography.

H4a: Frequency of Pornography Use Females. A chi-square test of independence was performed to examine the relationship between the frequency of current pornography use and relationship style endorsed. The relationship between these variables was not significant.

H4b: Frequency of Pornography Use Males. A chi-square test of independence was performed to examine the relationship between the frequency of current pornography use and relationship style endorsed. The relationship between these variables was not significant.

Discussion

H1 was partially supported. Exploring H1a, results suggest that the relationship style a female endorses is related to age of first sexual experience with the opposite sex. Specifically, these results suggest that females who endorse a dismissive relationship style are more likely to have had their first sexual experience with the opposite sex at an earlier age than those who endorse a secure relationship style.

H3 was partially supported. Exploring H3a, results suggest that females who endorse a secure relationship style are more likely to have had their first experience of viewing pornography at a later age than those who endorse a preoccupied or dismissive relationship style.

H2 (Sexting and RQ Style) and H4 (Frequency of Pornography Use and RQ Style) were not supported for either males or females. For males, H1b (First Sexual Experience and RQ Style) and H3b (First Experience of Viewing Pornography and RQ Style) were not supported.

The early use of sexting and pornography, and the high rates of pornography use, provide support for the idea that these methods of expressing and exploring sexuality are becoming 'normalised' behaviour. This supports the view that social norms around sexuality have changed in the past three decades.

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The technology used to facilitate these changes is clearly demonstrated in the results, with the most common mechanisms of viewing pornographic material being via internet browser by laptop or computer and mobile phones. Applications such as 'Snapchat' and text messaging facilitate the transmission of nude and semi-nude images. Most of these experiences begin in early adolescence, thus modern technology is shaping the way people are expressing their sexuality and potentially impacting sexual attitudes and behaviours.

The results of H1a do not directly support the findings of Skinner et al. (2015), or Bogaert and Sadava (2002). There is a discrepancy between the findings of the present study suggesting that earlier sexual intercourse is related to endorsing a Dismissive rather than Secure relationship style, whereas Bogaert and Sadava's study suggests that those with an anxious (or preoccupied) attachment are more likely to have had earlier sexual intercourse than those with secure attachment styles. Taken more broadly, this could be explained by a secure relationship style being associated with later sexual intercourse, suggesting some potential overlap between the insecure relationship style categories.

The findings of the present study are consistent with research regarding the age at first exposure to pornography (Ybarra and Mitchell 2005; Štulhofer, Buško et al 2010). The results of H3a (female's first experience of viewing pornography more likely to be earlier if they endorse a preoccupied or dismissive relationship

style) provide more context to the findings of Bleakley, Hennessy & Fishbein (2011) where avoidant (dismissive) and anxious (preoccupied) styles were associated with frequency of pornography use and problematic pornography use. However, in the present study H4 was not supported, indicating that there was no significant relationship between frequency of pornography use and relationship style endorsed for both males and females, conflicting with the results of Bleakley, Hennessy & Fishbein (2011).

Weisskirch and Delevi (2011) found that attachment anxiety predicted positive attitudes towards sexting. Similarly, research has found that attachment anxiety is related to sexting as a result of poor impulse control in women, and frequency of consenting to unwanted sexting (Trub and Starks 2017; Drouin and Tobin 2014). Alongside this, Drouin and Landgraff (2012) found that sexting was more common with those with insecure attachments. Whilst sexting may be related to relationship style, in the current study age of first experience of sexting was not found to be related in either males or females.

Attachment has the potential to change over a lifespan (i.e. more or less secure). It is important, when interpreting results of this study, to consider that the RQ score represents the individual's current relationship style (at the time of the questionnaire), whereas the questions relating to sexual activities are mostly retrospective. Different developmental experiences (for example, early sexual intercourse) can shape a person's attachment style.

The original study for the RQ reported 47% secure, 18% dismissive, 14% preoccupied and 21% fearful for the relationship styles endorsed (Bartholomew & Horowitz, 1991). Considering the current sample, females and males are represented in Table 3.5. This indicates that the present sample had a higher proportion of preoccupied and fearful relationships styles endorsed, and a lower proportion of secure and dismissive styles endorsed than the original 1991 study. The difference is more pronounced for EA females than males to the total 1991 sample. This could be hypothesised to be related to a large proportion of the sample being gathered from online forums focused on relationships – it its likely those with more relationship anxiety would have come across the advertisement for the study, as they were searching/frequenting online forums focussing on relationships and sex. There is a potential for the results in the present study to be biased to over-represent the characteristics of those who endorse preoccupied and fearful relationship styles. Therefore, care should be taken in the interpretation of the results.

However, it is of note the population used for the original 1991 study was made up of American psychology students. 67.3% of the present sample reported that they were students. There is also a 27-year difference in the data collection from the present study and the original.

The data collected for this research study can be assumed to be across socio-economic status, culture, ethnicity, and educational

level. The attachment styles endorsed by participants in this study

are therefore potentially unique to the sample obtained and

represent English-speaking internet users.

Table 3.5: Comparison of Sample Composition for Relationship Style Endorsed

	Secure	Dismissive (Avoidant)	Preoccupied (Anxious and Ambivalent)	Fearful
RQ (Bartholomew & Horowitz, 1991)	47%	18%	14%	21%
Current Sample Females	28%	11%	24%	37%
Current Sample Males	32%	16%	24%	28%

Limitations

It is important to consider that the present sample is 'self-selected'

in that participants chose to complete the questionnaire. There is

limited control over extraneous variables and spurious responses.

This could mean the sample may be skewed to reflect the

characteristics of persons who are more likely to engage with

material associated with sex, relationships, and pornography on the

internet. This study is subject to self-selection bias.

The survey data collected is likely to be impacted to some degree by

impression management due to responses being self-report, with

participants potentially being dishonest or exaggerating their

responses to questions on sexual behaviour, pornography use, and

relationships.

This study asks for retrospective answers relating to age of first experience of sexual activity. It was considered that for many people, first experiences are often more memorable and therefore would be somewhat easy to recall for respondents aged 18-25 years. It is of note that any self-report information respondents provided may be incorrect, despite best efforts to be honest and accurate, due to factors such as poor recall ability.

Suggestions for further research include examining the interaction between consensual sexting and sexual experience and attachment in more detail, as well as further exploration of the function of sexting as a method of communication and consideration of how the risks to minors can be managed.

Conclusion

This research adds further support for the hypothesised links between experience of sexual intercourse with the opposite sex and current relationship style, and early experience of pornography use with current relationship style for EA females. This has practical implications for public health providers in supporting young women to develop healthy sexual attitudes and behaviours.

Chapter Four: A Critique of The Problematic Pornography Use Scale (PPUS): Norms for an Online English-Speaking Sample

Abstract

This Chapter outlines the use and application of the 'Problematic Pornography Use Scale' (PPUS). Kor and colleagues (2014) devised a 12-item scale using a 6-point Likert scale, ranging from 'Never true' to 'Almost Always true' to assess an individual's self-reported behaviour over the last 6 months. The PPUS utilises the addiction framework as a basis to understand 'problematic pornography use', identifying factors that may reflect addictive pornography use. The factors intended to be measured by the PPUS are: (1) distress and functional problems, (2) excessive use, (3) control difficulties, and (4) use for escape/avoidance of negative emotions. The overall internal consistency, convergent and construct validity of the PPUS was high. Concurrent and predictive validity may need further research and development with culturally sensitive norms for both males and females. With reference to one of the only studies (to date) of an English speaking online sample, individuals scoring over 26 and above may need referral for further assessment and intervention, being in the top 10% for problematic pornography use.

Introduction

This psychometric critique outlines the use and potential misuse of the 'Problematic Pornography Use Scale' (PPUS), a scale developed in Israel by Kor, Zilcha-Mano, Fogel, Mikulincer, Reid and Potenza (2014) to measure problematic pornography use (Kor et al., 2014). This critique offers a wider view of the context in which this scale has been derived (namely the existing literature surrounding this method), suggesting alternatives or supplements that could be used, and evaluating the tool's benefits and problems with regard to its practical, day-to-day usage. In addition, a study carried out by Beadsmoore and Browne (2019) will be presented involving 1031 English-speaking respondents who completed the PPUS online.

Kor et al., (2014) set out to validate the PPUS over a set of three studies, attempting to operationally define and measure problematic pornography use. The hope was that the research could in future guide efforts to identify and treat problematic pornography use and promote further developments and research in this area.

Firstly, the PPUS will be introduced, followed by a general discussion of some of the conceptual issues around pornography use. An examination of the psychometric properties of this tool including reliability and validity will be explored and normative samples from Israel are compared to an English speaking online sample, before finally drawing conclusions.

The Problematic Pornography Use Scale (PPUS)

The PPUS was a tool for assessing problematic pornography use based on an individual's self-reported perceived behaviour in the last 6 months. The PPUS utilises the addiction framework as a basis from which to understand 'problematic pornography use', identifying factors that may reflect addictive pornography use. The factors intended to be measured by the PPUS are: (1) distress and functional problems, (2) excessive use, (3) control difficulties, and (4) use for escape/avoidance of negative emotions.

Kor and colleagues devised a 12-item scale using a 6-point Likert scale, ranging from 'Never true' to 'Almost Always true'. The twelve items comprising the PPUS are detailed in Table 4.1. Each item was a statement, requiring an endorsement indicating to what degree the statement was true for the individual. Before responding to the items, the participants are advised: *'Considering the past 6 months please rate how the following statements relate to you'.*

Table 4.1: Problematic Pornography Use Scale

1. Using pornography has created significant problems in my personal relationships with other people, in social situations, at work or in other important aspects of my life.
2. I risked or put in jeopardy a significant relationship, place of employment, educational or career opportunity because of the use of pornographic materials
3. I continued using pornography despite the danger of harming myself physically (for example: difficulty getting an erection due to extensive use, difficulty reaching an orgasm in ways that do not include pornography)
4. I often think about pornography

5. I spend too much time being involved in thoughts about pornography
6. I spend too much time planning to and using pornography
7. I feel I cannot stop watching pornography
8. I have been unsuccessful in my efforts to reduce or control the frequency I use pornography in my life
9. I keep on watching pornographic materials even though I intend to stop
10. I use pornographic materials to escape my grief or to free myself from negative feelings
11. I watch pornographic materials when I am feeling despondent
12. I have used pornography while experiencing unpleasant or difficult feelings (for example: depression, sorrow, anxiety, boredom, restlessness, shame or nervousness)

The PPUS takes around 5-10 minutes to complete. There are no detailed requirements of training for administration or scoring of the scale detailed by the authors. Due to its simplicity, there are no manualised instructions provided alongside the tool. The scoring was calculated by the interviewer after the individual has completed the tool, based on the items endorsed. The scoring was not detailed by the authors but could be calculated by the number of standard deviations from the reported means in the original study (Kor et al., 2014).

The three original validation studies (Kor et al., 2014) reported the PPUS to be a useful tool in determining the extent to which Problematic Pornography use might be conceptualised as an addiction. The findings, which are discussed in further detail below, are based on an online opportunity sample from an Israeli population.

Fernandez & Griffiths, (2019) undertook a systematic review of self-report psychometric instruments that have been developed to assess problematic pornography use. The results of this review suggested that whilst instruments had different conceptualisations of 'problematic' pornography use, addiction was the most common theoretical framework used across all instruments that were reviewed. The PPUS was included in this review and was suggested to have robust psychometric properties. Despite this, it is noted that further information may be required from respondents completing the instrument to establish which areas of the individual's life has been affected. It is also highlighted that the PPUS is one of two instruments within the systematic review to consider 'use despite harm' which is an addiction construct assessed by diagnostic criteria for 'Hypersexual Disorder' and 'Compulsive Sexual Behaviour Disorder'.

Conceptual Issues surrounding Pornography Use

With a recorded site traffic of 28.5 billion users worldwide during 2017 (an average of 81 million people per day), PornHub's '2017: A Year in Review' evidences the sheer scale and demand for pornographic content in the present day. It can be argued that the increasing numbers of people using the internet to access pornography has resulted in both positive and negative qualities, including improvement of sexual functioning but also providing other risks for unlawful, adverse or harmful conduct (Eleuteri, Tripodi, Petruccelli, Rossi, & Simonelli, 2014). Despite this rapid

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increase in pornography use in the UK and worldwide (Szymanski & Stewart-Richardson, 2014; Petersen & Hyde, 2010) over the past few decades, the arrival of reliable and valid assessment instruments for evaluating the problematic use of pornography was still limited. As such, this was an outstanding area of need for the discipline of forensic and clinical psychology.

Pornography use and misuse as a field of enquiry was characterised by, and was undoubtedly intrinsically intertwined with, the social rules and standards that surround the concept of pornography. Trends such as a rise in self-reported 'problematic pornography use' could be attributed to the increased consumption and social acceptance of pornography (D'Orlando, 2011). There was divergence in opinion of the perceived negative impact of pornography, with many Psychologists and Psychiatrists emphasising these effects as negative, and many Sociologists on the other hand, purporting a view that some of the conclusions reached by Psychologists and Psychiatrists (e.g. the concept of sex addiction, or sexual compulsivity) are subjective and socially-oriented (Levine and Troiden, 1988).

The question of the impact of prevailing social values, and their subjectivity, was an established conceptual issue within the field of psychology. Sound scientific methodology was often employed throughout the field, with close attention paid to the potential social, legal, and ethical ramifications of the misuse of these scientific methods (e.g. allowing one's own biases to intrude on the

objectivity of research). It was of note that stating, and attempting to explore, these more controversial areas of social psychology was vital for creating useful debate and advancing the general understanding of a discipline or research area to move us closer to the truth. It can be questioned as to how far a controversial issue should be pursued before its negative effects outweigh the positive debate.

Another important consideration was the benefit of hindsight. It was easy to criticise after the event and judge historical research, but it was essential to remember that they can be taken out of context in being judged by today's standards and not those of the day. This was countered by formulating a critical narrative over the timeline of development of psychological thought on sexuality to ensure conclusions drawn are not based on anomalies but a collection of viewpoints.

There was an important question, therefore, surrounding the definitions and language used to assess problematic pornography use. Considering the debate of liberal and permissive sexual attitudes to conservative and narrow sexual attitudes, it would depend on where one 'sits' on this continuum as to where one places their idea of 'problematic' behaviours. As such, this was an important consideration for the development of a psychometric to assess the construct of this behaviour. Not only in the administration, scoring, and interpretation of the instrument, but also in the experience of the individual subject to the test

themselves. It was important that a unified understanding was established, about the meaning and interpretation of the language used within the scale when considering the validity of the tool.

The PPUS conceptualises the definition of 'problematic pornography use' within the addiction model of pornography use. It can be argued that it was more appropriate to use the term 'problematic use' instead of 'addiction', when clinical evidence of an actual addiction cannot be evidenced with the use of self-reported data (Ross et al., 2012). It was a self-report instrument that aims to identify specific attributes that may signify 'addictive' pornography use. Definitions of pornographic material are notoriously difficult to pin down (e.g. Ayres & Haddock, 2009; Daneback, Træen & Sven-Axel, 2009; Ford, Durtschi, & Franklin, 2012, Haavio-Mannila & Kontula, 2003; Kingston, Malamuth, Fedoroff & Marshall, 2009). The definition used for the PPUS was: 1) creates or elicits sexual thoughts, feelings or behaviours; and 2) contains explicit images or descriptions of sexual acts involving the genitals. As the authors note, this definition has been used among other sex researchers in operationalising a working definition of pornography (Hald & Malamuth, 2008; Reid, Li Filliland, Stein & Fong, 2011).

Kor et al (2014) highlight that whilst some authors consider the use of pornography as a positive method of improving understanding and confirming their sexual orientation (Hald, Smolenski and Rosser (2013), a number of significant psychological problems have also been associated with frequent use of pornography. Usage has been

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associated with diminished trust in intimate partners, cynical attitudes about love and dissociation of love and sexuality, all affecting healthy sexual socialization (Zillman, 2000). Frequency of pornography use, and problematic pornography use, has been found to be related to more gender role conflict, more anxious and avoidant attachment styles, poor relationship quality and less sexual satisfaction (Szymanski & Stewart-Richardson, 2014). There are also concerns related to sexual development including underage sex, expectations of what was 'appropriate sex' and excessive pornography use leading to harmful sexual behaviour/offending (Malamuth, Addison and Koss, 2000; Ashurst & McAlinden, 2015). Frequency of exposure to sexually explicit material has also been previously linked with compulsivity and addiction to explicit images (To, Ngai, & Iu Kan, 2012). Individuals who report highly frequent use, as the author's highlight, also tend to report a history of traumatic experiences, such as sexual, physical, or emotional abuse (Levert, 2007).

Kor et al (2014) confirm that there was 'no agreed upon way' to measure excessive pornography use. In the absence of any normative, or non-normative data, developing this construct was made difficult due to inconsistent operationalised definitions of pornography use, difficult to generalise samples and a combination of validated and researcher-generated questions to investigate this area, indicating that the findings in the area are not comparable (Short et al., 2012; Wéry & Billieux, 2015). Most of the pre-existing

assessment tools for pornography use, have a limited theoretical basis and have tendency towards assessing the duration and frequency of pornography use (e.g., Lam, & Chan, 2007; Lo & Wei, 2005; Meerkerk, Van den Eijnden, & Garretsen, 2006; Stack, Wasserman, & Kern, 2004; Traeen, Spitznogle, & Beverfjord, 2004; Yoder, Virden, & Amin, 2005).   Several psychometric tools have been developed throughout the 2000s that purport to assess construct of 'problematic' online pornography use. However, these mainly focused on broader notions such as cybersex, sex addiction, or the use of the internet for sex (e.g., Carnes & Wilson, 2002; Delmonico & Miller, 2003; Laier, Pawlikowski, Pekal, Schulte, & Brand, 2012). Furthermore, hypersexuality, compulsive pornography use, and compulsive sexual behaviour have been evaluated using various scales (e.g., Coleman, Miner, Ohlerking, & Raymond, 2001; Noor, Rosser, & Erickson, 2014; Reid, Garos, & Carpenter, 2011; Womack, Hook, Ramos, Davis, & Penberthy; 2013), and only a small number of tools examined and homed in on the specific idea of 'problematic pornography use'.

The Cyber Pornography Use Inventory (CPUI-9) (Grubbs et al., 2015) was a nine-item tool, developing on the CPUI-31. This tool evaluates three factors (effort, compulsivity and distress). The Problematic Pornography Use Scale (PPUS; Kor et al., 2014) has four factors (distress and functional problems, excessive use, control difficulties, and use for escape/avoiding negative emotions). The PPUS integrates previous tools used to identify related topics in

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order to assess these aspects. It can be argued that due to the seemingly inductive approach taken with the design of these tools, neither the PPUS nor the CPUI have a strong underpinning in theory rooted in established psychological understanding. A criticism from Griffiths' (2005) that can be applied to the PPUS was that it does not consider all the 'potential dimensions of problematic pornography use', namely withdrawal and relapse. Alongside this, Griffiths highlights the benefits of the deductive approach which has found to be useful in the development of psychometric tools to assess other types of excessive or addictive problematic behaviours, such as gaming (Lemmens, Valkenburg, & Peter, 2009), shopping (Andreassen et al., 2015), or the use of tinder (Orosz, Tóth-Király, Bőthe, & Melher, 2016). A countercriticism of this deductive approach (considering the aforementioned difficulties associated with social values and interpretation of the data) was the view that there was little established or 'known' about the area of problematic pornography use. With exponential technological advances ensuring widespread availability, affordability, and access to pornography, a combination of deductive and inductive reasoning (i.e. hypothesis testing and theory formation and checking this data against established theories) can be used to get closer to understanding the 'truth' of problematic pornography use.

In defining 'problematic' pornography use, frequency can be viewed as a key factor for consideration, but it cannot be considered the only or the defining factor of this phenomenon. Consideration of

other characteristics of 'problematic pornography use' such as poor impulse control, compulsivity, the use of sex for avoiding or escaping negative emotions, and functional impairment and distress (Kor et al. 2013) are important parts of the picture. The PPUS authors highlight features shared between individuals with excessive pornography use problems and other addictive behaviours such as gambling and substance misuse.

Assessing for problematic pornography use could lead to improved treatment outcomes and assessing treatment effectiveness, along with an improved understanding of prevalence and severity of problematic pornography use.

Psychometric Measures and Scales

The British Psychological Society's definition of a psychometric test was 'a psychological test was 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'. Psychometric measures can be a useful component of a clinical assessment and formulation of a 'presenting problem'.

It was important in evaluating the measurement properties of an instrument that the study was of high quality methodologically to guarantee suitable conclusions are drawn about the measurement properties of the instrument.

Psychometric Properties of the PPUS

An examination of the psychometric properties of the PPUS including an assessment of reliability, validity, appropriateness of norms and ability to discriminate will follow. This will be followed by a brief consideration of the possible applicability of the tool within clinical settings, forensic settings and its research utility.

In Kor et al.'s original paper, there were a number of studies that contributed to the development of the PPUS. In Study 1, initial items were identified and developed targeting the four definitional concepts of problematic pornography use, generating a 21-item scale. Study 2 revised the 21-item PPUS to a brief 12-item measure. The psychometric properties of the 12-item scale were also established. Finally, in Study 3, correlations between the theoretically relevant constructs and the 12-item PPUS were observed.

As the research base for problematic pornography use was developing there were a limited number of studies utilising the PPUS. Kor and Colleagues detail the three original studies validating the tool. The tool has been utilised within a Persian sample and several studies have been conducted to validate the PPUS finding strong validity and reliability (Darvish & Nikmanesh, 2017; Kor, Potenza, Hoff, Porter, & Kraus, 2017; Kor et al., 2014).

Despite this scale's reliability and validity, the scale has been criticised as 'too long to be used as a brief measure' (Noor, Rosser, & Erickson, 2014). However, this can be contested as a 12-item tool that takes less than five minutes was arguably 'brief enough' for a

screening tool. The idea of the use of the PPUS is supported by Fernandez & Griffiths' (2019) assertion relating to the necessity for further clarification and assessment in order to establish *how* the use of pornography is problematic for the individual (i.e. which area of life (work, relationships, social situations, other) has been affected by pornography).

Norms

The PPUS was normed in Hebrew on an Israeli general population, utilising DSM criteria to assess preoccupation and compulsivity. A representative sample of the general population of Hebrew speaking Israelis was recruited by a major Israeli website designed to collect panel data for surveys in social science. The samples for all three studies were independent. It's psychometric performance in English has not yet been studied. The Study 1 sample consisted of 303 participants (137 women, 166 men), ranging from 18 to 70 years of age (M = 39.5, SD = 14.5). Fifty-three percent of participants were college graduates. The Study 2 sample consisted of 300 participants (120 women, 180 men), ranging from 18 to 69 years of age (M = 43.85, SD= 14.34). Forty-six percent of participants were college graduates. The Study 3 sample consisted of 1720 participants (834 men, 886 women) ranging in age from 18 to 70 years (M = 39.52, SD = 14.18). Forty-seven percent of participants were college graduates. In each study, participants were compensated for their participation in the study

via the online panel provider, each receiving $3.5 (in local currency) in purchase coupons.

Another important factor for consideration within the evaluation of this tool was the impact of religious attitudes towards pornography. The Israeli sample used in the original study could be subject to skews in the data, due to the largely Jewish community in Israel. Religious affiliations may be associated with negative attitudes towards pornography. It was important to explore the psychometric properties of the PPUS in non-religious communities as well as with other religious groups. Replicating this study in different cultures will increase the strength of this tool in establishing its validity and generalisability.

Reliability

Test-Retest Reliability. According to Kline 2015, a good psychometric test was reliable if it was self-consistent (Internal Consistency) and has good test-retest reliability. Test-retest reliability was when a psychometric test yields correlating scores from the same subjects tested on two separate occasions. The minimum figure (Pearson's r) for test-retest reliability was 0.7. Kor et al. (2014) do not report any test-retest reliability results.

Internal Consistency. Cronbach's alpha was a model for internal consistency, based on the average inter-item correlation. All the PPUS items were positively and significantly correlated (ranging from .33 to .81). It was reported that the four factors generated

good to excellent Cronbach alphas, ranging from .79 to .92. The PPUS also reported a high degree of overall internal consistency (alpha =.93). As such, the PPUS items were found to be reliable, a characteristic of a 'good' test.

Validity

There are many ways to evaluate the validity of a tool. Types of validity that will be reviewed in relation to the PPUS are face, convergent, concurrent, predictive, content and construct validity. The validity of a tool or psychological test is the degree to which the tool measures what it sets out to measure. It is important that a tool is valid in order for the accurate application and interpretation of results.

At first glance, the PPUS appears to test what it was supposed to test, the identified 4 factors associated with 'problematic pornography use', using the addiction framework, suggesting it has face validity. Kor and colleagues took measures to establish face validity and content validity for the PPUS by asking 16 non-participants to rate the relevance of each item to pornography use.

Convergent Validity. Kor and colleagues (2014) sought to validate the PPUS by assessing its convergent validity. Convergent validity examines outcomes of factors that theoretically should be related, to see if they are indeed related. Table 4.2 shows a range of significant positive correlations with many theoretically relevant measures. Kor et al., state the convergent validity of the PPUS was

high, but due to the range of correlations it was evident that there was only a partial overlap between the PPUS and other measures. Therefore, the PPUS appears to assess both shared and unique features when compared to these other measures.

Discriminate Validity. Evidence for discriminant validity was demonstrated by weaker correlations with Internet addiction and gambling addiction (See Table 4.2).

Criterion Validity. The PPUS was found to be positively correlated with frequency of pornography use, indicating that the tool measures relevant and intended outcomes.

Concurrent Validity. Concurrent validity is defined as the extent to which the results of a particular test or measurement correspond to those of a previously established measurement for the same construct. Concurrent Validity was assessed by correlating with tests that purport to measure the same construct (Kline, 2015). Kor and Colleagues do not refer directly to concurrent validity, but instead refer to convergent validity as noted above. Table 4.2 shows a range of significant positive correlations with many theoretically relevant measures, providing some evidence for concurrent validity.

Predictive Validity. Predictive Validity was a tool's ability to correctly predict future performance. To date, there have no studies that have attempted to assess the predictive validity of the PPUS. This was possibly due the difficulty in establishing a meaningful

criterion of what we would expect the PPUS to predict (Kline, 2015).
There are a variety of negative consequences that could be explored
in relation to problematic pornography use, for example:
relationship breakdown, loss of employment, or criminal and risk-
related activity. This an area that future research could explore in
more detail.

**Table 4.2: Pearson Correlations between the PPUS and other
assessed variables (Reproduced from Kor et al., 2014)**

Variable		Total PPUS Score
Internet Pornography use – Cyber Pornography Use Inventory (CPUI) – Grubbs et al. 2010)		.56***
Motivation for Pornography Use – Pornography Consumption Inventory (PCI) – (Reid, Carpenter and Draper, 2011; Reid, Li, Gilliland, Stein and Fong, 2011)	Sexual Curiosity	.49***
	Emotional Avoidance	.69***
	Sensation Seeking	.59***
	Sexual Pleasure	.50***
Psychopathological Symptoms - Brief Symptom Inventory (BSI) - (Derogatis and Melisaratos, 1983)	Somatisation	.18***
	Obsessive Compulsive Disorder	.21***
	Interpersonal Sensitivity	.23***
	Depression	.24***
	Anxiety	.20***
	Hostility	.20***
	Phobic Anxiety	.25***
	Paranoid Ideation	.21***
	Psychoticism	.27***
Self Esteem (Rosenburg Self Esteem Scale, (RSE) Rosenburg, 1965)		.23***
Sexual Behaviour Consequences (Hypersexual Behaviour Consequences Scale – (HBCS) Reid, Garos and Fong 2012)		.38***
Attachment Insecurities (Experiences in Close Relationships Scale (ECR), Brennan, Clarke and Shaver 1998)	Avoidance	.23***
	Anxiety	.26***

Hypersexuality Disorder (Hypersexual Disorders Questionnaire, (HDQ) Reid & Carpenter et al. 2012; Reid, Garrison and Fong 2012)	.68***
Internet Addiction (Internet Addiction Test, (IAT) Young, 1998)	.40***
Gambling Addiction (South Oaks Gambling Screen – (SOGS-RA), Winters, Stinchfield and Fulkerson, 1993)	.28***
Traumatic Events (Traumatic Experiences Questionnaire (TEQ), Nijenhuis Der HartO and Vanderlinden, 1999)	.14***

*** $p < .001$

Content Validity. Content validity was the extent to which items on a scale represent all aspects of the subject under consideration (in this case, the extent to which the items on the PPUS represent all possible items the test should cover). The content validity of some tests designed to measure a construct can indicate that the tool was only valid for screening and cannot be used as a diagnostic tool (Haynes, Richard & Kubany, 1995). Given the PPUS uses a 12-item scale, it was not comprehensive enough to be used as a diagnostic tool, but it has content validity for screening purposes. Kor and colleagues took measures to establish content validity for the PPUS by asking 16 non-participants to rate the relevance of each item to pornography use.

Construct Validity. Construct validity was the degree to which content of the test assesses the characteristics being examined and the extent to which the conceptual definitions match the operational definitions (Haynes et al., 1995). It was hypothesised that if the PPUS was in line with the theoretical construct of problematic pornography use, then higher PPUS scores would be associated with (1) poorer mental health and lower self-

esteem, (2) greater prevalence/frequencies of negative consequences of sexual behaviour (e.g. impairment in social, occupational, or other important areas of functioning), (3) less secure interpersonal relationships, (4) other behavioural addictions (hypersexuality, pathological gambling and internet addiction), and (5) a history of traumatic experiences (Kor et al., 2014). Kor et al., (2014) state that these hypotheses were supported to justify construct validity by noting the observed correlations in Table 4.2.

Study using the PPUS online

The aim of the study was to establish norms relating to English speaking adults (18 to 71 years) for responses to the PPUS, to provide further support for the use of the tool. An exploratory factor analysis was completed first, to establish the structure of the items within the current sample, and to obtain reliabilities for the subscales identified in Kor and colleague's original study.

The PPUS was available online from 24th April 2018 to 31st July 2018 using 'Bristol online surveys' and distributed across social media (Reddit, Instagram, Facebook, Tumblr, Twitter, Pinterest, Call for Participants). Ethical approval was obtained from Nottingham University Medical School ethics committee.

The Information sheet warned participants that the Questionnaire was about Pornography use and the personal nature of the questions. Demographic information (Gender, Age, Occupation, sexual orientation and family dynamics) was collected with

responses to the PPUS. As with the original Israeli sample, the instruction given was '*Considering the past six months, please rate how the following statements relate to you'*, with responses given on the 6-point Likert scale (see Table 4.1).

The number of people who viewed the website was 1851 and 1055 (57%) completed the questionnaire. Of those completing the Questionnaire, 24 (2.3%) claimed that they had never 'used or viewed' pornography. The remainder of the sample of 1031 adults (626 male, 387 female, and 18 gender non-conforming) were aged 18 to 71. In relation to occupation 44% were students, 48% were unemployed with 8% were employed.

The sexual orientation reported was 71% heterosexual, 20% bisexual, 3% homosexual and 2% were lesbian with 4% stating other. Most of the sample (78%) grew up in intact families with both biological parents. Just over one in ten people (12%) grew up with a single parent, usually the mother (11%), and 7% grew up with at least one stepparent or other relative. Other arrangements for care (fostered, adopted or in public care) represented 3% of the sample.

The demographic characteristics were compared for scores on the PPUS (see Table 4.3). Table 4.3 shows that there was a significant difference between males and females with females having significantly less problems with pornography use compared to males (t-test, t= 11.66. P< 0.0001). In addition, non-heterosexual respondents had significantly less problems with pornography use

compared to heterosexual people (t-test, t= 11.66. P< 0.0001).
There were no significant differences in porn use related to the
structure of the family of origin (intact vs broken family) or
occupation (student vs non-student).

Table 4.3: Scores on the PPUS in relation to demographic variable in an online English-speaking population

Variable	N	Mean PPUS Score	SD	t Score
Gender				
Male	626	14.34	11.44	11.66***
Female	387	6.69	7.61	
Occupation				
Student	455	11.36	10.60	0.089
Non-Student	576	11.43	10.90	
Sexual Orientation				
Heterosexual	731	11.90	11.19	2.34**
Non-Heterosexual	300	10.17	9.59	
Family of Origin				
Intact	803	11.51	10.96	0.647
Family Breakdown	228	10.99	10.12	
Total Sample	1031	11.40	10.78	Range (0-60)

** = p <0.001, ***=p<0.0001

Exploratory Factor Analysis

A factor analysis was completed using the online English-speaking
population PPUS data to establish the structure of the items, and to
produce scores and reliabilities for the subscales identified.

The data was screened for univariate outliers. There were 19 out-of-
range values, due to administration errors, and these were
identified and recoded as missing data, leaving 1031 total responses
for analysis.

A principal axis factor analysis was conducted on the 12-item PPUS with oblique rotation (direct oblimin). An oblique rotation was used as the subscales within the PPUS were considered to be theoretically correlated. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .91, and all KMO values for individual items were greater than .86. An initial analysis was run to obtain eigenvalues for each factor in the data. Four factors had eigenvalues over Jolliffe's recommendation (retaining factors with eigenvalues greater than 0.7) and in combination explained 79.32% of the variance. The scree plot was ambiguous and showed inflections that would justify either retaining two or four factors. Four factors were retained due to the large sample size, the convergence of the scree plot, and Joliffe's criterion on this value. All subscales within the PPUS had high reliabilities within an English-speaking online sample, with Cronbach's α greater than .78.

Table 4.4 shows the factor loadings after rotation. The items that cluster on the same factor suggest that factor 1 represents Distress and Functional Problems, factor 2 represents Excessive Use, factor 2 Control Difficulties, and factor 4 Use for Escape/Avoidance of Negative Emotions. This is consistent with the PPUS author's findings for the scale.

Table 4.4: Summary of Exploratory Factor Analysis Results for the PPUS Online

Item	Rotated Factor Loadings			
	Factor 1 - Control Difficulties	Factor 2 - Use for Escape /Avoidance Of Negative Emotions	Factor 3 - Distress and Functional Problems	Factor 4 - Excessive Use
I keep on watching pornographic materials even though I intend to stop	**.90**	.04	.03	-.06
I have been unsuccessful in my efforts to reduce or control the frequency I use pornography in my life	**.86**	.00	-.02	.01
I feel I cannot stop watching pornography	**.57**	.05	.03	.23
I watch pornographic materials when am feeling despondent (in low spirits from loss of hope or courage)	-.02	**.93**	-.02	.01
I use pornographic materials to escape my grief or to free myself from negative feelings	.05	**.86**	.02	-.03
I have used pornography while experiencing unpleasant or difficult feelings (for example: depression, sorrow, anxiety, boredom, restlessness, shame or nervousness)	-.02	**.80**	.01	.02
Using pornography has created significant problems in my personal relationships with other people, in social situations, at work or in other important aspects of my life.	-.03	.02	**.95**	-.05
I risked or put in jeopardy a significant relationship, place of employment, educational or career opportunity because of the use of pornographic materials	.01	.01	**.69**	.06
I continued using pornography despite the danger of harming myself physically (for example: difficulty getting an erection due to extensive use, difficulty reaching an orgasm in ways that do not include pornography)	.33	.04	**.34**	.12
I spend too much time being involved in thoughts about pornography	.02	-.05	.10	**.89**
I often think about pornography	-.05	.04	-.03	**.77**
I spend too much time planning to and using pornography	.21	.08	.03	**.57**
Eigenvalues	6.40	1.32	.94	.86
% of variance	53.34	10.98	7.80	7.20
α	**.88**	**.90**	**.78**	**.86**

Figures in bold show highest Factor Loading for each item.

The results of the exploratory factor analysis of the Online English-speaking PPUS data were consistent with Kor and Colleagues' original PPUS Study. The same four factors were identified, with high reliability.

Table 4.5 Mean Factor 1 (Control Difficulties) Scores across Demographic Variables

Variable	N	Mean Score	SD	t Score
Gender				
Male	626	0.20	1.10	7.91***
Female	387	-0.30	0.72	
Occupation				
Student	455	-0.02	0.96	-0.70
Non-Student	576	0.02	1.03	
Sexual Orientation				
Heterosexual	731	0.08	1.03	3.80*
Non-Heterosexual	300	-0.18	0.89	
Family of Origin				
Intact	803	0.05	1.02	3.20**
Family Breakdown	228	-0.19	0.89	

* = p <0.01, ** = p <0.001, ***=p<0.0001

Table 4.6 Mean Factor 2 (Use For Escape /Avoidance Of Negative Emotions) Scores across Demographic Variables

Variable	N	Mean Score	SD	t Score
Gender				
Male	626	0.11	1.07	4.40***
Female	387	-0.17	0.87	
Occupation				
Student	455	-0.02	0.97	-0.51
Non-Student	576	0.01	1.03	
Sexual Orientation				
Heterosexual	731	-0.02	1.00	-1.00
Non-Heterosexual	300	0.05	0.99	
Family of Origin				
Intact	803	-0.03	0.97	-2.04
Family Breakdown	228	0.12	1.09	

** = p <0.001, ***=p<0.0001

Table 4.7 Mean Factor 3 (Distress And Functional Problems)

Scores across Demographic Variables

Variable	N	Mean Score	SD	t Score
Gender				
Male	626	0.07	1.12	3.03***
Female	387	-0.12	0.72	
Occupation				
Student	455	0.01	1.04	0.38
Non-Student	576	-0.01	0.97	
Sexual Orientation				
Heterosexual	731	0.04	1.04	2.08*
Non-Heterosexual	300	-0.10	0.89	
Family of Origin				
Intact	803	0.01	1.01	0.63
Family Breakdown	228	-0.04	0.95	

* = p <0.01, ** = p <0.001, ***=p<0.0001

Table 4.8 Mean Factor 4 (Excessive Use) Scores across

Demographic Variables

Variable	N	Mean Score	SD	t Score
Gender				
Male	626	0.14	1.06	6.00***
Female	387	-0.24	0.83	
Occupation				
Student	455	0.31	0.97	1.00
Non-Student	576	-0.02	1.02	
Sexual Orientation				
Heterosexual	731	0.01	0.99	0.31
Non-Heterosexual	300	-0.01	1.01	
Family of Origin				
Intact	803	0.00	0.99	0.02
Family Breakdown	228	-0.00	1.02	

** = p <0.001, ***=p<0.0001

Independent samples t-tests were undertaken to explore the

differences between demographic variables on the factor scores for

each PPUS subscale.

Tables 4.5 to 4.8 show that there were a significant differences between males and females across all four subscales for factor scores. Females have significantly lower factor scores for each of the four subscales within the PPUS, indicating males self-report more problematic use of pornography.

In addition, non-heterosexual respondents had significantly less problems with control difficulties and distress and functional problems (Factors 1 and 3) than heterosexual respondents. Respondents who indicated they had an 'Intact' family of origin had significantly more problems with control difficulties (Factor 1) than those who indicated family-breakdown. There were no significant differences in problems with pornography use across the four subscales between students and non-students.

Table 4.9: Age in relation to Problematic Pornography Use

	N	Mean PPUS Score	SD
Male			
18-25	357	14.38	11.29
26-71	269	11.66	11.66
Female			
18-25	281	7.24	7.0
26-71	106	5.24	6.24

Table 4.9 shows the total mean scores for problematic porn use for males and females broken down by age. No significant differences were found related to age category for emerging adults (18 to 25 years) compared to older adults (26 to 71 years) in the male or female sample.

Discussion

As highlighted in the original paper, factor analysis is insufficient for corroborating a phenomenon as a 'disorder' (Block, 1995). This was a key criticism of this tool. As such, with respect to the practical use of the tool in clinical settings, whilst Mulhauser, Miller Short, & Weinstock, (2018) offer an exploration of the differences between 'clinically elevated and non-clinically elevated scores', it would be advisable to utilise this scale as a screening tool and/or as part of a broader assessment approach. This would ensure gathering qualitative data from the individuals involved to get additional measures of the lived experiences of distress and difficulties, a clear understanding of the function behind the 'problematic' use of pornography for each person, and the impact of this. Further research was required to properly assess the clinical efficacy of the tool, and to assess whether the results align with those who have diagnoses of hypersexuality disorder, associated diagnoses, or those seeking help for problematic pornography use.

Regarding the tool's research utility, whilst the PPUS has been shown to be an effective method of assessing problematic pornography use with high internal consistency and reliability, it was not without its criticisms or limitations. Greater support for the tool could be demonstrated by further replications of the original study in other populations.

As Fernandez & Griffiths (2019) suggest, despite the PPUS' coverage of addiction components not being the widest in

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comparison to other tools available, it is considered to assess the most central components of addiction. Alongside this, the PPUS is considered to be the instrument that comes the closest to assessing components considered within 'Hypersexual Disorder' criteria (8 of 10) and 'Compulsive Sexual Behaviour Disorder' (7 of 9). However, the PPUS does not directly assess craving and intrapsychic conflict, which are considered within diagnostic criteria for the aforementioned disorders.

Studies using the PPUS

A search was completed to identify papers that mentioned 'problematic pornography use scale'. From 165 results, studies that have used the PPUS and that have reported their results in sufficient detail are shown in Table 4.10 for comparison of means and sample compositions.

The PPUS was used with US Veterans, indicating problems with pornography were associated with younger age and less education (Turban, Potenza, Hoff, Martino, & Kraus, 2017; Turban, Shirk, Potenza, Hoff, & Kraus, 2020; Shirk, Saxena, Park & Kraus, 2021). The findings of Shirk and colleagues' study differ in that associations were not found with demographic characteristics such as gender, sexuality and family dynamic, in comparison to the online-English speaking sample (op.cit). All three of these research studies used the same sample of US Veterans and did not report mean total PPUS Scores. Additionally, no total mean scores were reported for studies looking into the relationship between masculinity and

pornography use (Borgogna, McDermott, Browning, Beach & Aita, 2018; Borgogna, McDermott, Berry & Browning, 2020). Borgogna, Smith, McDermott, & Whatley, (2020) only utilised the Control Difficulties subscale within the PPUS in their research into relationship problems and playboy (and girl) 'norms', and therefore this was not included in the comparison table below.

Norms for an Online English-Speaking Sample

To identify English-speaking norms for the PPUS and to explore how this may contrast with the Israeli Norms identified in Kor et al., (2014)'s studies, an online survey was conducted with the 12-item PPUS (Beadsmoore and Browne, 2019). The Cronbach α was .92 for the online English-speaking sample for the PPUS indicating a high degree of internal consistency. The means and standard deviations reported in the original Israeli studies, the Online English-Speaking replication of these studies, and published papers using the PPUS (which reported results in sufficient detail) are shown in Table 4.10 below.

Table 4.10: Means and Standard Deviation Comparisons of Studies using the PPUS

	Sample			Total PPUS Score		
PPUS Study	**Sample Makeup**	**Age**	**Number of Participants**	**Mean**	**SD**	**Range**
Kor et al., 2014 – Study 2	Israeli Community Sample	18-69 (M=39.50, SD=14.50)	300 (120 female and 180 male)	5.54	8.58	0-59
Kor et al., 2014 - Study 3	Israeli Community Sample	18-70 (M=39.52, SD=14.18)	1720 (886 female and 834 male)	5.73	8.71	0-58
Beadsmoore and Browne, 2019	Online English -Speaking Sample	18-71 (M=25.45, SD=7.77)	1031 (387 female, 626 male and 18 gender non-confirming persons)	11.40	10.78	0-60

Kahveci, Van Bockstaele, Blechert, & Wiers, 2020	Amsterdam Sample	18- ?? (M=24.47, SD=6.42)	63 males (58 heterosexual, 4 bisexual)	11.40	10.64	0-52
Sklenarik, Potenza, Gola, Astur, 2020	Online Connecticut Sample	18-?? (M=18.9, SD=1.1)	121 heterosexual females	2.1	2.8	0-13
Ince, Yücel, Albertella, Fontenelle, 2020	Pornography Addiction Recovery Communities and 'MTurk'	18-?? (M=31.75, SD=10.72)	138 males	48.30	12.98	17-72
Brem et al., 2018	Men in 'Batterer Intervention Programs'	18-?? (M=34.58, SD=10.68)	273 men who were arrested for domestic violence and court-ordered to attend programmes	6.55	12.02	Not Stated
Allen, Kannis-Dymand & Katsikitis, 2017	Online Survey	18-60 (M=26.65, SD=8.52)	182 males and 10 females	29.19	11.98	Not Stated

The online English-speaking sample had a younger mean age than the original studies, which could account for the higher mean PPUS score. Kor and colleagues claim religious affiliation may be associated with negative attitudes towards pornography, which was an alternative explanation for the lower mean PPUS score within the largely Jewish Israeli sample. However, this cannot be conclusively determined as data on religious affiliation was not collected within the English online survey. In addition, an online English-speaking sample, using social media, may be biased towards those interested in pornography which may elevate the scores. There was evidence of this bias in the female sample which had a greater than expected number of non-heterosexual females (48.5% of the female sample) in comparison to non-heterosexual males (16.4% of the male sample).

In comparison to the Kor et al (2014) studies in Israel, the English-speaking sample also found significant differences between males and female respondents with males showing more problematic pornography use. However, no age differences were found between younger and older age samples in the English-speaking study, which contradicts the findings of the Israeli studies. Kor et al (2014), found no associations were observed between PPUS scores and occupation, income and years of education. A similar lack of association was found in the English speaking online study with no significant differences between student and non-student samples.

In terms of those respondents that may require help with their problematic pornography use, no clinical cut-off points are given by Kor et al (2014), although the study would suggest that a score of 16 and above would be considered a high score for an Israeli sample (see Table 4.10). More recently, (Kor et al, 2019) suggest a score of 28 or more as relevant to referral for a US sample.

With respect to the studies compared in Table 4.10, the highest mean total PPUS Score found was in Ince, Yücel, Albertella, and Fontenelle's 2020 study of Pornography Addiction Recovery Communities and MTurk (a crowdsourcing website). The lowest mean total PPUS score reported was an online sample of heterosexual females in Connecticut. This provides support for the purported gender differences in use and attitudes towards pornography. It is of note that the mean total PPUS Scores reported in Kahveci, Van Bockstaele, Blechert, & Wiers' (2020) study were

very similar to those reported in the present study (op.cit). Overall, the difference in scores across all of the studies in Table 4.10 suggest that sampling method, as well as cultural and contextual factors, has an impact on the level of problematic pornography use reported.

The frequency of PPUS Scores from the English-speaking sample are shown in Appendix 4A. The findings of the English-speaking online study (op.cit) showed that 26.3% of individuals scored 16 or above and 8.3% scored 28 and above, following the score cut-off quoted in the Israeli study. The results in Table 4.10 for the online English-speaking sample suggest a score of 23 and above (being one standard deviation away from the mean) as in need of referral for further assessment and potential intervention. Results indicate 14.2% of the online English-speaking sample obtained scores of 23 and higher. However, the top 10% of online 'problematic porn users' score 26 and above which was similar to the score cut-off quoted for the US sample as a referral cut-off point (Kor et al, 2017).

Appendix 4A also demonstrates that only 7.3% of the sample score over half the possible total PPUS score (30+/60) and even fewer (1.2%) score in the top quartile (46+/60). This suggests the PPUS was not fully developed in terms of its external validity.

Conclusion

Overall, the internal consistency, convergent and construct validity of the PPUS has been found to be high. However, concurrent

and predictive validity may need further research and development with culturally sensitive norms for both males and females. With reference to one of the only studies (to date) of an English speaking online sample, it was proposed that individuals scoring over 26 and above may be considered for a referral for further assessment and intervention, being in the top 10% for 'problematic pornography use'.

This recommendation for a referral cut-off point requires further validation within clinical samples. However, the PPUS could prove valuable as a screening tool or as part of a broader assessment approach, alongside other methods of assessment that consider: the function of pornography use for the individual, the impact of this on themselves and others, and their experience of distress and difficulties in this regard.

Chapter Five: The Protective and Risk Factors for Underage Sex, a Systematic Review

Abstract

Underage Sex is an often-discussed topic with regard to the formulation of sex and relationship education programmes. However, research regarding the vulnerability and preventative factors associated with consensual and non-consensual underage sex is limited. This systematic review aimed to explore underage sex in adolescents and children, and the associated risk and protective factors. A systematic search was conducted identifying all the studies published before the 5th March 2021, which examined underage sex and associated risk and protective factors.

The search was conducted on six electronic databases (EmBase, Journals@Ovid, Medline, PsycINFO, CINAHL, and PubMed) with a supplementary search of the grey literature (using Google Scholar), and inclusion of expert recommendations. The criteria was quantitative studies which included males and females up to the age of 18 years old (or adults reporting retrospectively), with exposure to risk and protective factors for early onset of sexual intercourse (before 16 years). Altogether, 945 studies were identified for potential inclusion and twenty-three fulfilled the eligibility criteria to be included in the systematic review. Findings from twenty-three studies between 1996 and 2019 identified risk factors associated with underage sexual intercourse (under 16 years old).

Limitations of the current research field are discussed, as well as suggestions for future research directions, and implications of findings.

Keywords: sexual behaviour, adolescent development, underage sex, quantitative research, relationships, sexuality

Introduction

Perspectives in adolescent psychology have considered the risks along with the potentially positive aspects of sexuality in middle or late adolescence and emerging adulthood (Blythe & Rosenthal, 2000; Russell, 2005; Smiler, Ward, Caruthers, & Merriwether; Tolman, Striepe, & Harmon, 2003), noting that during the teenage years, most adolescents in Western cultures become sexually active.

In the last few decades, research has looked into the development of adolescent sexuality and has largely focused on the risks and problems linked to sexual behaviours, such as underage pregnancy and sexually transmitted infections. Several of these studies have been cross-sectional, designed to identify the correlates of adolescent sexual behaviour.

Zimmer-Gembeck & Helfand (2008) conducted a review longitudinal studies conducted over during a period of ten years (1994-2004), summarising reports from 35 studies. In this body of research, various aspects of sexual behaviour were reported to have been investigated, focusing on sexual perceptions and attitudes, as well as the prevalence and occurrence of sexual behaviours, such as the onset of sexual intercourse. The authors highlight that prospective longitudinal studies were needed to disentangle the factors that were in place prior to sexual behaviour from those that emerged at the same time or after the onset of sexual intercourse (Zimmer-Gembeck & Helfand, 2008). For example, within some of these

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identified studies, researchers found that earlier onset of sexual intercourse is associated with certain prior social environmental factors, such as features of family and peer relationships (e.g., Crockett, Bingham, Chopak, & Vicary, 1996; McBride, Paikoff, & Holmbeck, 2003; Whitbeck, Yoder, Hoyt & Conger, 1999).

Zimmer-Gembeck & Helfand (2008) also highlight in their review that 'the complexity of adolescent sexuality has made it difficult to develop a comprehensive theoretical framework to guide research'. This means that researchers have drawn from a range of theoretical perspectives or models.

 'Problem Behavior Theory' (Jessor, van den Bos, Vanderryn, Costa, & Turbin, 1995) and 'Social Control Theory' (Hirschi, 1969) have been used to guide longitudinal research on adolescent sexual behavior.

In Problem Behavior Theory (Jessor et al., 1995), individuals' attitudes, traits, and social bonds are considered. Applied to sexuality, sexual intercourse has been expected (and found) to be more common amongst adolescents with certain 'unconventional dispositional traits' and among those who are 'relatively lacking in social bonds to conventional institutions' (e.g., Capaldi, Crosby, & Stoolmiller, 1996; Goodson, Evans, & Edmundson, 1997; Kirby, 2002).

In addition, when these various theories are simultaneously considered along with other related areas of research and theory on

the development of adolescent behaviour (e.g., Moffitt's theory of antisocial behaviour, 1993), Zimmer-Gembeck & Helfand (2008) argue that there could be at least two correlational pathways associated with sexual intercourse onset. They suggest one pathway would include particular dispositional traits marked by unconventionality, problem behaviours, and lack of social bonds to family, school, or other social institutions. This pathway is suggested to be more likely found when onset of sexual intercourse is most deviant from the norm and the riskiest, such as 'very early' onset of sexual intercourse.

Zimmer-Gembeck & Helfand (2008) also point out that the possibility of two pathways for adolescent sexual behaviour is consistent with Moffitt's (1993) theory. This suggests that identifying age of onset of antisocial behaviour among adolescents, would lead to one of two different pathways, historically studied as 'antisocial adolescents'. In line with Moffit's theory, this group would be expected to share developmental similarities, and have a common set of identified factors associated with the onset, continuation, and escalation of 'problem behaviours.'

Zimmer-Gembeck & Helfand (2008) point out the well-established body of evidence indicating covariation between sexual behaviour and antisocial behaviour (usually defined to include alcohol and other drug use, delinquent acts, and aggression). This review follows a similar theoretical basis to Zimmer-Gembeck & Helfand's 2008 review, in line with Moffit's theory. Other theories to explore

the factors associated with adolescent sexual behaviour, include the biopsychosocial health model that integrates biology, psychological factors, and environmental experiences (Weiss, 2000), the life-span developmental perspective (Baltes, Reese, & Lipsitt, 1980), and the stage termination model of development (Crockett, Bingham, Chopak, & Vicary, 1996). Each of these models identifies behavior as impacted by the dispositions and biological development of the individual, as well as being shaped by the environment via learning, modelling, and opportunities.

Whilst adolescents may report similar behaviour, they may have exposed to different combinations of individual and environmental experiences, that can be attributed to or are associated with their sexual behaviours. In theory, the most 'problem pathway' will be found among those individuals who have experienced sexual intercourse earlier than most of their peers.

Following on from this, it will be the group who have first sexual intercourse relatively earlier than most of their peers that would be expected to have a greater history of difficulties prior to adolescence and who would continue to have more problems during adolescence.

The present review was undertaken to provide summary of up-to-date knowledge about risk and protective factors that associate with early age of onset of adolescent sexual intercourse. In this review, early age of onset or 'underage' sexual intercourse was defined as under 16 years old (up to 15 years). This is in agreement with a number of studies in this area (Zimmer-Gembeck & Helfand (2008).

Results of scoping did not find any recent, or relevant reviews or meta-analyses considering risk and protective factors associated with underage sex as an outcome variable in both male and female adolescents. This review also provides support and justification for the research described in previous chapters. Additionally, this review provides a needed overview of what is currently known for those seeking to develop new or modify existing programs to improve the individual and social lives of young people.

Aims & Objectives

The aim of this systematic review was to determine the protective and risk factors for underage sex, defined as sexual intercourse involving penetrative sexual acts with opposite-sex or same-sex partners under the age of 16 years.

Methods

Protocol

The present systematic review was conducted in accordance with the PRISMA Statement protocol (Moher, Liberati, Tetzlaff, & Altman, 2010) to ensure quality assurance.

Eligibility Criteria

Articles were included in the present review if they met the following specific criteria for eligibility:

Studies: Quantitative, cross-sectional, case-control studies or cohort studies

Population: 0-18, all genders, adolescents, and children (including retrospective data collected from adult self-report)

Intervention/Exposure: Risk Factors

Comparator: Protective factors

Outcome: Underage sex

Search Strategy

A literature search was conducted from 18th February to 23rd February 2020 on six electronic databases: PsycINFO, CINAHL, Journals@Ovid, EmBase, Medline and PubMed.

A second literature search was conducted from 8th February to 24th February 2021, of the six original databases for papers published

between February 2020 and February 2021. Alongside this, a search of the grey literature (Google Scholar) was completed between 18th February to 5th March 2021. Expert recommendations were also included in this second literature search.

To assess eligibility for inclusion the abstract and titles were screened. In addition, the reference lists of previous systematic reviews and studies, where the full text was examined, were scanned on 22nd February 2020 and on the 20th of February 2021.

The following search terms were used: age of consent, legality, child abuse, child, adolescent, teen, teenage, underage, sex, intercourse, sexual behaviour, minor, age of, early, sexual debut, sexual initiation, risk factors and protective factors.

Data Collection Process

A data extraction sheet was developed, and pilot tested on four of the studies identified. The data extraction sheet was amended following piloting. Data was collected on Recruitment (1) (sample size, recruitment procedures, and method of data collection), Participant Characteristics (2) (age range, gender, ethnicity, family socio-economic status (SES), geographical region, and any other information), and (3) Outcomes and Measurement (Statistical Analysis Used and Theoretical Paradigm Used to Explain the Behaviour).

Quality of Assessment

A quality assessment checklist was developed by adapting a pre-defined proforma (Moher, Liberati, Tetzlaff, & Altman, 2010). This pro-forma was designed to consider risk of bias both at the study level and at the outcome level, in line with the PRISMA guidelines for reporting systematic reviews and meta-analyses (Moher, Liberati, Tetzlaff, & Altman, 2009).

The quality assessment was made up of questions that considered the clarity and appropriateness of research questions, appropriateness of study methods to assess research questions, whether there was a clearly defined and specified population, and whether sample size was justified (power description, or variance and effect estimates provided). The Quality assessment also considered whether inclusion and exclusion criteria were predefined and applied uniformly to all participants, and whether inclusion and exclusion were measured prior to the measurement of outcome. It considered whether the timeframe was sufficient to see an association between exposure/intervention and outcome, whether the study examined different levels of risk in relation to underage sex, and whether the exposure was assessed more than once over time. It looked at whether the intervention or exposure (Independent Variable (IV)) was clearly defined, valid, reliable and implemented consistently across all study participants. Similarly, for the outcome (underage sex) (Dependant Variable (DV)) it considered whether this was clearly defined, valid, reliable and

implemented consistently across all study participants. The quality assessment also considered whether the participants were from the same population, whether an appropriate data analysis method was used, and whether conclusions were supported by data. Finally, it looked at whether results were believable and generalisable, and whether sensitive data was collected privately.

Results

The search strategy identified 945 papers for potential inclusion inclusive of eight studies which were identified utilising reference lists of previous related systematic reviews and studies. Three expert recommendations were included from Professor Vince Egan, The University of Nottingham. After removing duplicates, 922 studies remained. Eight hundred and thirty-nine articles did not meet the inclusion criteria after a review of abstracts and titles. Eighty-three papers were retrieved for a more detailed evaluation and quality assessment. A total of twenty-three articles fulfilled the eligibility criteria. A flow chart for the literature search is shown in Figure 5.1.

Quality Assessment

The quality assessment was completed by the primary author. All studies were independently reviewed by a second assessor to reduce risk of bias. Both reviewers agreed that 13 out of 23 articles were rated as 'good' and 8 of the remaining articles were rated as 'fair'. Two studies received a rating of 'poor'.

Characteristics of Included Articles

Participants. Overall, 109,419 participants were involved in the included articles. The age range of all participants was 8 to 35 (some studies reported the 'grade in school' which was changed to express to a numerical age). As summarised in Table 5.2, 21 out of

23 articles sampled both males and females, with one study sampling males only, and one females only. Eighteen studies were based in the United States, with the remaining five in Spain, Jamaica, Australia, Netherlands, and Nigeria. Various sub-groups were studied within the articles identified, typically adolescents in a particular geographical location. Some were identified as a 'high risk sample', 'sexually active females who had become pregnant and delivered, or who were currently pregnant and planned to deliver', two-parents and single-parent families, economically disadvantaged urban minority youth, and two general population samples recruited from schools. Four studies did not identify any sub-groups within their articles. Three articles utilised data from the same 'Three-City Study', although samples drawn from this data were all different to each other. Ethnicities varied across the sample of included articles, with most articles having multiple ethnicities within the sample and two articles not stating any information relating to ethnicity of participants.

Methods. Nineteen studies used questionnaires to collect data, with 6 articles collecting data from longitudinal cohort studies. Two studies used additional census and case record data, and 6 studies also used a semi-structured interview method. Three studies utilised a combination of methods to obtain data.

Figure 5.1: PRISMA Flow-Chart of the Article Selection Process
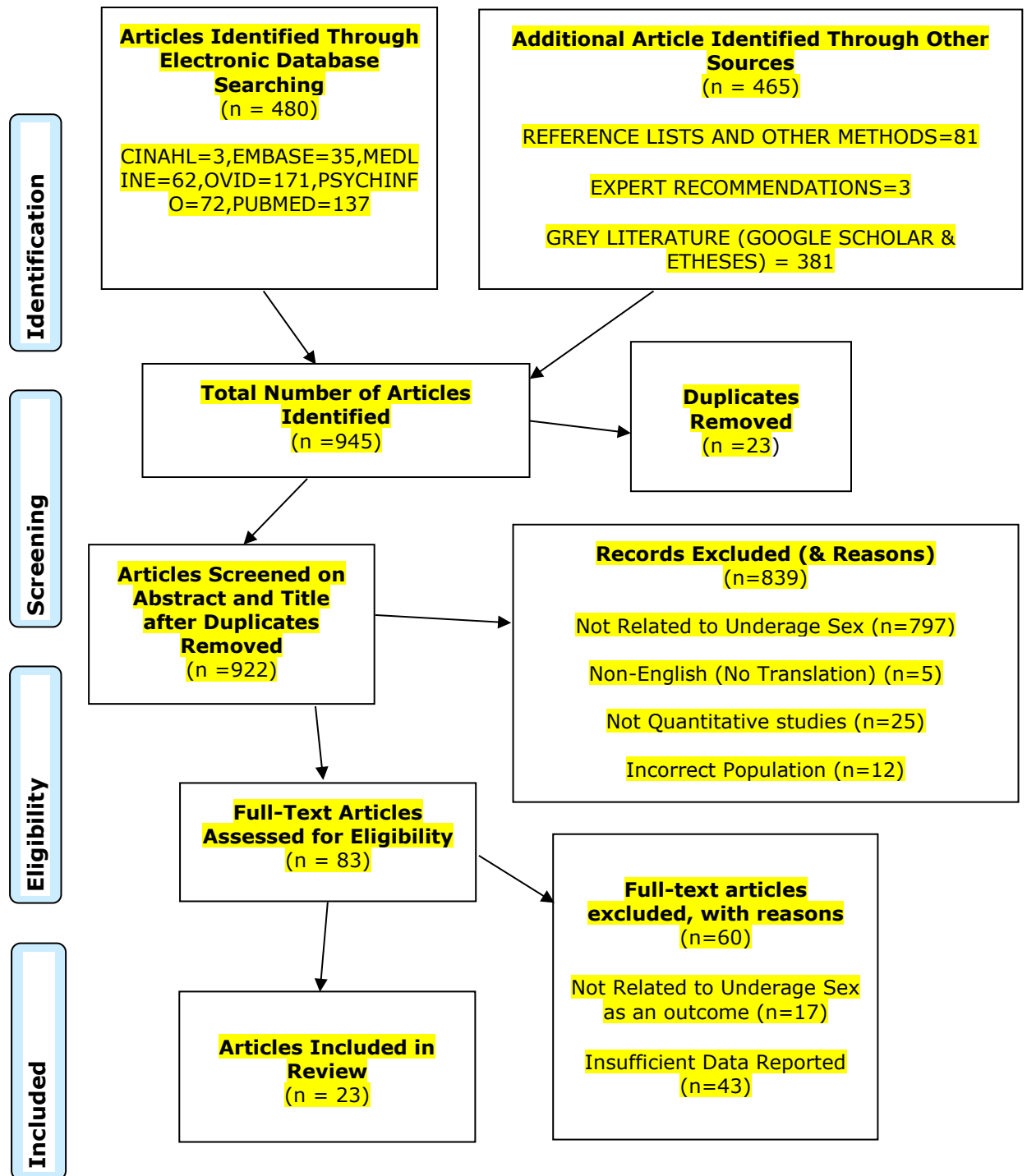
Table 5.1: Quality Assessment of the Reviewed Articles (N=23)

Study Number	Authors (Date)	Clear/appropriate research aims/question)?	Appropriate study methods to assess research question(s)?	Clearly defined and specified Population?	Was the sample size justified? (power description, or variance and effect estimates provided?)	Were inclusion and exclusion criteria predefined and applied uniformly to all participants?	Was the timeframe sufficient to see an association between exposure/intervention and outcome?	Did the study examine different levels of risk in relation to underage sex?	Was the exposure assessed more than once over time?	Was the intervention/exposure (IV) clearly defined, valid, reliable, and implemented consistently across all study participants?	Was the outcome (underage sex) (DV) clearly defined, valid, reliable, and implemented consistently across all study participants?	Participants from the same population?	Appropriate Data Analysis method?	Conclusions supported by data?	Generalisable results?	Sensitive Data collected privately?	Percentage Score (%)
1 FAIR	Lima-Serrano, Guerra-MartÃn, & Lima-RodrÃguez (2017)	YES	YES	YES	YES	P	P	P	NO	YES	P	YES	YES	YES	P	YES	77
2 GOOD	Fang, Stanton, Li, Romer, Galbraith & Feigelman (1996)	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	YES	YES	P	YES	83
3 GOOD	Black, Oberlander, Lewis, Knight, Zolotor, Litrownik, Thompson, Dubowitz, & English (2009)	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	P	NO	83
4 FAIR	Boyer & Fine (1992)	YES	YES	YES	NO	YES	P	NO	NO	P	YES	YES	P	YES	P	YES	67
5 FAIR	Whitbeck, Yoder, Hoyt & Conger (1999)	YES	YES	YES	YES	YES	P	P	NO	NO	YES	P	YES	YES	P	NO	67
6 FAIR	Rafaelli and Crockett (2003)	YES	YES	YES	P	YES	YES	YES	NO	P	YES	YES	YES	YES	P	NO	77
7 FAIR	Smith (1997)	YES	YES	YES	NO	YES	YES	P	NO	YES	YES	P	YES	YES	YES	NO	73
8 FAIR	Waller & DuBois (2004)	YES	YES	YES	NO	P	YES	YES	NO	YES	P	P	YES	YES	YES	YES	77
9 GOOD	O'Donnell, Myint-U, O'Donnell & Stueve (2003)	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	87
10 GOOD	Ali Husin, (2013)	YES	YES	YES	P	YES	YES	YES	YES	YES	YES	YES	YES	YES	P	YES	93
11 POOR	DiIorio, Dudley, Soet & McCarty (2004)	P	YES	P	NO	NO	NO	NO	NO	P	P	YES	YES	YES	P	NO	43
12 GOOD	Jordahl & Lohman (2009)	YES	YES	YES	P	YES	YES	YES	YES	YES	YES	YES	YES	YES	P	YES	93
13 POOR	Lammers, Ireland, Resnick & Blum (2000)	P	YES	YES	NO	YES	P	NO	NO	P	P	YES	YES	P	P	NO	53
14 GOOD	Lohman & Billings (2008)	YES	YES	YES	NO	YES	YES	YES	YES	P	YES	YES	YES	YES	P	YES	87
15 GOOD	Mendle, Harden, Turkheimer, Van Hulle, D'Onofrio, Brooks-Gunn, Rodgers, Emery & Lahey (2009)	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	P	NO	83

16 GOOD	Wand, Bryant, Worth, Pitts, Kaldor, Delaney-Thiele & Ward (2017)	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	YES	YES	P	P	80
17 GOOD	Oshi, McKenzie, Baxter, Robinson, Neil, Greene, Wright & Lodge (2019)	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	P	P	87
18 FAIR	Burgers (2018)	YES	YES	YES	NO	YES	P	YES	NO	YES	YES	YES	YES	YES	P	NO	73
19 FAIR	Cavazos-Rehg, Krauss, Spitznagel, Schootman, Bucholz, Peiprt, Sanders-Thomson, Cottler & Beirut (2009)	P	YES	P	P	YES	YES	P	YES	P	YES	YES	YES	YES	P	NO	73
20 GOOD	O Hara, Gibbons, Gerard, Li & Sargent (2012)	YES	YES	YES	NO	YES	YES	P	YES	YES	YES	YES	YES	YES	P	NO	80
21 GOOD	O Hara & Cooper (2015)	YES	YES	YES	YES	YES	YES	P	YES	YES	YES	YES	YES	YES	P	YES	93
22 GOOD	Moilanen, Leary, Watson & Ottley (2015)	YES	YES	P	NO	YES	YES	YES	NO	P	P	YES	YES	YES	P	NO	67
23 GOOD	Funmito Omolola, Akintunde, Olusegun, Olumuyiwa A, Samuel Ebun, Timothy Olufemi, Idowu Paulin & Olorunfemi Akinbode (2018)	YES	YES	YES	YES	YES	P	YES	NO	YES	YES	YES	YES	YES	P	NO	80
	Percentage Score (%)	93	100	93	35	91	83	74	30	80	89	93	98	98	57	43	

Yes= a score of 2; P =Partial (a score of 1); No =a score of 0.

Sexual Intercourse. The mean age of onset of sexual intercourse for the sample was reported in eleven out of twenty-three studies. These ranged from 12.77 to 15.81 years old for those reporting sexual debut. The percentage rate of sexual intercourse under the age of 16 years old was reported in 12 studies, a ranging between 15.4% to 79%.

Contraception Use. Contraceptive use was reported in eight studies, with the highest rate of reported use at 85.2% and the lowest at 15%.

Risk Factors. A total of 29 identified risk factors for underage sexual intercourse identified within the current review are summarised in Table 5.3. Nine of these risk factors were found in more than one study, these were: adolescent alcohol use, adolescents whose mothers had given birth at an early age, adolescents who made decisions without parental input (autonomous decision making), adolescent drug use, gender, low education (or academic achievement), first source of sex education, 'ethnic minority background', and adolescent smoking.

Table 5.2: Summary of Studies Included in The Systematic Review

Study Number	Authors (date)	Geographical Region	Sample Size	Age Range (in years)	Gender	Mean Age of Sexual Intercourse	% Using contraception	% Under the age of 16	Risk Factors	Other findings
1	Lima-Serrano, Guerra-Martín, & Lima-Rodríguez (2017)	Seville, Spain	204	12-17	Males and Females	14.88	85.2%	Not Stated	'Family Dysfunction' identified as a predictor for early sexual initiation	AGPR Test was used to Measure Family Dysfunction
2	Fang, Stanton, Li, Romer, Galbraith & Feigelman (1996)	USA	382	9-15	Male and Females	Not Stated	Not Stated	37%	None specifically identified	
3	Black, Oberlander, Lewis, Knight, Zolotor, Litrownik, Thompson, Dubowitz, & English (2009)	USA	637	12-16	Males and Females From a 'High Risk' Sample	14.34	Not Stated	79%	Child maltreatment (defined as sexual abuse, physical abuse, emotional abuse, or neglect) before the age of 12 years old predicts adolescent sexual intercourse at 14 years old.	Boys were more likely than girls to report sexual intercourse by the age of 14 years & The relation between physical abuse before the age of 12 years and sexual intercourse at the age of 14 years was stronger for girls than for boys
4	Boyer & Fine (1992)	USA	535	13-21	Females Only	13.8	26%	Not Stated	Prior sexual victimisation	
5	Whitbeck, Yoder, Hoyt & Conger (1999)	USA	457	13-16	Males and Females	Not Stated	Not Stated	Not Stated (yes/no option offered)	Adolescent alcohol use, association with deviant peers predicts earlier onset of sexual intercourse.	

6	Rafaelli and Crockett (2003)	USA	443	12-13	Males and Females	Not Stated	62.4%	25.1% (under 15 years)	Adolescents whose mothers had given birth at an early age. Adolescents who made decisions without parental input Adolescents who experienced negative peer pressure. …had significantly higher odds of having sex before15 years old.	
7	Smith (1997)	USA	1334	13-18	Males and Females	Not Stated	Not Stated	72.2% Boys 46.7 Girls Overall 64.7%	None identified	
8	Waller & DuBois (2004)	USA	134	12-14	Males and Females	Not Stated	28% boys and 19% girls	Not Stated (yes/no option offered)	'Stressful experiences' and 'self-evaluations/self-standards' are associated with the initiation of sexual activity.	
9	O'Donnell, Myint-U, O'Donnell & Stueve (2003)	USA	849	12-16	Males and Females	Not Stated	Not Stated	16 years and under: 64.3 %	Sexual norms (early sex supportive attitudes) Sexual Expectancies Sexual Responsibilities and Sexual Refusal Attitudes	
10	Ali Husin, (2013)	USA	928	8-20 years old	Males and Females	13.56	not stated	37.8% overall, 44.5% for boys and 31.4% for girls	Adolescent school problems & drug/alcohol abuse	The longer the father was absent, the greater the odds for early sexual debut for girls. Adolescent school problems (46%) & drug/alcohol abuse (97%) were highly

									predictive of early sexual debut
11	DiIorio, Dudley, Soet & McCarty (2004)	USA	491	11-14 years old	Males and Females	not stated	not stated	not stated	Sexual Possibility Situation Measure	Education, pro-social activities, parental control, and personal values are all Protective Factors
12	Jordahl & Lohman (2009)	USA	984	11-16 years old	Males and Females	12.77	not stated	25.80%	Being Male, older, African American, location, Family structure instability	Adolescents with mothers who had a degree education or higher, decreased chances of early sexual activity
13	Lammers, Ireland, Resnick & Blum (2000)	USA - Minnesota	26,023	13-18 years old	Males and Females	not stated	not stated	not stated	Alcohol, Drugs, smoking	15624 out of 26023 were not sexually active. Protective factors: Married parents, higher SES, higher school performance, higher religiosity, higher worries about community
14	Lohman & Billings (2008)	USA	528	10-14 years old	Males	not stated	not stated	not stated	Delinquency, School problems, alcohol*, drugs*, Race, Family structure, maternal education, family income, teenage mother, neighbourhood environment, family welfare receipt, parental monitoring*, low academic achievement* (*=main factors)	Adolescent boys from high-risk neighbourhoods living in poverty have a higher risk of early sexual debut
15	Mendle, Harden, Turkheimer, Van Hulle, D'Onofrio, Brooks-Gunn, Rodgers, Emery & Lahey (2009)	USA	1382	14 to 33 years	Males and Females	15.28 (Father absent) & 15.35 (Father	not stated	not stated	Father always present for self, absent for sibling	Family structure has a role in the onset of sexual activity

					partially absent)				
16	Wand, Bryant, Worth, Pitts, Kaldor, Delaney-Thiele & Ward (2017)	Australia - Sydney	2320	16 to 29 years	Males and Females	not stated	Inconsistent use, or not using condom: 62% Male, 68% Female	14 years & under: 79% Males, 67% Females	Low Education, high risk sexual behaviours, drugs, alcohol, reporting being drunk/high at last sexual encounter	Early sexual debut is related to high number of sexual partners in last 12 months. High number of sexual partners related to STI diagnosis.
17	Oshi, McKenzie, Baxter, Robinson, Neil, Greene, Wright & Lodge (2019)	Jamaica - Kingston	233	18 to 35 years	Males and Females	86.3% had sex with mean sexual debut of 15.51 years	44.6% of those who had early sexual debut used a condom on first encounter	32.30%	Single-parent families (specifically a single-father family structure), first source of sex information,	
18	Burgers (2018)	Netherlands - Utrecht	532	12 to 18 years	Males and Females	14.19 years	not stated	not stated	Low SES, ethnic minority background, male	More parental monitoring related to slightly worse comms with parents. Middle SES boys had a higher age of sexual debut compared to low SES boys. Good Parent-adolescent comms mitigated for Low SES early sexual debut for boys.
19	Cavazos-Rehg, Krauss, Spitznagel, Schootman, Bucholz, Peiprt, Sanders-	USA -St Louis	66,682	Unclear: 12-17 years?	Males and Females	47.89% not had sexual intercourse	not stated	31.37%	Hispanic or African-American ethnicity	

	Thomson, Cottler & Beirut (2009)								
20	O Hara, Gibbons, Gerard, Li & Sargent (2012)	USA	1228	12 to 14 years at Time 1 and 18 to 21 years at Time 6	Males and Females	not stated	Among sexually active participants, 25.2% reported casual sex without a condom	15.4% of those who had sexual debuted by Time 6	Early Movie sexual exposure	Sexual Media diet predicts age of sexual debut. Sensation-seeking associated with earlier sexual debut
21	O Hara & Cooper (2015)	USA - Buffalo NY	1867	13 to 19 years at Time 1	Males and Females	15.5	not stated	not stated	Male, Black,	Virgins more likely to be female, white & young, whereas alcohol abstainers were more likely to be Black & Young. Average age of regular heavy drinking of 16.4 years. Whites had an average age of regular heavy drinking initiation 6 months before sexual debut whereas Blacks were 3.5 years after sexual debut.
22	Moilanen, Leary, Watson & Ottley (2015)	USA	799	Unclear	Males and Females	15.81	not stated	not stated	High level of autonomous decision-making. Low ae of mother at first birth	Males younger than females at sexual initiation. Male Hispanic teens and African-American teens were the same for sexual debut both different to white teens.

23	Funmito Omolola, Akintunde, Olusegun, Olumuyiwa A, Samuel Ebun, Timothy Olufemi, Idowu Paulin & Olorunfemi Akinbode (2018)	Ogbomoso Nigeria	447	16 to 19 years	Males and Females: 191 boys, 248 girls	26.84% had sexual debut. Mean of 15.4 years for males and 15.8 years for females	85% did not use a condom	18.6% sexual debut under 15 years	Not Religious, No Sex Education at home, peer sex education, Polygamous family setting, alcohol use, smoking, no knowledge of reproductive health issues	Women twice as likely as men to have early sexual initiation. 45% more likely to have early sexual initiation if no sex education at home. Peer sex education meant twice as likely to initiate sex early. Polygamous family setting was twice as likely to initiate sex early. Drinking alcohol meant twice as likely to initiate sex early. Smoking meat 3 times as likely to initiate sex early. People with good knowledge of reproductive health issues were 82% less likely to initiate sex early.

Table 5.3 Risk Factors Associated with Underage (Before 16 years) Sexual Intercourse (N=29)

Risk Factors Identified	Study	% Sexual Intercourse Under the age of 16	% Reported Using contraception	Total Number of Studies
'Family Dysfunction' identified as a predictor for early sexual initiation	Lima-Serrano, Guerra-Martín, & Lima-Rodríguez (2017)	Not Stated	YES 85.2%	1
Child maltreatment (defined as sexual abuse, physical abuse, emotional abuse, or neglect) before the age of 12 years old predicts adolescent sexual intercourse at 14 years old.	Black, Oberlander, Lewis, Knight, Zolotor, Litrownik, Thompson, Dubowitz, & English (2009)	79%	Not Stated	1
Prior sexual victimisation (FEMALES ONLY)	Boyer & Fine (1992)	Not Stated	YES 26%	1
Adolescent alcohol use	Whitbeck, Yoder, Hoyt & Conger (1999)	Not Stated	Not Stated	6
	Funmito Omolola, Akintunde, Olusegun, Olumuyiwa A, Samuel Ebun, Timothy Olufemi, Idowu Paulin & Olorunfemi Akinbode (2018)	(under 15 years) 18.6%	NO 85%	
	Wand, Bryant, Worth, Pitts, Kaldor, Delaney-Thiele & Ward (2017)	14 years and under: 79% Males, 67% females	Inconsistent Use, or not using Condom: 62% Male, 68% Female	
	Lohman & Billings (2008)	Not Stated	Not Stated	
	Lammers, Ireland, Resnick & Blum (2000)	Not Stated	Not Stated	
	Ali Husin (2013)	37.8% overall, 44.5% for boys and 31.4% for girls	Not Stated	

Adolescent association with deviant peers	Whitbeck, Yoder, Hoyt & Conger (1999)	Not Stated	Not Stated	1
Adolescents whose mothers had given birth at an early age.	Rafaelli and Crockett (2003) 25.1%	(under 15 years) YES	62.4%	2
	Moilanen, Leary, Watson & Ottley (2015)	Not Stated	Not Stated	
Adolescents who made decisions without parental input (autonomous decision making)	Rafaelli and Crockett (2003) 25.1%	(under 15 years) YES	62.4%	2
	Moilanen, Leary, Watson & Ottley (2015)	Not Stated	Not Stated	
Adolescents who experienced negative peer pressure.	Rafaelli and Crockett (2003)	25.1% (under 15 years)	YES 62.4%	1
Sexual norms (early sex supportive attitudes)	O'Donnell, Myint-U, O'Donnell & Stueve (2003)	16 years and under: 64.3 %	Not Stated	1
Sexual Expectancies	O'Donnell, Myint-U, O'Donnell & Stueve (2003)	16 years and under: 64.3 %	Not Stated	1
Sexual Responsibilities	O'Donnell, Myint-U, O'Donnell & Stueve (2003)	16 years and under: 64.3 %	Not Stated	1
Sexual Refusal Attitudes	O'Donnell, Myint-U, O'Donnell & Stueve (2003)	16 years and under: 64.3 %	Not Stated	1
Adolescent School Problems	Ali Husin (2013)	37.8% overall, 44.5% for boys and 31.4% for girls	Not Stated	1
Adolescent Drug Use	Ali Husin (2013)	37.8% overall, 44.5% for boys and 31.4% for girls	Not Stated	4
	Lohman & Billings (2008)	Not Stated	Not Stated	
	Lammers, Ireland, Resnick & Blum (2000)	Not Stated	Not Stated	
	Wand, Bryant, Worth, Pitts, Kaldor, Delaney-Thiele & Ward (2017)	14 years and under: 79% Males, 67% females	Inconsistent Use, or not using Condom: 62% Male, 68% Female	
Gender (Male)	Jordahl & Lohman (2009)	25.8%	Not Stated	3

	O Hara & Cooper (2015)	Not Stated	Not Stated	
	Burgers (2018)	Not Stated	Not Stated	
Geographical Location	Jordahl & Lohman (2009)	25.8%	Not Stated	1
Family Structure Instability	Jordahl & Lohman (2009)	25.8%	Not Stated	1
Smoking	Lammers, Ireland, Resnick & Blum (2000)	Not Stated	Not Stated	2
	Funmito Omolola, Akintunde, Olusegun, Olumuyiwa A, Samuel Ebun, Timothy Olufemi, Idowu Paulin & Olorunfemi Akinbode (2018)	(under 15 years) 18.6%	NO 85%	
Parental Monitoring	Lohman & Billings (2008)	Not Stated	Not Stated	1
Low Academic Achievement or Low Education	Lohman & Billings (2008)	Not Stated	Not Stated	2
	Wand, Bryant, Worth, Pitts, Kaldor, Delaney-Thiele & Ward (2017)	14 years and under: 79% Males, 67% females	Inconsistent Use, or not using Condom: 62% Male, 68% Female	
Presence of Father	Mendle, Harden, Turkheimer, Van Hulle, D'Onofrio, Brooks-Gunn, Rodgers, Emery & Lahey (2009)	Not Stated	Not Stated	1
Single Father Family Structure	Oshi, McKenzie, Baxter, Robinson, Neil, Greene, Wright & Lodge (2019)	32.3%	44.6% of those who had early sexual debut used a condom on first encounter	1
First Source of Sex Education	Oshi, McKenzie, Baxter, Robinson, Neil, Greene, Wright & Lodge (2019)	32.3%	44.6% of those who had early sexual debut used a condom on first encounter	2
	Funmito Omolola, Akintunde, Olusegun, Olumuyiwa A, Samuel Ebun, Timothy Olufemi, Idowu Paulin & Olorunfemi Akinbode (2018)	(under 15 years) 18.6%	NO 85%	

Low Socio-Economic Status	Burgers (2018)	Not Stated	Not Stated	1
'Ethnic Minority' Background	Burgers (2018)	Not Stated	Not Stated	3
	O Hara & Cooper (2015)	Not Stated	Not Stated	
	Cavazos-Rehg, Krauss, Spitznagel, Schootman, Bucholz, Peiprt, Sanders-Thomson, Cottler & Beirut (2009)	31.37%	Not Stated	
'Early Movie Sexual Exposure'	O'Hara, Gibbons, Gerard, Li & Sargent (2012)	15.4%	NO 25.2%	1
Not Religious	Funmito Omolola, Akintunde, Olusegun, Olumuyiwa A, Samuel Ebun, Timothy Olufemi, Idowu Paulin & Olorunfemi Akinbode (2018)	(under 15 years) 18.6%	NO 85%	1
Polygamous Family Setting	Funmito Omolola, Akintunde, Olusegun, Olumuyiwa A, Samuel Ebun, Timothy Olufemi, Idowu Paulin & Olorunfemi Akinbode (2018)	(under 15 years) 18.6%	NO 85%	1
No Knowledge of Reproductive health issues	Funmito Omolola, Akintunde, Olusegun, Olumuyiwa A, Samuel Ebun, Timothy Olufemi, Idowu Paulin & Olorunfemi Akinbode (2018)	(under 15 years) 18.6%	NO 85%	1

Across all articles identified, different results were reported about risk factors associated with underage sexual intercourse.

One paper highlighted the protective factor of 'good' knowledge of reproductive health issues, with respondents 82% less likely to initiate sex early (Funmito Omolola et al., 2018). Lammers et al., (2000) listed protective factors as: married parents, higher socio-economic status, higher school performance, higher religiosity, and higher worries about the community. Adolescents with mothers with a degree education or higher were found to have decreased chances of early sexual activity (Jordahl and Lohman, 2009). Adolescent education, parental control, pro-social activities, and personal values have also been cited as protective factors for early sexual debut (DiIorio et al., 2004).

No papers split their results into heterosexual or homosexual sexual intercourse, and there was a lack of consistent reporting of the age at which individuals engaged in sexual intercourse. Despite claiming to explore timing and onset of sexual activities, two studies opted instead for a 'yes/no' questioning style for experience of first sexual intercourse, offering limited data regarding timing and age. This could potentially be due to restrictions put on researchers in studying sexual behaviour in order to safeguard young people.

A number of papers within the review reflected samples including adolescents from the general population. Some articles were unique in respect of the samples recruited (i.e., high-risk,

'ethnic minority', and economically disadvantaged) and therefore the representativeness of the findings is limited.

Across the sample, largely western (American) respondents were recruited, this impacts the generalisability of the findings mostly to western cultures. This is a weakness of the research in this area as it is not reflective of an international picture of adolescent sexual behaviour. Despite other respondents being recruited from Jamacia, Spain, Netherlands, Australia, and Nigeria, a signification proportion of the respondents in this review were from the USA.

This review adds to knowledge in the area by highlighting the requirement for quality data to be collected regarding the prevalence, risk and protective factors associated with early experience of sexual intercourse.

Discussion

The findings in this review indicate support for the assertion that most adolescents become sexually active during teenage years (Blythe & Rosenthal, 2000; Russell, 2005; Smiler, Ward, Caruthers, & Merriwether; Tolman, Striepe, & Harmon, 2003).

Family Dysfunction was identified as a predictor for early sexual initiation (Lima-Serrano, Guerra-Martín, & Lima-Rodríguez, 2017) as well as associating with deviant peers (Whitbeck, Yoder, Hoyt & Conger, 1999). This is in agreement with research indicating earlier sexual intercourse is associated with certain prior social environmental factors, such as features of family and peer relationships (e.g., Crockett, Bingham, Chopak, & Vicary, 1996; McBride, Paikoff, & Holmbeck, 2003; Whitbeck, Yoder, Hoyt & Conger, 1999).

Support for Moffit's theory, and Zimmer-Gembeck & Helfand's 2008 assertion, that developmental experiences relate to early adolescent intercourse is found in Black, Oberlander, Lewis, Knight, Zolotor, Litrownik, Thompson, Dubowitz, & English (2009) study, indicating child maltreatment predicts earlier onset of sexual intercourse. Linked to this, substance misuse difficulties are often linked with adverse childhood experiences. Within this review, several studies identified alcohol use, drug use, and smoking as associate with early onset of sexual intercourse.

One of the challenges in research in this area, is collecting data on sexuality from adolescents. This brings up a number of

ethical issues. Three identified studies discussed this as being a limitation of their research and a potential constraining factor for obtaining quality data. It is important to balance the requirement for an accurate evidence base for strategies such as sex education programmes, with avoiding the potentially damaging impact of exploring adolescent sexual behaviour (especially with those who have previous experiences of child maltreatment).

Contraception use rate was reported in eight of twenty-three studies identified. The mean age of first sexual intercourse identified in this review ranged from 12.77 to 15.81 years which is under the legal age of consent in the UK (16 years old). Throughout the review, data on age of first sexual intercourse was not consistently reported. Some studies did not reflect the proportion of their sample that had not had sex (as a control comparison), and some reported a median age of first sexual intercourse, rather than a mean age. There is potential for debate around whether an earlier age of sexual intercourse is becoming a societal norm. This could also mean that measures such as safeguarding young people and sex education programmes are potentially failing, at least for certain sections of society (high-risk, underprivileged, or economically disadvantaged). This highlights the requirement for review of either the legal age of consent (which varies internationally) or the way in which adolescent sexuality is conceptualised.

Unequal distributions across socio-economic groups of unplanned pregnancies, and 'early' sexual activity demonstrate the

existing inequalities in sexual health. Considering the twenty-nine identified risk factors within this review, the disparities that exist between social groups appear to be present before the initiation of sexual activity, suggesting greater efforts are required to address the underlying causes driving these risk factors.

Hollenberg (1998) criticises an over focus on 'pursuing offenders' and 'ignoring teenage mothers. Hollenberg also highlights that enforcing statutory rape laws as a means of impacting the sexual behaviour of teenagers is unfounded based on the evidence. Hollenberg points out the requirement for an understanding of the complex sociological, psychological, and economic reasons for sexual behaviour in adolescence. This review provides support for this notion and could identify potential relevant interrelating risk factors that contribute to a model of underage sexual intercourse.

Lindberg & Maddow-Zimet (2012) found that sex education about abstinence and birth control was associated with healthier sexual behaviours and outcomes as compared with no instruction. Conversely, Oettinger (1999) found that sex education in the 1970's had some impact on teenage sexual behaviour and that sex education was associated with earlier sexual activity in females. It is of note, during the current review, Oshi et al. (2019) suggested that the first source of sex education was impactful in terms of earlier sexual intercourse. Funmito Omolola (2018) found that no sex education at home, and a lack of reproductive knowledge were risk factors for earlier sexual intercourse.

Chandra, Martino, Collins, Elliott, Berry and Kanouse (2007) demonstrated a link between exposure to sexual content on television and the experience of a pregnancy before the age of 20 years old. Ohara et al., (2012) found that early exposure to sexual media diet predicts age of sexual debut, with early movie sexual exposure being a risk factor.

The research area of 'early' sexual intercourse is studied mostly by questionnaire, occasionally by longitudinal methods and most-often via self-report methods. Most scientists acquire sexual data through self-report surveys, since direct observation is challenging. The approach of recording data on age of initiation of sexual activities, especially sexually intercourse varies from study to study, making comparisons of different samples difficult. Within the literature base, there is a crossover with sexual abuse literature and literature that explores adolescent sexuality without any acknowledgement to legality. Risk behaviours are often discussed within this research, but not often in regard to early age of sexual intercourse. This may be largely down to the sensitive nature of the topic area and the ethical and methodological difficulties associated with sensitively collecting information on adolescent sexual behaviour.

This review finds support for Zimmer-Gembeck & Helfand's (2008) assertion that 'the complexity of adolescent sexuality has made it difficult to develop a comprehensive theoretical framework to guide research'.

Chapter Six: Discussion

Findings from the First Primary Research Study

The rationale for the first primary research study was to reduce the gaps in knowledge surrounding the influence of pornography use and was designed to explore four primary hypotheses:

1. The age of onset of sexual activities will NOT be related to pornography use before 12 years (H1).

2. The age of onset of sending nude or semi-nude images of self (sexting) will (H2a) NOT be related to underage sexual intercourse (i.e. before 16 years) and (H2b) NOT be related pornography use before 12 years.

3. Growing up living with both biological parents (two parent family) will (H3a) NOT be related to age of onset of sexual intercourse and (H3b) NOT be related to age of onset of pornography use.

4. Receiving sex education in primary school (i.e. before 12 years) will (H4a) NOT be related to age of onset of sexual intercourse and (H4b) NOT be related to age of onset of pornography use.

With respect to each hypothesis as identified within the chapter (see Table 2.16, Chapter 2), relationships were found

between the age of onset of showing genitals to another person and pornography use before 12 years old, with an earlier mean age being reported for those who watched pornography before 12 years old, than those who watched pornography after 12 years old. Similarly, both taking and sending a nude or semi-nude image at an earlier age was found to be related to first use of pornography under the age of 12 years. These findings were seen across both heterosexuals and non-heterosexuals, and males and females. These findings provide support for existing research suggesting that pornography use is associated with sexting behaviour (Stanley, Barter, Wood, Aghatie, Larkins, Lanau and Överlien, 2018).

Age of onset of romantic relationship was found to be related to a younger (under 12 years) age of first pornography use for all sub-groups of the sample, except for heterosexual females. Similarly, all of the opposite sex sexual activities (from kissing to full sexual intercourse) were found to be related to a younger age of first viewing pornography, in all sub-groups, except for heterosexual females. This suggest that pornography is not as influential to heterosexual females with respect to sexual activities with the opposite sex, or with initiation of romantic relationship, as is it to males who identify as heterosexual, and males and females who identify as bisexual, homosexual or lesbian (non-heterosexual).

Results of the first primary study indicate mixed results in respect of sexual activities with the same sex and pornography use under 12 years old. For heterosexual males, no relationship was

found. However, for heterosexual females, in five out of seven sexual activities (not including sexual or oral intercourse) a relationship was found with first pornography use under 12 years old. It is interesting that, despite identifying as heterosexual, both males and females reported sexual activities with the same sex. Presumably, this can be understood to be sexual experimentation during adolescence. This could indicate support for existing research indicating that emerging adults today 'test-run' relationships and engage in 'harmless hook ups' and 'friends with benefits' (brief, uncommitted sexual encounters without the promise of a relationship) (Fincham & Cui, 2010; Garcia, Reiber, Massey, Merriweather, 2012; Rozler & Lavinthal, 2010 Owen, Fincham, Moore, 2011; Bradshaw, Kahn, & Saville, 2010). These findings also contrast with those found suggesting this culture of 'hooking up' is not as prevalent (Monto & Carey, 2014). Emerging adulthood and Generation Y appear to be unique with regard to sexual activities with both the same and opposite sex, providing support for generational distinctions and the decision to analyse 18-25 year-olds separately in the present research.

For both non-heterosexual males and females, four and six same-sex sexual activities respectively were found to be associated with an earlier first use of pornography. No relationship was found for same-sex sexual intercourse for non-heterosexual females. No relationship was found for non-heterosexuals for same-sex variables for deeply kissing, feeling a member of the same sex's chest over

clothes, and feeling a member of the same sex's chest under clothes.

Age of onset of sex education was found to be related to a younger age of first pornography use for all sub-groups of the sample, except for non-heterosexual males.

For all sub-groups of the sample (across sexuality and gender) a younger age of first sexting was found to be related to both sexual intercourse under 16 years old, and pornography use under 12 years old, than those reporting sexual intercourse over 16, or pornography user over 12 years. This provides further support for research linking pornography use and sexting (Van Ouytsel, Ponnet, & Walrave 2014; Stanley, Barter, Wood, Aghatie, Larkins, Lanau and Överlien, 2018) and indicates an association for both of these factors related to underage sex.

For all sub-groups of the sample (across sexuality and gender) a non-nuclear family dynamic (growing up with a family dynamic other than that of two biological parents) was not found to be related to sexual intercourse under the age of 16 years old. However, a non-nuclear family dynamic was found to be associated with first pornography use under the age of 12 years old for all sub-groups except non-heterosexual males. These findings are in partial support of research suggesting family variables increase risk of adolescent exploitation both online and offline (Clarke, Clarke, Roe-Sepowitz & Fey, 2012; Martin et al., 2011; Noll, Shenk, Barnes &

Haralson, 2013; Pérez-Fuentes et al., 2013; Roe-Sepowitz, 2012; Whittle et al., 2013; Wildsmith, Barry, Manlove & Vaughn, 2013).

For all sub-groups of the sample (across sexuality and gender) primary school sex education was not found to be related to sexual intercourse under the age of 16 years old. However, primary school sex education was found to be related to first pornography use under 12 years old for all sub-groups except non-heterosexual females. These findings bring into question the research purporting that sex education is meeting the needs of sexual knowledge and understanding for children (Wurtele, 2009).

In summary, for both non-heterosexual males and females, early onset of sexting was found to be associated with underage sexual intercourse. A relationship between early onset of sexting and pornography use under 12 years old was found for both males and females, as well as a relationship between early age of onset of pornography use and primary school sexual education.

Gender

Results of Chi-square tests of independence for gender for non-heterosexuals in the first primary research study revealed significant differences between male and female heterosexuals and non-heterosexuals (see Table 2.2) supporting previous research into gender differences in arousal (Chivers, Rieger, Latty, & Bailey, 2004).

Pornography Use

The findings of the primary research study support the assertion that there is an increasing use of pornography (Albury, 2014). Only 6.9% of heterosexuals and 6.1% of non-heterosexuals in this sample had not viewed pornography and 93.3% of the entire sample (both heterosexuals and non-heterosexuals) had viewed pornography by age 17 (under the age of guidance for access to pornography), a higher level of pornography access than reported in the June 2016 NSPCC report (Martellozzo et al., 2016). This also supports the increase in the past 10-15 years (the time when the sample in the primary research study would have been adolescents) in the use of pornography (Szymanski & Stewart-Richardson, 2014; Petersen & Hyde, 2010). It is illegal for under 18's to watch online or buy pornography, so the law around pornography is clearly out of step with what is now commonplace. For under 18's it is primarily left to parents to prevent a child accessing pornography.

Findings from the first primary research study about the frequency of pornography use by both heterosexual and non-heterosexual males are in line with previous research in this area (Harkness, Mullan, & Blaszczynski, 2015; To, Ngai, & Iu Kan, 2012). This research adds to knowledge surrounding factors associated with frequent pornography use, indicating significantly more heterosexual males than heterosexual females use pornography frequently (i.e. on a daily to weekly basis), heterosexual females most commonly reported using pornography on a less-than-weekly basis and significantly more non-heterosexual males than non-heterosexual females use pornography frequently (i.e. on a daily to weekly basis).

An important factor to consider when comparing the results of the present study to that of research that has been published previously is the operationalisation of 'pornography use'. The present study intended for participants to indicate active use (i.e. a choice, decision to view pornography), as opposed to simply pornography exposure, which may be accidental and unintentional (for example, a pop-up adverts). Exposure to pornography alone, especially when accidental, will likely have a different impact on sexual behaviour than purposeful, sought out, 'use'. Additionally, the content of what is defined as 'pornography' has changed significantly over time, (shifting to more explicit, biological detail of sexual acts) and is likely to span across a wide range of media, from 'soft-core' photographic nudity and semi-nudity (a likely feature in what is considered earlier 'pornography' to more 'hard core' graphic imagery and videos. Further research could seek to categorise and operationalise the definitions within pornography use as a sexual behaviour and seek to differentiate between levels of 'severity' of material.

Problematic Pornography Use

The use and application of the 'Problematic Pornography Use Scale' (PPUS) is explored in Chapter 4. Kor and colleagues (2014) devised a 12-item scale using a 6-point Likert scale, ranging from 'Never true' to 'Almost Always true' to assess an individual's self-reported behaviour over the last 6 months. The PPUS utilises the addiction framework as a basis to understand 'problematic

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pornography use', identifying factors that may reflect addictive pornography use. The factors intended to be measured by the PPUS are: (1) distress and functional problems, (2) excessive use, (3) control difficulties, and (4) use for escape/avoidance of negative emotions.

Considering the PPUS as a tool for measuring 'problematic pornography use', the internal consistency, convergent and construct validity of the PPUS was found to be high. However, concurrent and predictive validity may need further research and development with culturally sensitive norms for both males and females. With reference to the only study (to date) of an English speaking online sample, it is proposed that individuals scoring over 26 and above may be considered for a referral for further assessment and intervention, being in the top 10% for 'problematic pornography use'.

This recommendation for a referral cut-off point requires additional validation within clinical samples. However, the PPUS could prove valuable as a screening tool or as part of a broader assessment approach, alongside other methods of assessment that consider: the function of pornography use for the individual, the impact of this on themselves and others, and their experience of distress and difficulties in this regard.

Attachment and Relationship Style: Findings from the Second Research Study

The second research study explored the interactions between attachment and age of first experience of sexual intercourse, sexting and viewing pornography, and frequency of viewing/using pornography. This study also investigated the interactions between sexuality, sexting and pornography use. This study was designed to explore four primary hypotheses:

1.   It was hypothesised that attachment style would be related to age at first experience of sexual intercourse, with secure attachment being related to later age at first experience of sexual intercourse (H1).

2.   It was hypothesised that attachment style would be related to age at first experience of sexting, with secure attachment being related to later age at first experience of sexting (H2).

3.   It was hypothesised that attachment style would be related to age at first use of pornography, with secure attachment being related to later age at first use of pornography (H3).

4.   It was hypothesised that attachment style would be related to frequency of current use of pornography, with secure attachment being related to less frequent use of pornography (H4).

The second research study results suggest that the relationship style (identified using the RQ ()) a female endorses is related to age of first sexual experience with the opposite sex. Specifically, the results suggest that females who endorse a dismissive relationship style are more likely to have had their first

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sexual experience with the opposite sex at an earlier age than those who endorse a secure relationship style. Results also suggest that females who endorse a secure relationship style are more likely to have had their first experience of viewing pornography at a later age than those who endorse a preoccupied or dismissive relationship style.

The hypotheses that a relationship would be found between sexting and RQ style and that a relationship would be found between frequency of pornography use and RQ style were not supported for either males or females. For males, H1b (First Sexual Experience and RQ Style) and H3b (First Experience of Viewing Pornography and RQ Style) were not supported.

The results of H1a within the second research study do not directly support the findings of Skinner et al. (2015), or Bogaert and Sadava (2002). There is a discrepancy between the findings within the second research study suggesting that earlier sexual intercourse is related to endorsing a Dismissive rather than Secure relationship style, whereas Bogaert and Sadava's study suggests that those with an anxious (or preoccupied) attachment are more likely to have had earlier sexual intercourse than those with secure attachment styles. Taken more broadly, this could be explained by a secure relationship style being associated with later sexual intercourse, suggesting some potential overlap between the insecure relationship style categories. Additionally, Bogaert and Sadava's study included participants from Canada with a broader age range than the present

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study. Skinner et al (2015) collected their data from Australian parents reporting on their children's behaviour, and then later from these children as participants at age 17. This may go some way to accounting for the differences in response to the current research.

The findings within the second research study are consistent with research regarding the age at first exposure to pornography (Ybarra and Mitchell 2005; Štulhofer, Buško et al 2010). The results of H3a (female's first experience of viewing pornography more likely to be earlier if they endorse a preoccupied or dismissive relationship style) provide more context to the findings of Bleakley, Hennessy & Fishbein (2011) where avoidant (dismissive) and anxious (preoccupied) styles were associated with frequency of pornography use and problematic pornography use. However, within the second research study H4 was not supported, indicating that there was no significant relationship between frequency of pornography use and relationship style endorsed for both males and females, conflicting with the results of Bleakley, Hennessy & Fishbein (2011).

Weisskirch and Delevi (2011) found that attachment anxiety predicted positive attitudes towards sexting. Similarly, research has found that attachment anxiety is related to sexting as a result of poor impulse control in women, and frequency of consenting to unwanted sexting (Trub and Starks 2017; Drouin and Tobin 2014). Alongside this, Drouin and Landgraff (2012) found that sexting was more common with those with insecure attachments. Whilst sexting may be related to relationship style, within the second research

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study age of first experience of sexting was not found to be related in either males or females.

Attachment has the potential to change over a lifespan (i.e. more or less secure). It is important, when interpreting results of this study, to consider that the RQ score represents the individual's current relationship style (at the time of the questionnaire), whereas the questions relating to sexual activities are mostly retrospective. Different developmental experiences (for example, early sexual intercourse) can shape a person's attachment style.

The original study for the RQ reported 47% secure, 18% dismissive, 14% preoccupied and 21% fearful for the relationship styles endorsed (Bartholomew & Horowitz, 1991). Considering the sample within the second research study, females and males are represented in Table 3.5, Chapter 3. This indicates that the sample within the second research study had a higher proportion of preoccupied and fearful relationships styles endorsed, and a lower proportion of secure and dismissive styles endorsed than the original 1991 study. The difference is more pronounced for EA females than males to the total 1991 sample. There is a potential for the results in the within the second research study to be biased to over-represent the characteristics of those who endorse preoccupied and fearful relationship styles. Therefore, care should be taken in the interpretation of the results.

However, it is of note the population used for the original 1991 study was made up of American psychology students. 67.3%

of the sample within the second research study reported that they were students. There is also a 27-year difference in the data collection from this more recent study and the original.

Sexting

Sexting at an earlier age is linked to pornography use at an earlier age and suggests that exposure to sexualised imagery is on the increase.

The findings on the taking and transmission of self-image nudity support the idea that sexting is considered a 'normal' part of growing up, with 80.2% of the entire sample having admitted to sending or receiving self-image nudity (NSPCC, 2012; Hasinoff, 2014; 2015). Alongside these findings, a substantial amount (60.4%) of those who admitted to taking semi-nude or nude image of themselves were under the age of 18 when they first did so, and 53.1% sent those images under the age of 18 years old for the first time. This conflicts with the lower rates of sexting reported by Livingstone, Haddon, Görzig and Ólafsson, (2011).

The early use of sexting and pornography, and the high rates of pornography use, provide support for the idea that these methods of expressing and exploring sexuality are becoming 'normalised' behaviour. This supports the view that social norms around sexuality have changed in the past three decades.

The technology used to facilitate these changes is clearly demonstrated in the results, with the most common mechanisms of

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viewing pornographic material being via internet browser by laptop or computer and mobile phones. Applications such as 'Snapchat' and text messaging facilitate the transmission of nude and semi-nude images. Most of these experiences begin in early adolescence, thus modern technology is shaping the way people are expressing their sexuality and potentially impacting sexual attitudes and behaviours.

Sexual Development

The results of the primary research study found support that oral sex typically occurs before sexual intercourse which agrees with past research (Schwartz, 1999; Prinstein, Meade & Cohen, 2003). The primary research study added to knowledge on this topic by finding this was consistent for both males and females, both with opposite-sex and same-sex partners. There appears to be distinct differences in the sexual development patterns, with heterosexual females reporting later ages of showing genitals, viewing pornography and oral sex with the same sex. Non-heterosexual females generally appear to begin sexual activities earlier than non-heterosexual males and heterosexual males and females. There is also different ordering to the sexual activities for each sub-group (see Figure 6.1).

Ordering of Sexual Activities

A Spearman's rank-order correlation was used to determine the similarities between the rank order of sexual activities for gender and sexual orientation.

Heterosexual Males & Heterosexual Females

Results of the Spearman's correlation indicated there was a significant positive association between the rank order of sexual activities for heterosexual males and heterosexual females ($r_s(18) =$ .898, $p < .01$). The effect size of this relationship was large (Cohen, 1988).

Heterosexual Males & Non-Heterosexual Males

Results of the Spearman's correlation indicated there was a significant positive association between the rank order of sexual activities for heterosexual males and heterosexual females ($r_s(18) =$ .707, $p < .01$). The effect size of this relationship was Medium (Cohen, 1988).

Heterosexual Males & Non-Heterosexual Females

Results of the Spearman's correlation indicated there was a significant positive association between the rank order of sexual activities for heterosexual males and heterosexual females ($r_s(18) =$ .770, $p < .01$). The effect size of this relationship was Medium (Cohen, 1988)

Heterosexual Females & Non-Heterosexual Females

Results of the Spearman's correlation indicated there was a significant positive association between the rank order of sexual activities for heterosexual males and heterosexual females ($r_s(18) =$

.910, $p < .01$). The effect size of this relationship was Large (Cohen, 1988).

Heterosexual Females & Non-Heterosexual Males

Results of the Spearman's correlation indicated there was a significant positive association between the rank order of sexual activities for heterosexual males and heterosexual females ($r_s(18) = .714$, $p < .01$). The effect size of this relationship was Medium (Cohen, 1988).

Non-Heterosexual Males & Non-Heterosexual Females

Results of the Spearman's correlation indicated there was a significant positive association between the rank order of sexual activities for heterosexual males and heterosexual females ($r_s(18) = .863$, $p < .01$). The effect size of this relationship was Large (Cohen, 1988).

Figure 6.1: Sexual Development Trajectories by Gender and Sexuality (18-25 years)

	Sex Education	View Porn	Kiss OS	Show Genitals	Kiss SS	Deeply Kiss OS	Chest/Breast Over Clothes OS	Chest/Breast Over Clothes SS	Rom. Relationship	Chest/Breast Under Clothes OS	Chest/Breast Under Clothes SS	Manipulate Genitals SS	Manipulate Genitals OS	Deeply Kiss SS	Take Nude Image of Self	Oral OS	Oral SS	Sent Nude Image of Self	Sexual Intercourse OS	Sexual Intercourse SS
Hetrosexual Male	11.75	12.35	14.55	15.09	16.29	16.08	16.13	15.31	16.31	16.61	16.1	15.88	16.92	17.55	17.27	17.31	16.3	17.72	17.71	18.34
Hetrosexual Female	11.42	14.21	14.64	15.92	15.34	16.01	16.09	15.67	16.24	16.63	16.08	16.11	16.82	16.52	16.83	17.19	17.46	17.33	17.51	17.64
Non-heterosexual Male	11.63	12.29	14.29	15.09	16.58	16.01	15.77	17.12	16.23	16.21	17.25	16.83	16.34	17.49	16.72	16.84	17.28	17.21	17.22	17.84
Non-heterosexual Female	11.25	13.18	13.89	14.74	15.14	15.37	15.45	15.91	15.38	16.04	16.37	16.53	16.11	16.06	16.17	16.55	17.13	16.86	16.99	17.29
Overall	11.51	13.01	14.34	15.21	15.84	15.87	15.86	16	16.04	16.37	16.45	16.34	16.55	16.91	16.75	16.97	17.04	17.28	17.36	17.78

(OS = Opposite Sex, SS= Same Sex, Rom. = Romantic, Nude Image= Nude or Semi-Nude Image)

Underage Sex: Considerations from Systematically Reviewing the Literature

The findings in this thesis (by systematic review, Chapter 5) indicate support for the assertion that most adolescents become sexually active during teenage years (Blythe & Rosenthal, 2000; Russell, 2005; Smiler, Ward, Caruthers, & Merriwether; Tolman, Striepe, & Harmon, 2003).

From systematically reviewing the literature, family Dysfunction was identified as a predictor for early sexual initiation (Lima-Serrano, Guerra-Martín, & Lima-Rodríguez, 2017) as well as associating with deviant peers (Whitbeck, Yoder, Hoyt & Conger, 1999). This is in agreement with research indicating earlier sexual intercourse is associated with certain prior social environmental factors, such as features of family and peer relationships (e.g., Crockett, Bingham, Chopak, & Vicary, 1996; McBride, Paikoff, & Holmbeck, 2003; Whitbeck, Yoder, Hoyt & Conger, 1999).

Support for Moffit's theory, and Zimmer-Gembeck & Helfand's 2008 assertion, that developmental experiences relate to early adolescent intercourse is found in Black, Oberlander, Lewis, Knight, Zolotor, Litrownik, Thompson, Dubowitz, & English (2009) study, indicating child maltreatment predicts earlier onset of sexual intercourse.

Systematic review of the literature identified contraception use rate was reported in three of nine studies reviewed. The overall

mean age of first sexual intercourse of 14.21 years identified was under the legal age of consent (16 years old). This is in contrast to the findings in the primary research study (see Figure 5.1). There is potential for debate around whether an earlier age of sexual intercourse is becoming a societal norm. This could also mean that measures such as safeguarding young people and sex education programmes are potentially failing, at least for certain sections of society (high-risk, underprivileged, or economically disadvantaged). This highlights the requirement for review of either the legal age of consent (which varies internationally) or the way in which adolescent sexuality is conceptualised.

Hollenberg (1998) criticises an over focus on 'pursuing offenders' and 'ignoring teenage mothers'. Hollenberg also highlights that enforcing statutory rape laws as a means of impacting the sexual behaviour of teenagers is unfounded based on the evidence. Hollenberg points out the requirement for an understanding of the complex sociological, psychological, and economic reasons for sexual behaviour in adolescence.

Lindberg & Maddow-Zimet (2012) found that sex education about abstinence and birth control was associated with healthier sexual behaviours and outcomes as compared with no instruction. Conversely, Oettinger (1999) found that sex education in the 1970's had some impact on teenage sexual behaviour and that sex education was associated with earlier sexual activity in females. It is

of note, no findings in relation to sex education were reported in any of the studies reviewed.

Chandra, Martino, Collins, Elliott, Berry and Kanouse (2007) demonstrated a link between exposure to sexual content on television and the experience of a pregnancy before the age of 20 years old. No studies within this review found similar findings, however, this brings into question what additional factors could be impacting early initiation of sexual behaviour in adolescents.

The research area of 'early' sexual intercourse is studied mostly by questionnaire, occasionally by longitudinal methods and most-often via self-report methods. The approach of recording data on age of initiation of sexual activities, especially sexually intercourse varies from study to study, making comparisons of different samples difficult. Within the literature base, there is a crossover with sexual abuse literature and literature that explores adolescent sexuality without any acknowledgement to legality. Risk behaviours are often discussed within this research, but not often in regard to early age of sexual intercourse. This may be largely down to the sensitive nature of the topic area and the ethical and methodological difficulties associated with sensitively collecting information on adolescent sexual behaviour.

This review finds support for Zimmer-Gembeck & Helfand's (2008) assertion that 'the complexity of adolescent sexuality has made it difficult to develop a comprehensive theoretical framework to guide research'.

Figure 6.2: A Tentative Model: Sex Education and Sexual Development
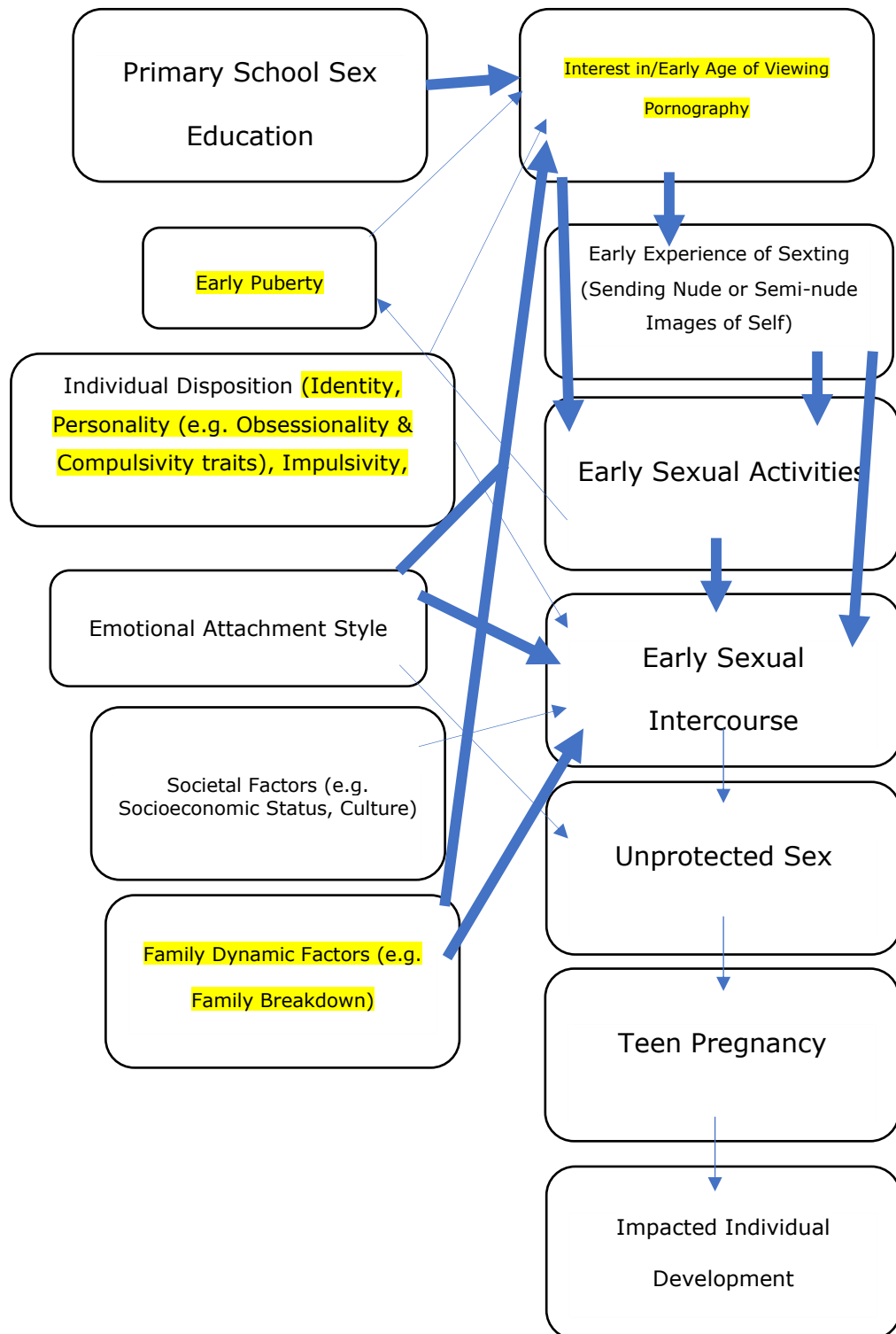
A Tentative Model: Sex Education and Sexual

Development

Figure 6.2 demonstrates a tentative model of the relationships between the variables explored within this thesis. The thick arrows represent relationships explored within this thesis and the thin arrows demonstrate associations found across research by other people reviewed within this thesis. This is a tentative model which requires more exploration.

Considering Legality

Three findings within this thesis bring into question the position of the law in respect of adolescent sexuality.

Firstly, the law with regard to underage sex. The systematic review of underage sex found that the mean age of sexual intercourse is around 14 years old. These findings were based on a combination of high risk and general population samples. There needs to be careful consideration of whether the law is applied appropriately and whether criminalising young people for underage sex without taking into account additional inter-relating factors is helpful or conducive to overall 'healthy development'. Finkelhor (1984) suggests at least a five-year age gap between partners constitutes child sexual abuse. Further research in this area needs to address and separate the notion of 'consensual' experimenting and 'safe sex' between adolescents (which is seemingly 'normative'

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according to prevalence rates in the literature) and child sexual abuse.

Secondly, the law with regard to sexting. The current thesis demonstrates how prevalent sexting behaviour is amongst emerging adults and highlights that sexting is often taking place under the age of 18. The transmission of nude images of a person under the age of 18 (even if it is of oneself) is currently illegal. The law needs to be applied with respect to the surrounding circumstances for teenagers engaging in sexting behaviour and a safeguarding approach needs to be applied sensitively and in line with up-to-date information regarding modern technology.

Finally, results within this thesis demonstrate that only 2% of emerging adults viewed pornography over the legal age limit (age 18 years old). The law here needs to be reviewed, taking into account what is normative for adolescents, especially those without access to education around sexuality that relates to their preferences and experiences (as an example, polyamory, pansexuality). Suggestions of a sex-positive, 'porn-free' sex education that promotes healthy relationship boundaries and incorporates a relational understanding (reciprocal roles and dynamics) may be beneficial for young people with regard to supporting them developing sexual knowledge in a way that ensures they are able to experiment and take 'risks' without potentially causing themselves longer term psychological difficulties.

Another aspect to contemplate when considering legality, is that many young people engage in behaviours before they are allowed to, or before they are recommended to. Examples of this include games, DVDs, music, alcohol, and cigarettes. It is important to consider how consistently the law is enforced and how much emphasis is placed upon parental guidance and responsibility for young people's behaviour. Alongside this, some parents disposition may be more permissive, or liberal, and this may mean they have a more relaxed attitude towards engaging in sexual behaviour, in line with their own experiences growing up.

The findings in this thesis indicate that law enforcement need to take an approach to considering adolescent sexuality in respect of underage sex, sexting and pornography use on an individual basis in order to account for complexity of multiple interrelating factors, as opposed to oversimplifying and applying blanket rules. The chronology of sexual acts reported in this study also indicate that for many young people this may be a natural unfolding of behaviours. This brings consent and 'safe' sex further up the priority list as important information for decision making about the law when considering early sexual behaviour, rather than problematising early sex simply for being 'earlier' (than previously recorded in research e.g. Schofield, 1965).

Moffitt's work suggests that individuals who go through early puberty begin their social sexual development earlier. Therefore, it is important to consider whether someone is sexually problematic or

simply curious and sexually sensationalistic. The present research did not explore motivation or intention, pubertal timing, or whether sexual behaviours were part of a pattern of behaviour. Future research could seek to differentiate between different motivations for engaging in sexual activity, as well as exploring links between pubertal timing and age of first engaging in sexuality activities, and how this relates to sexual development trajectories.

Limitations and Further Considerations

Regression models, although better at predicting legal sex for non-heterosexual male and females, were able to establish predictors of illegal (underage) sexual intercourse with the same sex. A younger age of first sending a nude/semi-nude image of oneself, a younger age first viewing pornography, and growing up with a non-nuclear family were associated with an increased likelihood of illegal (under 16) same-sex intercourse for both non-heterosexual males and females.

The aims of the primary research study did not include addressing the causality of pornography use and sexting but demonstrated the associations with sexual development. Future research should address causality to obtain a full understanding to inform guidelines and practice in this area. This research did not consider consensual and non-consensual sexual activity, and future research in this area could provide context to some of the results found within the primary research study.

The primary research study only addressed one regression model for non-heterosexuals (sexual activity with the same sex). Further research could explore this sub-group in more detail, exploring the different sexual identities under the umbrella term 'non-heterosexual' in order to provide much-needed data and insight into this part of the population.

About 22.5% of the participants within the primary research study identified themselves as bisexual which is double reported as population norm. It is important to consider that the present sample is 'self-selected' in that participants chose to complete the questionnaire. There is limited control over extraneous variables and spurious responses. This could mean the sample may be skewed to reflect the characteristics of persons who are more likely to engage with material associated with sex, relationships, and pornography on the internet. This study is subject to self-selection bias. Additionally, this study (due to the way data has been analysed) tends towards discussing sexuality in somewhat binary terms. Despite efforts to explore data with quantitative methods on the sexuality that participants self-identified, due to low numbers in categories (presenting difficulties for statistical analysis), data was categorised into 'heterosexual' and 'non-heterosexual'. Those who identified as bisexual were categorised in the latter 'non-heterosexual' category, which is not necessarily representative. The belief that everyone is bisexual (especially women as opposed to men), or that bisexuality does not exist as a unique identity, is commonly referred to as "bisexual erasure" (Barker, 2007, p. 389–

394). This research is limited by the quantitative approach of analysing data, and further research on sexual development could seek to use qualitative methods to ensure representation and inclusion of the broad spectrum of sexualities considered in data collection.

The survey data collected is likely to be impacted to some degree by impression management due to responses being self-report, with participants potentially being dishonest or exaggerating their responses to questions on sexual behaviour, pornography use, and relationships.

This study asks for retrospective answers relating to age of first experience of sexual activity. It was considered that for many people, first experiences are often more memorable and therefore would be somewhat easy to recall for respondents aged 18-25 years. It is of note that any self-report information respondents provided may be incorrect, despite best efforts to be honest and accurate, due to factors such as poor recall ability.

Further research needs to explore the predictors and associations of sexting behaviours in order to develop a more detailed picture of the relationships between sexting, pornography use, and underage sexual activity.

Conclusions

The findings of the primary research study provide support for previous research and help to build a clearer picture of what is

considered the 'norm' for EA males and females, who identify themselves as both heterosexual and non-heterosexual, with regard to pornography use, sexual activity and sexting. The findings from the second research study highlight associations between these behaviours in adolescence and a relationship style reported in early adulthood. Problematic pornography use is considered in light of the methods used to measure it, and considerations are made for the utility of the PPUS tool in practice. Finally, a review of the literature is reported, highlighting the requirement for research in

One of the key questions arising is given the prevalence of pornography use and sexting within EA, is this just normal behaviour? If this is the case, then laws concerning the use of pornography and exchange of self-image nudity (particularly under the age of 18) need to be amended to reflect this, whilst taking account of safeguarding. At present this is happening without the law being enforced.

The findings within this thesis lead to further questions about the interactions between different variables in their prediction of underage sexual activity. Sexual development patterns appear to be changing, and results from this research indicate that individuals (particularly males) who view pornography at an earlier age, have sexual development trajectories that begin at an earlier age. These findings, despite potentially presenting the characteristics of online users who have an interest in sex, present valuable information

about 18-25-year-olds, most of whom use the internet in their day-to-day lives.

Regarding intervention and risk-prevention, there is a necessity for clinicians and legal professionals to establish a clear picture of the risk factors for underage sexual activity, the requirements for putting preventative and protective systems in place, and the review of the content of sexual and relationship education. This will enable more appropriate safeguarding of children who are at risk of exploitation on the internet, offline and who are at risk of causing harm to others.

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Appendices

Appendix 1A: Ethical Approval for all Studies

The University of Nottingham

Faculty of Medicine and Health Sciences

Research Ethics Committee
School of Medicine Education Centre
B Floor, Medical School
Queen's Medical Centre Campus
Nottingham University Hospitals
Nottingham
NG7 2UH

Direct line/e-mail
+44 (0) 115 8232561
Louise.Sabin@nottingham.ac.uk

18th May 2016

Lianne Beadsmoore
MSc Forensic and Criminological Psychology Student
c/o Professor Kevin Browne
Director of Centre for Forensic and Family Psychology
Division of Psychiatry and Applied Psychology
The University of Nottingham
Room B25, Floor B, Yang Fujia Building,
Jubilee Campus
Nottingham NG8 1BB

Dear Ms Beadsmoore

Ethics Reference No: N12042016 SoM MSc FCP – please always quote
Study Title: A survey on the influence of Internet Pornography on Sexual Development and Self-image nudity.
Chief Investigator/Supervisor: Professor Kevin Browne, Director of Centre for Forensic and Family Psychology, Psychiatry and Applied Psychology, School of Medicine.
Lead Investigators/student: Lianne Beadsmoore, MSc Forensic and Criminological Psychology Student, Applied Psychiatry and Applied Psychology, School of Medicine.
Type of Study: MSc student project, anonymous online survey
Proposed Start Date: 1/4/2016   **Proposed End Date**: 31 July 2016 5mths
No of Subjects: 100   **Age**: 18+ years

Thank you for submitting the above application which has been reviewed by the Committee at its and the following documents were received:

- FMHS Research Ethics Application form dated 10/03/2016
- Project Proposal dated 07/05/2014
- Invite/advert for use on Social media
- Information and Consent Sheet for questionnaire v1.0 17/05/2016
- Questionnaire v1.0 10/03/2016
- Debrief Form v1.0 17/05/2016

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

Approval is given on the understanding that the conditions set out below are followed:

1. You must follow the protocol agreed and inform the Committee of any changes using a notification of amendment form (please request a form).

2. You must notify the Chair of any serious or unexpected event.

3. This study is approved for the period of active recruitment requested. The Committee also provides a further 5 year approval for any necessary work to be performed on the study which may arise in the process of publication and peer review.

4. An End of Project Progress Report is completed and returned when the study has finished (Please request a form).

Yours sincerely

pp *Lonnegann*

Professor Ravi Mahajan
Chair, Faculty of Medicine & Health Sciences Research Ethics Committee

University of Nottingham
UK | CHINA | MALAYSIA

Email: FMHS-ResearchEthics@nottingham.ac.uk

**Faculty of Medicine & Health Sciences
Research Ethics Committee**
c/o Faculty PVC Office
School of Medicine Education Centre
B Floor, Medical School
Queen's Medical Centre Campus
Nottingham University Hospitals
Nottingham, NG7 2UH

25 October 2017

Lianne Beadsmoore
Forensic Psychology Doctorate Student
c/o Professor Kevin Browne
Director of Centre for Forensic and Family Psychology
Division of Psychiatry and Applied Psychology
The University of Nottingham
Room B25, Floor B, Yang Fujia Building,
Jubilee Campus
Nottingham NG8 1BB

Dear Ms Beadsmoore

Ethics Reference No: N12042016 – please always quote
Study Title: A survey on the influence of Internet Pornography on Sexual Development and Self-image nudity.
Study 2: Sexual Development and Attachment.
Chief Investigator/Supervisor: Professor Kevin Browne, Director of Centre for Forensic and Family Psychology, Psychiatry and Applied Psychology, School of Medicine.
Lead Investigators/student: Lianne Beadsmoore, Forensic Psychology Doctorate Student, Applied Psychiatry and Applied Psychology, School of Medicine.
Type of Study: Doctorate student project, anonymous online survey
Proposed Start Date: 1/4/2016   **Proposed End Date:** 31 July 2018
No of Subjects: 100+   **Age:** 18+ years

Thank you for notifying the Committee of amendment no 1: 21.09.2017 as follows:

- Addition of Study 2: To repeat Study 1 with an amendment looking at Attachment using the validated Relationship Scales Questionnaire (RQ: Bartholomew & Horowitz, 1991).
- Change of course from MSc to Doctorate
- Time extension with a new end date of 31 July 2018.

and the following documents were received:

- Study 2 Sexual Development and Attachment Questionnaire version 1.0: 21.09.2017
- RQ Bartholomew & Horowitz, 1991

These have been reviewed and are satisfactory and the study amendment no 1: 21.09.2017 has been given a favourable opinion.

Yours sincerely

Professor Ravi Mahajan
Chair, Faculty of Medicine & Health Sciences Research Ethics Committee

University of Nottingham
UK | CHINA | MALAYSIA

Email: FMHS-ResearchEthics@nottingham.ac.uk

Faculty of Medicine & Health Sciences
Research Ethics Committee
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17 April 2018

Lianne Beadsmoore
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c/o Professor Kevin Browne
Director of Centre for Forensic and Family Psychology
Division of Psychiatry and Applied Psychology
The University of Nottingham
Room B25, Floor B, Yang Fujia Building,
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Nottingham NG8 1BB

Dear Ms Beadsmoore

Ethics Reference No: N12042016 – please always quote
Study Title: A survey on the influence of Internet Pornography on Sexual Development and Self-image nudity.
Study 2: Sexual Development and Attachment.
Chief Investigator/Supervisor: Professor Kevin Browne, Director of Centre for Forensic and Family Psychology, Psychiatry and Applied Psychology, School of Medicine.
Lead Investigators/student: Lianne Beadsmoore, Forensic Psychology Doctorate Student, Applied Psychiatry and Applied Psychology, School of Medicine.
Type of Study: Doctorate student project, anonymous online survey
Proposed Start Date: 1/4/2016   Proposed End Date: 31 July 2018
No of Subjects: 100+   Age: 18+ years

Thank you for notifying the Committee of amendment no 2: 04.02.2018 as follows:

- Addition of Study 3: To repeat Study 2 with an optional extra tick-box for each question relating to sexual development regarding consent. Addition of 12 questions from the validated tool 'Problematic Pornography Use Scale' at the end of the questionnaire (PPUS; Kor et al 2014).

and the following documents were received:

- Study 3 Sexual Development and Attachment Questionnaire version 1.0: 04.02.2018

These have been reviewed and are satisfactory and the study amendment no 2: 04.02.2018 has been given a favourable opinion.

Yours sincerely

Professor Ravi Mahajan
Chair, Faculty of Medicine & Health Sciences Research Ethics Committee

Appendix 1B: Participant Information, Informed Consent and Debrief

Thank you for Volunteering to take part

Research Ethics Ref: N12042016

This study is being undertaken by Lianne Beadsmoore and Professor Kevin Browne from the University of Nottingham as part of a Doctorate in Forensic Psychology.

We are seeking people aged 18+ years who may be interested in voluntarily taking part in a research project using a survey investigating the interactions between use of pornography use and sexual development and whether this has changed since the use of modern technologies have become more commonplace (e.g. mobile phone texting, social networking, email, internet etc).

The survey will have a mixture of questions, some very personal, asking you to estimate the ages at which you may have undertook certain behaviours. You will be asked to respond to questions that will help describe and compare individuals who participate in this study, such as your sexuality or gender.

Your participation should take approximately 15 minutes. The data will only be uploaded on completion of the questionnaire by clicking the SUBMIT button. All questions are compulsory, however, you can answer N/A to any questions you are unsure of or do not wish to answer. You can exit the survey at any point by clicking X in your browser.

We will do everything possible to ensure your answers in this study are anonymous, however, as with any online related activity, the risk of a breach is always possible. An encrypted secure https website will be used to minimize these risks.

To ensure anonymity an option to collect and store responses without any additional details will be active in the survey tool being used. All data collected will be uploaded and held securely and password protected on a secure University computer and dedicated web server. As no personal data is being collected or stored, any data shared will be anonymous. Data will be kept for 7 years after the results of this study have been published.

If you voluntarily choose to participate in this research, you may stop participating at any time you wish. No one will know that you began or withdrew from the study. There are no consequences for not participating in this research, and you have complete control over your choice to participate in this survey.

The results of the study may be published in scientific journals and presented at scientific conferences. As no identifying information is being collected this data will be reported anonymously.

If you have any questions about this project, you may contact the Lead Researcher, Lianne Beadsmoore (msxlb4@nottingham.ac.uk) or if you have any concerns about any aspect of this study please contact the Research Supervisor: Professor Kevin Browne (lwzkdb@nottingham.ac.uk).

If this does not achieve a satisfactory outcome please contact:

Faculty of Medicine & Health Sciences, Research Ethics Committee, c/o Faculty PVC Office, B Floor, Medical School, QMC Campus, Nottingham University Hospitals, NG7 2UH

E-mail: FMHS-ResearchEthics@nottingham.ac.uk

This study has been reviewed and given a favourable opinion by the University of Nottingham, Faculty of Medicine & Health Sciences Research Ethics Committee (FMHS REC ref no: N12042016)

If you have any further questions regarding this study, there will be an opportunity to ask any questions at the end of the survey. Should this survey cause you any distress, a list of helplines and websites providing more information on where to access relevant help can be found on the final page.

Thank you for your participation.

By continuing with this survey, you are stating that:

- I voluntarily agree to take part in this study.
- I am at least 18 years old, or older.
- I confirm that I have been given, read and understood the information provided to me (previous survey page).
- I understand that data recorded about me will be anonymised, and authorise the investigators to disclose the results of my participation in the study with no identifying information. I give permission for these investigators to collect, store, analyse and publish this information.
- I understand that information about me recorded during the study will be kept in a secure database. If data is transferred to others it will be made anonymous. Data will be kept for 7 years after the results of this study have been published.
- I understand that I can ask for further instructions or explanations at any time, by contacting msxlb4@nottingham.ac.uk.
- I understand that I am free to withdraw from the study at any time, by clicking the 'X' in the corner of the browser, without having to give a reason for withdrawing.

If you consent to the above conditions regarding your participation in this survey, select the option below and continue onto the next page to begin.

○ I consent

Next >

Thank You for Volunteering to Take Part in This Survey

Thankyou for taking part in this survey.

This study aims to look at the effect of pornography use on sexual development and the prevalence of exchanging images containing self-image nudity in the present population. This research aims to provide an insight into sexual development and it's relationship with modern technology, which could inform policy on safer internet usage in the future.

If you have any further questions, please do not hesitate to contact msxlb4@nottingham.ac.uk

If you have a concern about any aspect of this study, you can contact the Administrator, Faculty of Medicine & Health Sciences Research Ethics Committee, c/o School of Medicine Education Centre, B Floor, Medical School, Queen's Medical Centre Campus, Nottingham University Hospitals, Nottingham NG7 2UH. E-mail: louise.sabir@nottingham.ac.uk (quoting FMHS REC ref no: N12042016).

If taking part in this study has raised any concerns for you, please seek further advice and assistance from a GP or Counsellor.

For Assistance, Emotional Support and Further Information:

Samaritan Helpline:116 123

Net Doctor – Porn and Relationships:

netdoctor.co.uk

COSRT (College of Sexual & Relationship Therapists):

cosrt.org.uk

Revenge Porn Helpline:

0845 6000 459 (10-4 Mon-Fri)

revengepornhelpline.org.uk

TheSite
thesite.org

Thanks again for your participation.

Appendix 2A: Survey Questions

1. If you consent to the above conditions regarding your participation in this survey, select the option below and continue onto the next page to begin.
2. What is your age in years? (e.g. 18)
3. Which gender do you most identify yourself with? • Male • Female • Other (please specify)
4. Which sexual orientation do you identify closest with? • Heterosexual • Bisexual • Homosexual • Lesbian • Other
5.. If you selected Other, please specify:
6. What is your Occupation? • Student • Employed • Unemployed • Retired • Other
6.a. If you selected Other, please specify:
6.b. If you answered student, what course are you studying?
7. Who did you live with when you were growing up? • Both parents • Single Mother • Single Father • Father and step-mother • Mother and step-father • Relative • Adoptive/foster • Other
7.a. If you selected Other, please specify:
At what age (in years) did you…
8. First have a romantic relationship?
9. First Receive Sex Education (for example, at school)?
10. First Show Your Genitals to Another Person That Was NOT in Your Family?
11. First Kiss a Member of the Opposite-sex?
12. First Kiss a Member of the Same-sex?
13. First Deeply Kiss (Snog) a Member of the Opposite-sex?
14. First Deeply Kiss (Snog) a Member of the Same-sex?
15. First Feel a Member of the Opposite-sex's Breast/Chest Over Their Clothes?
16. First Feel a Member of the Same-sex's Breast/Chest Over Their Clothes?

17. First Feel a Member of the Opposite-sex's Breast/Chest Under Their Clothes?
18. First Feel a Member of the Same-sex's Breast/Chest Under Their Clothes?
19. First Manipulate/Stimulate a Member of the Opposite-sex's Genitals ?
20. First Manipulate/Stimulate a Member of the Same-sex's Genitals?
21. First Engage in Full Sexual Intercourse with the Opposite-sex?
22. First Engage in Sexual Intercourse with the Same-sex?
23. First Engage in Oral Sexual Intercourse (Blow Job/Licking Out) With the Opposite-sex?
24. First Engage in Oral Intercourse (Blow Job/Licking Out) With the Same-sex?
25. Have You Ever Sent or Received a Nude or Semi-Nude Image? YES/NO
At what age (in years) did you…
26. First Take a Nude or Semi –Nude Image of Yourself?
27. First Take a Nude or Semi -Nude Image of Others?
28. First Sent a Nude or Semi -Nude Image of Yourself to Someone Else?
29. First Sent a Nude Image or Semi-Nude of Others to Someone Else?

30. Who Did You Send Your FIRST Nude or Semi -Nude Image of Yourself To?
- Boyfriend/girlfriend
- Friend
- Stranger
- Agency/modelling
- Other

30.a. If you selected Other, please specify:

31. What Was the Mechanism You Used to Send Your FIRST Nude or Semi-Nude Image of Yourself (Select All That Apply)?
- Snapchat
- Facebook/Facebook Messenger
- Twitter
- Instagram
- Kik
- Tumblr
- Skype
- Via text message
- Via email
- Other

31.a. If you selected Other, please specify:

32. What Was the Content of the FIRST Image?
- Sexual pose without clothes
- Nude breasts/chest
- Nude genitals (penis or vagina)
- Full nude photo

- Underwear/swimwear photo
- Sexual pose with clothes on
- Other

32.a. If you selected Other, please specify:

33. Were You Recognisable (e.g. Picture including Face) in the Photo You First Sent?
YES/NO

34. Did the Recipient Share the Photo With Anyone Else?
YES/NO/I DON'T KNOW

35. Did People Other Than The Recipient Access The Photo?
YES/NO/I DON'T KNOW

36. Do You Currently Use/View Pornography?
YES/NO

37. Have You Ever Used or Viewed Pornography?
YES/NO

38. What Age Did You First View Pornography?

39. How Do You View Pornography? (Select All That Apply).
- Facebook
- Instagram
- Tumblr
- Film/DVD
- TV
- Magazines (including lads mags)
- Newspaper (e.g., page 3)
- Internet browser via tablet
- Internet browser via mobile phone
- Internet browser via laptop/computer
- Other

39.a. If you selected Other, please specify:

40. How Often Do You View Pornography?
- Once a year
- Once a month
- Once a fortnight
- Once a week
- More than once a week
- Every day
- More than once a day
- Every hour

41. Do You Watch Pornography…
- Alone
- With a romantic partner
- With a friend (s)
- In groups

42. Where Do You Access Pornography? (Select All that Apply).
- Work
- School
- At home in family areas
- At home in a private area (e.g. bedroom)
- Other

43. Do You Think Pornography Influences Expectations of Sexual Activity?

YES/NO	
44. Do You Think Pornography is Addictive? YES/NO	

45. When You Watch Pornography, What Types/Genres Do You Watch? (Select All that Apply).
- Semi- nude/swimwear models (male)
- Semi-nude/swimwear models (female)
- Nude Models (Male only)
- Nude Models (Female only)
- Celebrity/Fake
- Topless
- Full frontal nudity
- Massage
- Group sex
- Penetrative sex
- Public/Open places/Outdoor
- BDSM (Bondage, Ritualistic Sex, Rough)
- Sci-fi
- Ebony (Black)
- Indian
- Asian
- Romantic
- Gay (Male)
- Gay (Female)
- Female Friendly
- Transgender
- Uniform
- Babysitter
- Teen
- Cartoon/Manga/Anime/Hentai
- Reality/Amateur
- Mature Males (+40)
- Mature Females (+40)
- Older Woman with young person
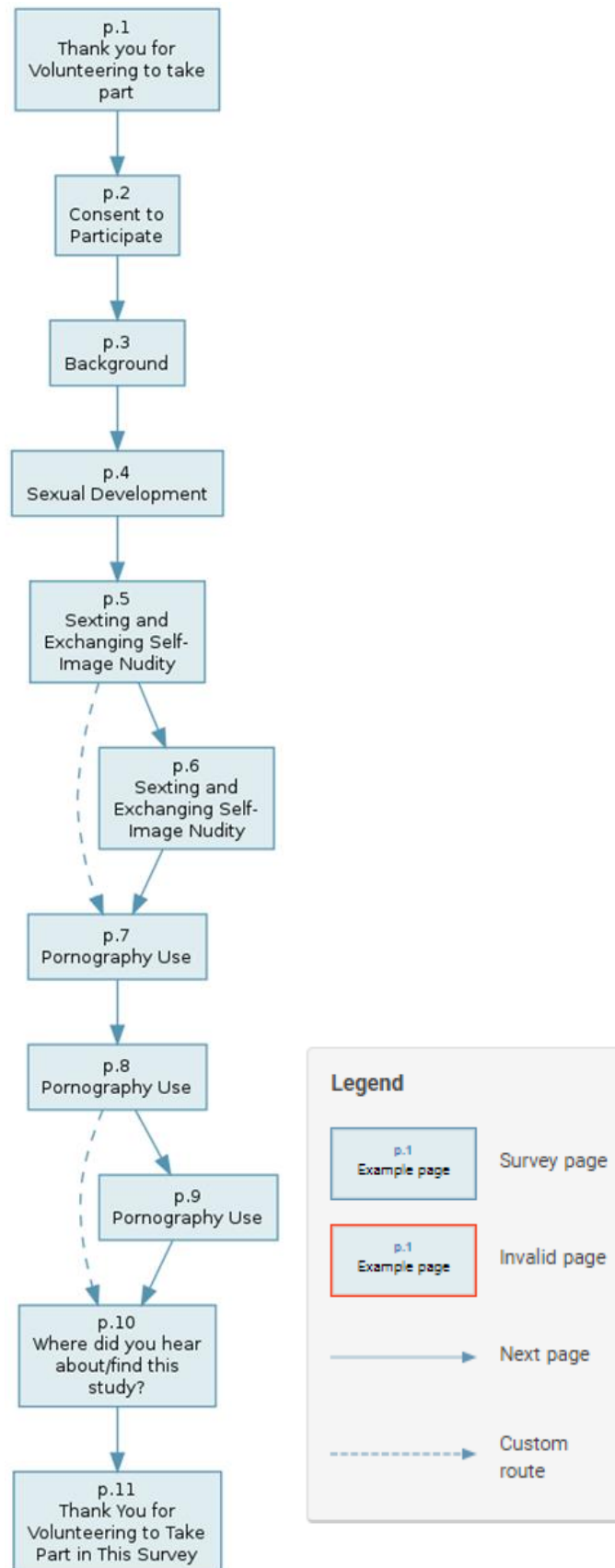- Older Man with young person
- Other

45.a. If you selected Other, please specify:

46. Where did you hear about/find this study?
- Facebook
- Twitter
- Tumblr
- Call for Participants
- Email
- Word of Mouth
- Google Search
- Other

46.a. If you selected Other, please specify:

Appendix 2B: Survey Flowchart

Appendix 2C: Characteristics of Sample – Sexting Univariate Analysis for Emerging Adults

Characteristic	Category	Emerging Adult Heterosexuals (N=2188)						Emerging Adult Non-heterosexuals (N=862)					
		Male		Female		Overall		Male		Female		Overall	
		N	%	N	%	N	%	N	%	N	%	N	%
Sexting	Yes	1017	75.9	700	82.5	1717	78.5	225	78.4	503	87.5	728	84.5
	No	323	24.1	148	17.5	471	21.5	62	21.6	72	12.5	134	15.5
Age First Taken Nude or Semi-Nude Image of Self	Under 16 years old	220	16.4	210	24.8	430	19.7	67	23.3	214	37.2	281	32.6
	16 years old and over	704	52.5	475	56.0	1179	53.9	146	50.9	279	48.5	425	49.3
Age First Sent Nude or Semi-Nude Image of Self	Under 16 years old	165	12.3	163	19.2	328	15.0	54	18.8	165	28.7	219	25.4
	16 years old and over	742	55.4	515	60.7	1257	57.4	153	53.3	323	56.2	476	55.2
Recipient of First Nude or Semi-Nude Image of Self	Boyfriend/Girlfriend	681	50.8	488	57.5	1169	53.4	113	39.4	333	57.9	446	51.7
	Friend	134	10.0	101	11.9	235	10.7	42	14.6	71	12.3	113	13.1
	Stranger	90	6.7	69	8.1	159	7.3	53	18.5	73	12.7	126	14.6
	Agency/Modelling	0	0.0	2	0.2	2	0.1	0	0.0	1	0.2	1	0.1
	Other	75	5.6	34	4.0	109	5.0	11	3.8	19	3.3	30	3.5
Mechanism for Sending First Nude or Semi-Nude Image of Self (select all that apply)	Facebook	84	6.3	43	5.1	127	5.8	18	6.3	36	6.3	54	6.3
	Snapchat	300	22.4	207	24.4	507	23.2	52	18.1	110	19.1	162	18.8
	Twitter	2	0.1	0	0.0	2	0.1	0	0.0	1	0.2	1	0.1
	Instagram	2	0.1	1	0.1	3	0.1	1	0.3	0	0.0	1	0.1
	Kik	76	5.7	36	4.2	112	5.1	18	6.3	36	6.3	54	6.3
	Tumblr	2	0.1	5	0.6	7	0.3	3	1.0	10	1.7	13	1.5
	Skype	68	5.1	42	5.0	110	5.0	23	8.0	37	6.4	60	7.0
	Text	366	27.3	315	37.1	681	31.1	74	25.8	207	36.0	281	32.6
	Email	49	3.7	43	5.1	92	4.2	14	4.9	38	6.6	52	6.0
	Other	192	14.3	97	11.4	289	13.2	60	20.9	86	15.0	146	16.9
Content of First Image	Sexual Pose without Clothes	141	10.5	66	7.8	207	9.5	30	10.5	48	8.3	78	9.0
	Sexual Pose with Clothes on	81	6.0	104	12.3	185	8.5	21	7.3	89	15.5	110	12.8
	Full Nude Photo	97	7.2	38	4.5	135	6.2	24	8.4	23	4.0	47	5.5
	Nude Breast/Chest Only	78	5.8	245	28.9	323	14.8	15	5.2	191	33.2	206	23.9
	Nude Genitals (Penis/Vagina) Only	398	29.7	24	2.8	422	19.3	100	34.8	19	3.3	119	13.8
	Underwear/Swimwear	132	9.9	197	23.2	329	15.0	21	7.3	114	19.8	135	15.7
	Other	65	4.9	24	2.8	89	4.1	9	3.1	16	2.8	25	2.9
Recognisable in the First Nude or Semi-Nude Image Sent of Self?	Yes	262	19.6	219	25.8	481	22.0	44	15.3	163	28.3	207	24.0
	No	725	54.1	478	56.4	1203	55.0	176	61.3	336	58.4	512	59.4
Recipient Share Image with other people?	Yes	30	2.2	23	2.7	53	2.4	12	4.2	28	4.9	40	4.6
	No	643	48.0	424	50.0	1067	48.8	122	42.5	265	46.1	387	44.9
	I don't know	344	25.7	253	29.8	597	27.3	91	31.7	210	36.5	301	34.9
Did People Other Than the Recipient Access the Photo?	Yes	35	2.6	35	4.1	70	3.2	11	3.8	39	6.8	50	5.8
	No	668	49.9	450	53.1	1118	51.1	131	45.6	261	45.4	392	45.5
	I don't know	289	21.6	213	25.1	502	22.9	78	27.2	200	34.8	278	32.3

Appendix 2D: Characteristics of Sample – Pornography Use Univariate Analysis for Emerging Adults

Characteristic	Category	Emerging Adult Heterosexuals (N=2188)						Emerging Adult Non-heterosexuals (N=862)					
		Male		Female		Overall		Male		Female		Overall	
		N	%	N	%	N	%	N	%	N	%	N	%
Pornography Use (Ever)	Yes	1335	99.6	792	93.4	2127	97.2	286	99.7	558	97	844	97.9
	No	5	0.4	56	6.6	61	2.8	1	0.3	17	3	18	2.1
Frequency of Porn Use	More than Once a Day	141	10.5	10	1.2	151	6.9	47	16.4	22	3.8	69	8.0
	Daily	344	25.7	27	3.2	371	17.0	83	28.9	36	6.3	119	13.8
	Once per week or more	755	56.3	331	39.0	1086	49.6	134	46.7	306	53.2	440	51.0
	Once a fortnight	39	2.9	138	16.3	177	8.1	7	2.4	95	16.5	102	11.8
	Monthly or less	56	4.2	286	33.7	342	15.6	15	5.2	99	17.2	114	13.2
Age First Viewed Porn	Under 12 years old	386	28.8	146	17.2	532	24.3	84	29.3	148	25.7	232	26.9
	12 years old & over	944	70.4	644	75.9	1588	72.6	200	69.7	405	70.4	605	70.2
Current Pornography Use	Yes	1234	92.1	639	75.4	1873	85.6	276	96.2	492	85.6	768	89.1
	No	106	7.9	209	24.6	315	14.4	11	3.8	83	14.4	94	10.9
Mechanism for viewing Pornography (select all that apply)	Internet Browser via Computer	1225	91.4	640	75.5	1865	85.2	271	94.4	479	83.3	750	87.0
	Facebook	38	2.8	7	0.8	45	2.1	9	3.1	6	1.0	15	1.7
	Instagram	110	8.2	17	2.0	127	5.8	20	7.0	26	4.5	46	5.3
	Tumblr	326	24.3	287	33.8	613	28.0	146	50.9	279	48.5	425	49.3
	Film/DVD	106	7.9	30	3.5	136	6.2	32	11.1	23	4.0	55	6.4
	TV	149	11.1	37	4.4	186	8.5	27	9.4	26	4.5	53	6.1
	Magazines (including 'Lads Mags')	155	11.6	23	2.7	178	8.1	35	12.2	24	4.2	59	6.8
	Newspaper (e.g. 'Page 3')	28	2.1	6	0.7	34	1.6	6	2.1	10	1.7	16	1.9
	Internet Browser via Tablet	394	29.4	149	17.6	543	24.8	96	33.4	118	20.5	214	24.8
	Internet Browser via Mobile Phone	930	69.4	495	58.4	1425	65.1	206	71.8	407	70.8	613	71.1
	Other	72	5.4	25	2.9	97	4.4	13	4.5	33	5.7	46	5.3
Do you watch Pornography Alone or with other people?	Alone	1222	91.2	712	84.0	1934	88.4	253	88.2	479	83.3	732	84.9
	With a Romantic Partner	57	4.3	42	5.0	99	4.5	13	4.5	27	4.7	40	4.6
	With a friend or friends	3	0.2	10	1.2	13	0.6	1	0.3	6	1.0	7	0.8
	In Groups	1	0.1	1	0.1	2	0.1	3	1.0	1	0.2	4	0.5
	Alone and with a Romantic Partner	52	3.9	27	3.2	79	3.6	16	5.6	45	7.8	61	7.1
Do you think Pornography influences expectations of Sexual Activity?	Yes	1025	76.5	671	79.1	1696	77.5	232	80.8	457	79.5	689	79.9
	No	310	23.1	121	14.3	431	19.7	54	18.8	101	17.6	155	18.0
Do you think Pornography is Addictive?	Yes	904	67.5	507	59.8	1411	64.5	188	65.5	372	64.7	560	65.0
	No	431	32.2	285	33.6	716	32.7	98	34.1	186	32.3	284	32.9

Characteristic	Category	Emerging Adult Heterosexuals (N=2188)						Emerging Adult Non-heterosexuals (N=862)					
		Male		Female		Overall		Male		Female		Overall	
		N	%	N	%	N	%	N	%	N	%	N	%
	Semi- nude/Swimwear Models (Male)	15	1.1	43	5.1	58	2.7	58	20.2	29	5.0	87	10.1
	Semi-nude/Swimwear Models (Female)	364	27.2	37	4.4	401	18.3	70	24.4	64	11.1	134	15.5
	Nude Models (Male only)	23	1.7	84	9.9	107	4.9	90	31.4	73	12.7	163	18.9
	Nude Models (Female only)	671	50.1	68	8.0	739	33.8	102	35.5	122	21.2	224	26.0
	Celebrity/Fake	286	21.3	28	3.3	314	14.4	56	19.5	22	3.8	78	9.0
	Topless	554	41.3	71	8.4	625	28.6	100	34.8	84	14.6	184	21.3
	Full Frontal Nudity	705	52.6	161	19.0	866	39.6	144	50.2	174	30.3	318	36.9
	Massage	473	35.3	142	16.7	615	28.1	83	28.9	110	19.1	193	22.4
	Group Sex	602	44.9	266	31.4	868	39.7	150	52.3	239	41.6	389	45.1
	Penetrative Sex	994	74.2	494	58.3	1488	68.0	195	67.9	346	60.2	541	62.8
	Public/Open Places/Outdoor	644	48.1	246	29.0	890	40.7	137	47.7	214	37.2	351	40.7
	BDSM-Bondage, Ritualistic Sex, Rough	464	34.6	279	32.9	743	34.0	117	40.8	288	50.1	405	47.0
	Sci-fi	122	9.1	16	1.9	138	6.3	32	11.1	27	4.7	59	6.8
When You Watch	Ebony (Black)	361	26.9	34	4.0	395	18.1	72	25.1	49	8.5	121	14.0
Pornography, What	Indian	225	16.8	7	0.8	232	10.6	41	14.3	19	3.3	60	7.0
Types/Genres Do You	Asian	522	39.0	45	5.3	567	25.9	86	30.0	71	12.3	157	18.2
Watch? (select all that	Romantic	480	35.8	230	27.1	710	32.4	93	32.4	148	25.7	241	28.0
apply)	Gay (Male)	58	4.3	141	16.6	199	9.1	164	57.1	171	29.7	335	38.9
	Gay (Female)	503	37.5	190	22.4	693	31.7	112	39.0	287	49.9	399	46.3
	Female Friendly	374	27.9	272	32.1	646	29.5	68	23.7	237	41.2	305	35.4
	Transgender	172	12.8	27	3.2	199	9.1	100	34.8	90	15.7	190	22.0
	Uniform	259	19.3	66	7.8	325	14.9	50	17.4	69	12.0	119	13.8
	Babysitter	402	30.0	88	10.4	490	22.4	47	16.4	81	14.1	128	14.8
	Teen	770	57.5	144	17.0	914	41.8	138	48.1	144	25.0	282	32.7
	Cartoon/Manga/Anime/Hentai	411	30.7	117	13.8	528	24.1	106	36.9	133	23.1	239	27.7
	Reality/Amateur	740	55.2	233	27.5	973	44.5	136	47.4	203	35.3	339	39.3
	Mature Males (+40)	12	0.9	31	3.7	43	2.0	25	8.7	40	7.0	65	7.5
	Mature Females (+40)	313	23.4	15	1.8	328	15.0	48	16.7	31	5.4	79	9.2
	Older Woman with Young Person	318	23.7	31	3.7	349	16.0	46	16.0	55	9.6	101	11.7
	Older Man with Young Person	136	10.1	101	11.9	237	10.8	42	14.6	113	19.7	155	18.0
	Other	107	8.0	47	5.5	154	7.0	40	13.9	43	7.5	83	9.6

Appendix 2E: Significant Variables for Sexual Intercourse under the age of 16 years old (illegal) or 16 years and over

(i)   Significant Questionnaire Responses (Categorical Variables) of Heterosexual Males that have Sexual Intercourse with the Opposite Sex under the age of 16 years old (illegal) or 16 years and over (N=1051).

Questionnaire Factor	Category	Under 16 (n=150)		16 and over (n=901)		Total N	Statistics**	Probability	Effect Size (Φ)
Occupation	0 Student	71	11%	548	89%	619	9.66	P<0.01	Small (-.09)
	1 Non-Student	79	18%	353	82%	432			
Family Dynamic	1 Nuclear (Both Parents)	104	13%	723	87%	827	9.13	P<0.01	Small (-.09)
	0 Non-Nuclear	46	21%	178	79%	224			
Sex Education	0 Primary	84	18%	386	82%	470	6.82	P<0.01	Small (.08)
	1 Secondary	62	12%	456	88%	518			
Sexting	0 Yes	145	16%	758	84%	903	16.71	P<0.0001	Small (.13)
	1 No	5	3%	143	97%	148			
Age First Sexting	0 Under 16	63	41%	89	59%	152	83.22	P<0.0001	Medium (.32)
	1 16 and Over	74	11%	600	89%	674			
Content of First Sexting Image	0 Nudity	21	24%	67	76%	88	7.22	P<0.01	Small (.08)
	1 Clothed	129	13%	834	87%	963			
First Sexting Image Recipient	0 Stranger	4	6%	67	94%	71	4.64	P<0.05	Small (-.07)
	1 Known/Other	146	15%	834	85%	980			
Age First View Pornography	0 Under 12	66	22%	236	78%	302	20.13	P<0.0001	Small (.14)
	1 12 and Over	83	11%	661	89%	744			
Pornography Influences Expectations of Sexual Activity?	0 Yes	102	13%	702	87%	804	7.31	P<0.01	Small (-.08)
	1 No	48	20%	197	80%	245			

**Pearson's Chi Square (2-tailed), df = 1.

(ii)   Significant Questionnaire Responses (Continuous Variables) of Heterosexual Males that have Sexual Intercourse with the Opposite Sex under the age of 16 years old (illegal) or 16 years and over (N=1051).

Questionnaire Factor	Under 16* (n=150)	16 and over* (n=901)	Total N	t-statistic	Probability	Effect Size (Hedges' g)
Age first Taken Nude-Semi Nude Image	15.78 (2.49)	17.61 (2.60)	839	-7.57	p<0.001	Medium (0.71)
Age first Sent Nude-Semi Nude Image	16.12 (2.38)	18.08 (2.55)	826	-8.33	p<0.001	Medium (0.78)
Age first Viewed Pornography	11.47 (1.97)	12.48 (1.98)	1046	-5.76	p<0.001	Medium (0.51)

*Independent Samples t-tests - Mean Age of First Experience of Sexual Activity, with standard deviations in parentheses after means.

(iii)   Significant Questionnaire Responses (Categorical Variables) of Heterosexual Females that have Sexual Intercourse with the Opposite Sex under the age of 16 years old (illegal) or 16 years and over (N=748).

Questionnaire Factor	Category	Under 16 (n=121)		16 and over (n=627)		Total N	Statistics**	Probability	Effect Size (Φ)
Family Dynamic	1 Nuclear (Both Parents)	81	14%	506	86%	587	11.37	P<0.01	Small (-.09)
	0 Non-Nuclear	40	25%	121	75%	161			
Age First Sexting	0 Under 16	56	36%	100	64%	156	50.92	P<0.0001	Small (.28)
	1 16 and Over	54	11%	485	89%	485			
Recipient Share First Image	0 Yes	7	32%	15	68%	22	4.09	P<0.05	Small (.07)
	1 No/I don't Know	114	16%	612	84%	726			

Pearson's Chi Square (2-tailed), df = 1.

(iv)   Significant Questionnaire Responses (Continuous Variables) of Heterosexual Females that have Sexual Intercourse with the Opposite Sex under the age of 16 years old (illegal) or 16 years and over (N=748).

Questionnaire Factor	Under 16* (n=121)	16 and over* (n=627)	Total N	t-statistic	Probability	Effect Size (Hedges' g)
Age first Taken Nude-Semi Nude Image	15.26 (2.07)	17.10 (2.47)	646	-8.44	p<0.001	Medium (0.76)
Age first Sent Nude-Semi Nude Image	15.56 (2.16)	17.69 (2.47)	641	-9.13	p<0.001	Large (0.88)
Age first Viewed Pornography	13.57 (2.64)	14.37 (3.55)	702	-2.81	p<0.05	Small (0.23)

*Independent Samples t-tests - Mean Age of First Experience of Sexual Activity, with standard deviations in parentheses after means.

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(v)   Significant Questionnaire Responses (Categorical Variables) of Non-heterosexual Males that have Sexual Intercourse with the Same Sex under the age of 16 years old (illegal) or 16 years and over (N=135).

Questionnaire Factor	Category	Under 16 (n=17)		16 and over (n=118)		Total N	Statistics**	Probability	Effect Size (Φ)
Family Dynamic	1 Nuclear (Both Parents)	8	8%	94	92%	102	8.55	P<0.01	Small (-.25)
	0 Non-Nuclear	9	27%	24	73%	33			
Age First Sexting	0 Under 16	11	33%	22	67%	33	16.80	P<0.0001	Medium (.38)
	1 16 and Over	4	5%	78	95%	82			

**Pearson's Chi Square (2-tailed), df = 1.

(vi)   Significant Questionnaire Responses (Continuous Variables) of Non-heterosexual Males that have Sexual Intercourse with the Same Sex under the age of 16 years old (illegal) or 16 years and over (N=135).

Questionnaire Factor	Under 16* (n=17)	16 and over* (n=118)	Total N	t-statistic	Probability	Effect Size (Hedges' g)
Age first Taken Nude-Semi Nude Image	14.60 (1.30)	16.88 (2.33)	116	-3.70	p<0.001	Large (1.02)
Age first Sent Nude-Semi Nude Image	15.07 (1.58)	17.47 (2.49)	115	-3.62	p<0.001	Large (0.99)
Age first Viewed Pornography	10.41 (3.04)	12.54 (2.00)	133	-3.81	p<0.001	Large (0.98)

*Independent Samples t-tests - Mean Age of First Experience of Sexual Activity, with standard deviations in parentheses after means.

(vii)   Significant Questionnaire Responses (Categorical Variables) of Non-Heterosexual Females that have Sexual Intercourse with the Same Sex under the age of 16 years old (illegal) or 16 years and over (N=263).

| Questionnaire Factor	Category	Under 16 (n=62)		16 and over (n=201)		Total N	Statistics**	Probability	Effect Size (Φ)
Family Dynamic	1 Nuclear (Both Parents)	35	20%	141	80%	176	4.02	P<0.05	Small (-.12)
	0 Non-Nuclear	27	31%	60	69%	87			
Age First Sexting	0 Under 16	35	34%	67	66%	102	11.75	P<0.01	Small (-.22)
	1 16 and Over	20	15%	112	85%	132			
Recipient Share First Image	0 Yes	9	53%	8	47%	17	8.70	P<0.01	Small (-.18)
	1 No/I don't Know	53	22%	193	78%	246			

**Pearson's Chi Square (2-tailed), df = 1.

(viii)   Significant Questionnaire Responses (Continuous Variables) of Non-heterosexual Females that have Sexual Intercourse with the Same Sex under the age of 16 years old (illegal) or 16 years and over (N=263).

Questionnaire Factor	Under 16* (n=62)	16 and over* (n=201)	Total N	t-statistic	Probability	Effect Size (Hedges' g)
Age first Taken Nude-Semi Nude Image	14.75 (2.98)	16.11 (2.59)	236	-3.30	P<0.01	Medium (0.5)
Age first Sent Nude-Semi Nude Image	15.36 (2.84)	16.52 (2.76)	234	-3.39	P<0.01	Small (0.42)
Age first Viewed Pornography	12.05 (2.93)	13.35 (2.78)	257	-3.14	P<0.01	Small (0.46)

*Independent Samples t-tests - Mean Age of First Experience of Sexual Activity, with standard deviations in parentheses after means.

Appendix 3A: Survey Flow Chart
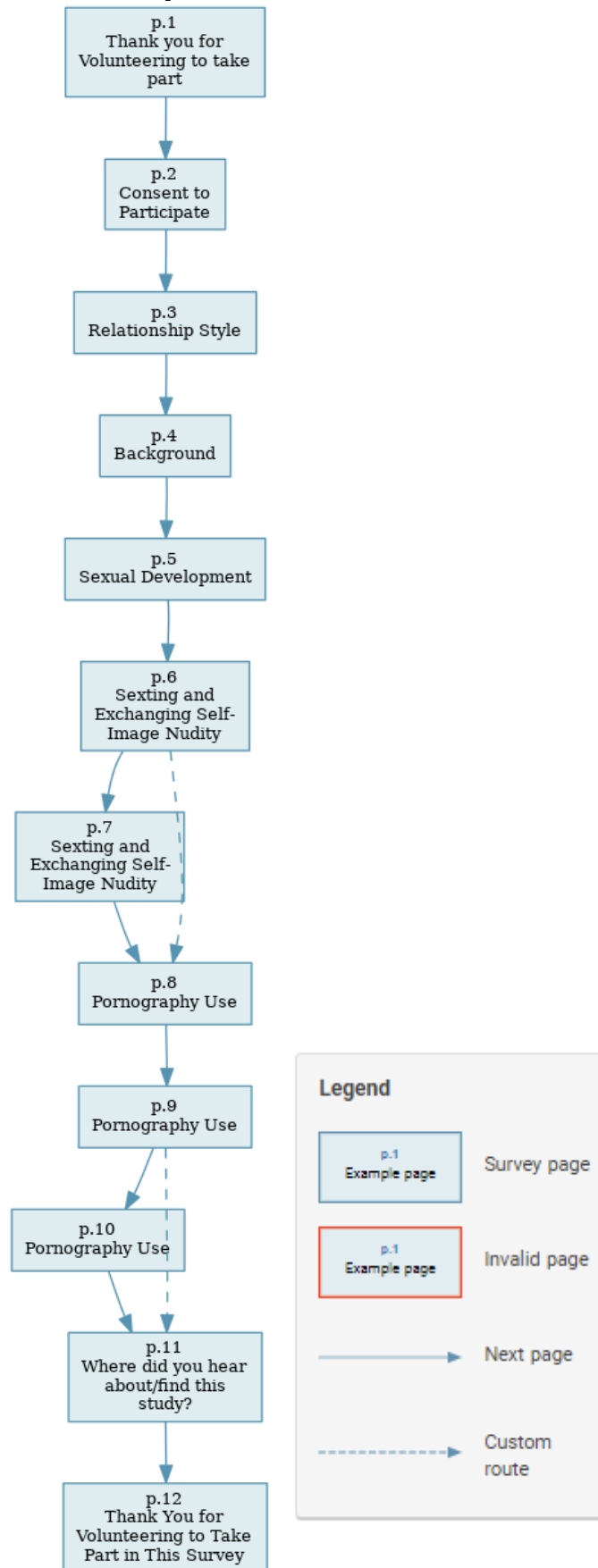
Appendix 4A: Frequency of Total PPUS Scores

Frequency of Total PPUS Scores in an Online English-Speaking Sample (N= 1031)
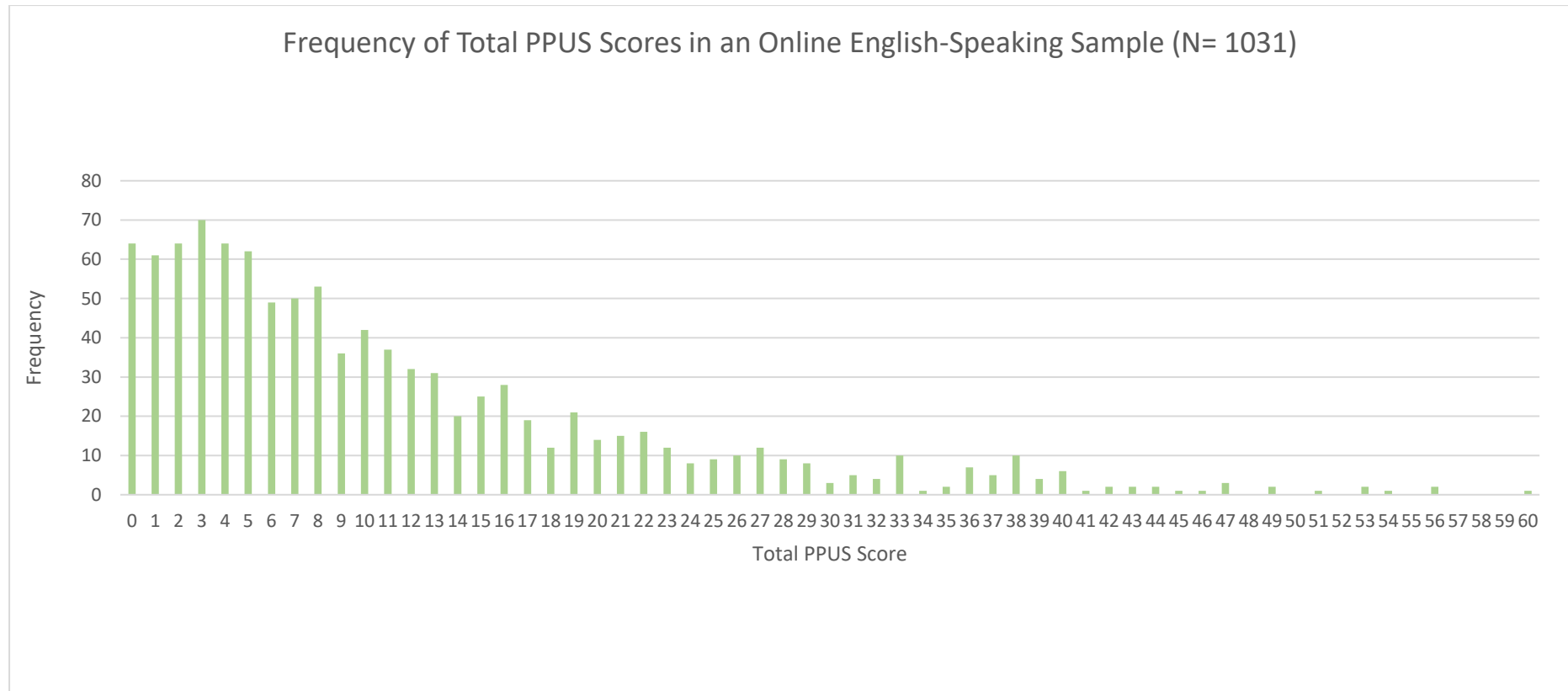
Appendix 5A: Search

OVID, PSYCHINFO, EMBASE, MEDLINE

(Underag$ or Under-age$ Teen*age or Minors or Adoles*cent or Child) and (Age of Consent or Legality or Child Abuse) and (Sex* or Intercourse or Sex* Behavio?r) and (Risk factors and Protective factors)

PUBMED

((((((("adolescent"[MeSH Terms] OR "adolescent"[All Fields]) OR "teen"[All Fields]) OR (((((((("minority groups"[MeSH Terms] OR ("minority"[All Fields] AND "groups"[All Fields])) OR "minority groups"[All Fields]) OR "minorities"[All Fields]) OR "minority"[All Fields]) OR "minority s"[All Fields]) OR "minors"[MeSH Terms]) OR "minors"[All Fields]) OR "minor"[All Fields])) AND (("child abuse"[MeSH Terms] OR ("child"[All Fields] AND "abuse"[All Fields])) OR "child abuse"[All Fields])) OR (("underage"[All Fields] OR "underaged"[All Fields]) AND ("sex"[MeSH Terms] OR "sex"[All Fields]))) AND ("sex"[MeSH Terms] OR "sex"[All Fields])) AND ((((("protective factors"[MeSH Terms] OR ("protective"[All Fields] AND "factors"[All Fields])) OR "protective factors"[All Fields]) OR ("protective"[All Fields] AND "factor"[All Fields])) OR "protective factor"[All Fields]) AND (((("risk factors"[MeSH Terms] OR ("risk"[All Fields] AND "factors"[All Fields])) OR "risk factors"[All Fields]) OR ("risk"[All Fields] AND "factor"[All Fields])) OR "risk factor"[All Fields]))

CINAHL

 ((Underage or Teen*age or Minors or Adoles*cent or Child) and (Age of Consent or Legality or Child Abuse) and (Sex* or Intercourse or Sex* Behavio?r) and (Risk factors and Protective factors))

Appendix 5B: Quality Assessment Proforma

Scoring: 2=yes, 1=partial, 0=no

Identifiers	Date of quality assessment	
	Authors	
	Title	
General Questions	Clear/appropriate research aims/ question)?	
	Appropriate study methods to assess research question(s)?	
	Clearly defined and specified Population?	
	Was the sample size justified? (power description, or variance and effect estimates provided?)	
	Were inclusion and exclusion criteria predefined and applied uniformly to all participants?	
	Was the timeframe sufficient to see an association between exposure/intervention and outcome?	
	Did the study examine different levels of risk in relation to underage sex?	
	Was the exposure assessed more than once over time?	
	Was the intervention/exposure (IV) clearly defined, valid, reliable and implemented consistently across all study participants?	
	Was the outcome (underage sex) (DV) clearly defined, valid, reliable and implemented consistently across all study participants?	
	Participants from the same population?	
	Appropriate Data Analysis method?	
	Conclusions supported by data?	
	Generalisable results?	
Additional Questions	Sensitive Data collected privately	

Appendix 5C: Data Extraction Form

Identifiers	Study Number	
	Authors	
Recruitment	Geographical Region	
	Sample Size	
	Sub-Groups	
	Method Of Data Collection	
Participants' Characteristics	Age Range	
	Gender	
	Ethnicity	
	Family SES	
	Mean Age of Sexual Intercourse	
	% Using contraception	
	% Sexual Intercourse Under the age of 16	
Outcomes and Measurement Tools	Risk Factors	
	Other findings	