Routledge
Taylor & Francis Group

Victims & Offenders

An International Journal of Evidence-based Research, Policy, and Practice

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/uvao20

Understanding Adolescent Criminal and Risky Online Sexual Behaviors in the Context of Mental Health and Well-Being: Findings from a Multi-National European Cybercrime Study

Julia Davidson, Mary Aiken, Anna Gekoski, Gopal Netuveli, Ruby Farr & Alexandra Deac

To cite this article: Julia Davidson, Mary Aiken, Anna Gekoski, Gopal Netuveli, Ruby Farr & Alexandra Deac (01 Oct 2024): Understanding Adolescent Criminal and Risky Online Sexual Behaviors in the Context of Mental Health and Well-Being: Findings from a Multi- National European Cybercrime Study, Victims & Offenders, DOI: 10.1080/15564886.2024.2408675

To link to this article: https://doi.org/10.1080/15564886.2024.2408675

Published online: 01 Oct 2024.

VICTIMS & OFFENDERS
https://doi.org/10.1080/15564886.2024.2408675

Routledge
Taylor & Francis Group

Understanding Adolescent Criminal and Risky Online Sexual Behaviors in the Context of Mental Health and Well-Being: Findings from a Multi- National European Cybercrime Study

Julia Davidson, Mary Aiken, Anna Gekoski, Gopal Netuveli, Ruby Farr, and Alexandra Deac

Institute for Connected Communities, University of East London, London, UK

ABSTRACT

Using a large multi-national data set of young people in Europe, this paper considers (i) the prevalence of three risky online sexual behaviors: sexting, self-generated sexual images, and watching pornography; (ii) demographic differences with respect to age and gender; and (iii) whether these three risky behaviors are associated with depression, anxiety and stress. Findings indicate that males engaged in all three behaviors more than females. Engaging in all three behaviors was associated with significantly higher levels of depression, anxiety, and stress. The implications for educational programs and policy are discussed in the context of the findings.

KEYWORDS

Cybercrime; risky sexual behaviors; online harms; youth cybercrime; youth online risk taking

Introduction

Internet use has grown exponentially in the past decade, becoming a central part of everyday life, particularly amongst children and young people. As of January 2024, there were 5.35 billion Internet users worldwide, which amounted to 66.2% of the global population (Statista, 2024). Children worldwide grow up using digital devices and going online from a very early age, while young people are the most digitally connected generation in history (Odgers & Jensen, 2020). In fact, Ofcom recently reported that a large majority of children aged 3–4 are online (87%) (The Office of Communications, 2023). Nearly half of teens surveyed by the Pew Research Center (2023) reported they use the Internet "almost constantly." This is on par with 2022 findings, but almost double the 24% who reported this in the 2014–2015 survey. Overall, more than nine-in-ten teens surveyed said they use the Internet at least daily (Anderson et al., 2023).

The Internet has revolutionized children and young people's lives in many positive ways, in terms of how they interact with peers, access information, learn new skills, express themselves, and are educated (Davidson et al., 2021). In a recent report on technology use and the mental health of children and young people, the Royal College of Psychiatrists (Royal College of Psychiatrists, 2020) concluded that "the Internet can be a rich and valuable resource for young people" (p. 24). Similarly, Ofcom's media use and attitudes report (2022/23) found that children and young people aged 3–17

CONTACT Julia Davidson j.davidson@uel.ac.uk Institute for Connected Communities, University of East London, University Way, London E16 2RD, UK

and their parents said that going online benefited them in various ways. Specifically (in ascending order): to help with their schoolwork/homework; build and maintain friendships; find useful information; learn a new skill; access the news; develop creative skills; understand what others are thinking/feeling; develop skills with reading and numbers; and find out about, or support, causes (The Office of Communications, 2023).

Conversely, reports suggest that Internet use may also lead children and young people to engage in offending and risky behavior (Livingstone et al., 2017). Specifically, digital technology can enable and enhance opportunities to engage in cybercrime, as the online environment facilitates invisibility, and anonymity, along with minimal oversight (Nesi et al., 2018). Online risky behaviors may be broadly defined as behaviors that "include involvement in a number of situations that increase the likelihood of occurrence of negative consequences to self or others, such as emotional distress, victimization or deterioration at the social or academic level" (Gámez-Guadix et al., 2016, p. 101). Young people may be particularly susceptible to online risk-taking, some of which may be criminal, particularly given the long-established recognition that adolescence is a transitional time of turbulence (BetterHelp, 2024), in which three key factors are universally observed: (i) increased risk-taking, (ii) increased novelty seeking, and (iii) increased peer association and affiliation (Johnson et al., 2009, p. 4; Spear, 2000).

Evidence has found that nearly seven out of ten (67.9%) young people have engaged in one or more types of risky online and offline behaviors (Brewer et al., 2023). For instance, a study involving 122 adolescents (aged 13–17) and 172 young adults (aged 18–24), which investigated their previous online risk-taking actions and their future intentions to engage in such behaviors, revealed that adolescents displayed a significantly higher propensity for intending to take risks online compared to young adults (White et al., 2015). While research which asked 122 young people (aged 13–17) and 172 young adults (aged 18–24) about their past online risk-taking behavior and intentions to engage in future online risk-taking behavior found that young people had significantly higher intentions to take online risks than young adults (White et al., 2015).

The terms "risk" and "harm" are often used interchangeably in the literature, yet risks – or risky behaviors – may be, but are not necessarily, associated with harms (Livingstone, 2013). While one young person may find sexting a positive experience, for example, another may experience negative consequences such as feelings of anxiety or shame Notably, sexting is illegal in some jurisdictions. Extant evidence supports the association between risky Internet use and various harms. These may include – but are not limited to – changes in mental health and wellbeing, social withdrawal, isolation, sedentary lifestyle, impaired sleep, poorer academic achievement or engagement in school, poor social adjustment, attention/cognition impairments, extroversion, neuroticism, Attention-Deficit/Hyperactivity Disorder (ADHD), suicidal ideation and suicide (Joshi et al., 2019).

It must be stressed, however, that association is not causation, with many studies in this area – including the current one – only being able to point to a possible correlation between risky behaviors and harm. Nonetheless, even if a causal link cannot be established, the association between harms and risky online behavior is broadly supported by research and statistics. It may also be the case that causation works both ways. For example, Pluhar et al. (2019) argue that disorders such as ADHD, affective disorders, and Autism Spectrum Disorder (ASD) may predispose children to Problematic Internet Use (PIU) – including

"uncontrolled video gaming, social media use, pornography viewing, and information-bingeing on short videos or websites" (p. 447) – and also result in PIU.

Online risk-taking may also be associated with problematic offline behaviors, such as drug or alcohol use (Fisoun et al., 2012). While, at the end of the spectrum, online risky behavior may lead to engaging in cybercrime (Phillips et al., 2022), with criminological theory predicting that young people may engage in the perpetration of new and varied forms of cybercrime (Brewer et al., 2023; Matza, 1990). The term "cybercrime" may be defined as referring to a broad spectrum of behaviors; encompassing all online behaviors that result in harm, including online harms, cyberdeviance, cyberdelinquency and crimes (both cyber-dependent and cyber-enabled) conducted in cyberspace or through the use of digital technology" (Phillips et al., 2022, p. 2).

Such behaviors are potentially harmful both to the individual and to others. Acknowledging that there is a lack of consensus in the literature as to what specific behaviors are encapsulated under the umbrella term of "cybercrime," Phillips et al. (2022), in the context of this study, proposed a new classification framework which incorporated various typologies to understand cybercrime. For example, one of the typologies include eight broad categories: (1) attacks against data and systems; (2) attacks against property and theft; (3) interpersonal violence; (4) sexual violence; (5) violence against groups; (6) violence (general); (7) using advanced technology; and (8) using false information. However, while most of the above categories constitute behavior that is criminal, this is not always the case and varies by jurisdiction.

This paper concentrates on those behaviors that are considered to constitute "risky online sexual behaviors" some of which may or may not be categorized as illegal in the UK and other jurisdictions, specifically: (i) watching adult pornography[1,2] and (ii) sexting (including the sharing of self-generated sexual images of minors, which is illegal in the UK). Notably, the working definition of pornography within this article refers to accessing images or video content that are sexual in nature, while sexting refers to messaging sexually explicit content or materials (Davidson et al., 2023). It is illegal to produce, distribute, possess, or display any indecent images of individuals under the age of 18, regardless of whether the content was created with the consent of the young person involved (Parliament of the United Kingdom, 2024, c. 37,). The conditions under which such behaviors may be, or may become, illegal include, for example, accessing and/or downloading "extreme adult pornography" and child sexual abuse material, or where "self-generated" sexual images (SGSIs) are shared further than the intended recipient. Below, we offer a (non-comprehensive) literature review of the research on these behaviors, concentrating on their prevalence, age and gender differences found, and the harms that may be correlated with them, with an emphasis on harms associated with psychological well-being and mental health.

Sexting and SGSIs

As noted by Doyle et al. (2021), "the unrestricted, immediate, and seemingly secure nature of digital communication have given rise to new ways of connecting with others romantically and sexually" (p. 86). "Sexting" is one such behavior. Sexting may be broadly defined as using digital technology to create, send, and receive sexually explicit or suggestive texts, images or videos of oneself or others by mobile phone, e-mail,

Internet, or social media (Ngo et al., 2017). Sexting may include the creation and sharing of SGSIs, which may be referred to as "nude image sharing" (NSPCC, 2023). However, it should be noted that the Terminology Guidelines for the Protection of Children from Sexual Exploitation and Sexual Abuse highlights the potential risk in using terms such as "self-generated" in the context of sharing sexual images among children and adolescents under 18 years of age, as this may imply blame to the child/adolescent for any harm that might follow (Quayle, 2022).

Recent evidence suggests that sexting has increased over the past decade (Molla-Esparza et al., 2020), with prevalence estimates of sexting ranging from 14.8% to 27.0% among youth aged 10–18 years (Kim et al., 2020; Madigan et al., 2018). Other research has found that young people are more likely to know someone who has sent a sext as opposed to sending one themselves (Maheux et al., 2020). A worldwide meta-analysis of 39 studies found that the mean prevalence for sending sexts was 14.8% and for receiving sexts was 27.4% (mean age of 15, range of 12–15), with sexting increasing with age (Madigan et al., 2018). Looking at SGSIs, a nationally representative survey of over 1,000 young people aged 16–21 in England and two focus groups with teenagers aged 13–19, conducted by The Children's Commissioner (2023), found that a significant minority of young people are sent SGSIs of a person known to them in real-life. The receivers of SGSIs are disproportionately girls, with half (51%) of girls aged 16–21 having been sent or shown explicit content involving someone they know in real life. This is as compared to one-third (33%) of boys. A Cybersurvey by Youthworks (2023) of over 6,000 young people found that, between the ages of 14 and 15, the likelihood of a child sending an explicit image more than doubled: 4% of children aged 13 said they had sent explicit images of themselves, which rises to 7% aged 14, and at age 15 and over this table is one in six (17%). Youthworks (2020) found the gender difference to be marginal, with 7% of boys sharing images versus 6% of girls. Those who didn't want to state their gender – 6% of the sample – were the most likely (15%) to send explicit images. The higher numbers found in the Children's Commissioner report may be due to the age of the children in the samples.

Sexting usually takes place between two people in a relationship (Scott & Gavin, 2018), which is particularly true for adolescents, the majority of whom send sexts to partners as opposed to strangers, peers, acquaintances, and potential partners (Cooper et al., 2016). There is, however, a growing body of research to support the association between sexting and harms. For example, research has found correlations between sexting and sexual risk behaviors (such as not using contraception and/or having sex while under the influence of substances); mental health issues (such as depression, anxiety and suicidal ideation); and substance use (e.g., Klettke et al., 2014; Morelli et al., 2016).

Looking at mental health issues specifically, a meta-analysis by Mori et al. (2019) found that sexting was significantly associated with internalizing problems, such as anxiety and depression, with stronger correlations found for younger adolescents. A literature review by Gassó et al. (2019) on sexting, mental health, and victimization among adolescents found that the "vast majority" – 12/14 studies considered – indicated a positive association between depressive symptoms and sexting. For example, Chaudhary et al. (2017) in a survey of 1760 young people (with a mean age of 12.2), found that youths who engaged in sexting were significantly more likely to report symptoms of depression and anxiety, in comparison with those who did not report sexting. Specifically, between 20% and 27% who sexted had depression, and between 57% and 61% who sexted had anxiety. Van Ouytsel

et al. (2015) also found a significant association between teen sexting and depressive symptoms. Similarly, Gámez-Guadix et al. (2017) found that a higher degree of depressive symptoms predicted a higher degree of sexting behaviors in young people aged between 12–16.

In contrast, other research has found no correlation between sexting and negative psychological outcomes (Klettke et al., 2018; Morelli et al., 2016). For example, in Morelli et al. (2016) study involving 1334 teens and young adults, no significant differences in psychological distress were observed between individuals who frequently engaged in sexting and those who did not. Similarly, Klettke et al. (2018) research with 598 young adults from Australia and India also found no association between sexting and depression or anxiety.

Finally, harms may also result when sexts (usually SGSIs) are non-consensually shared beyond the original recipient (Williamson, 2021). Historically, this has often been seen to be in the context of a bitter relationship breakup (Sheller, 2015), which has been described as "revenge pornography;" however, revenge may not be the only motivator. The term "image-based abuse" is now often used, which McGlynn et al. (2017) refer to simply as the "non-consensual creation and/or distribution of private sexual images" (p. 1) and became an illegal behavior as of 2015 in England and Wales, punishable by up to two years' imprisonment. This behavior may cause numerous psychological harms, including feelings of shame, helplessness, embarrassment, self-blame, anger, guilt, paranoia, isolation, humiliation and powerlessness; along with feeling a loss of integrity, personal dignity, sense of security, self-esteem, self-respect and self-worth (e.g., McGlynn et al., 2017; Sheller, 2015; Wolak & Finkelhor, 2016).

Pornography use

Widespread use of the Internet has led to Internet pornography (IP) use becoming pervasive globally (Willoughby et al., 2018; Wright, 2012). Pornography is not only used by adults but increasingly by adolescents. While prevalence rates vary according to different variables (e.g., age, gender, sexual orientation, country), in large-scale nationally representative adolescent studies from Europe, the US, and Canada (e.g., Bőthe et al., 2020; Lobe et al., 2011; Wolak et al., 2007; Wright, 2020), it has been found that 63–68% of young people report lifetime IP use, and 23–42% report IP use in the past year. A recent report by the Children's Commissioner (2023) found that half (50%) of survey respondents – 58% of boys and 42% of girls aged 16–21 – reported that they had sought out online pornography. In terms of frequency, it has been found that – on average – young people report using IP once a week or more in the past three or six months (Bőthe et al., 2020; Rousseau et al., 2021), with boys reporting more frequent use of IP – watching it weekly or more frequently – whereas girls reported monthly or less pornography use (Bőthe et al., 2021). The Children's Commissioner (2023) also found that one-fifth (21%) of males aged 16–21 had viewed pornographic content at least once a day in the two weeks prior to the survey, compared to 7% of girls. Boys and those who first viewed online pornography at age 11 or younger were significantly more likely to use pornography frequently.

Various studies have attempted to build a profile of young people who use pornography. A synthesis of 20 years of research on the prevalence, predictors, and implications of adolescents' use of pornography broadly found that males use pornography more frequently than females and at a more advanced stage of puberty, and young

people who are sensation seekers and those with troubled family environments are more likely to use it (Peter & Valkenburg, 2016). Boys are also more likely to report intentionally seeking out pornography, from a younger age, and more regularly (Ševčíková & Daneback, 2014; Stanley et al., 2018). Supporting this, a survey of 1,500 young people found that pornography use was related to being male and older (Farré et al., 2020). Additionally, being bisexual or having an undefined sexual orientation, and higher substance use, was correlated with higher pornography use. Bőthe et al. (2020) also found sexual orientation differences, with heterosexual and sexually diverse boys using pornography approximately the same amount, while sexually diverse girls used pornography more frequently than their heterosexual peers (Bőthe et al., 2020). Particularly, Efrati and Amichai-Hamburger (2020) found that adolescent pornography users were usually boys who scored low on social intimacy, were introverted and neurotic, and narcissists.

As noted by Healy-Cullen et al. (2022), "the majority of research in this field is framed using a harms-based lens" (p. 491). More specifically, Svedin et al. (2023) observe that most research in this area has explored the relationship between pornography use and sexual attitudes and behaviors. For example, a survey conducted among 500 18-year-olds (Parker, 2014) found that four in ten (40%) young women, and two in ten (21%) young men, strongly agree that "pornography leads to unrealistic attitudes to sex." While nearly four in ten (37%) young women, and two in ten (18%) young men, strongly agree that "pornography encourages society to view women as sex objects." These findings are supported by a more recent online survey with 1001 children and young people aged 11–16 in the UK, in addition to focus groups, which found that pornography use among young people was linked to: unrealistic attitudes about sex; maladaptive attitudes about relationships; more sexually permissive attitudes; greater acceptance of casual sex; beliefs that women are sex objects; more frequent thoughts about sex; and sexual uncertainty (Martellozzo et al., 2017).

Horvath et al. (2013) conducted a comprehensive rapid evidence assessment, which revealed a link between pornography consumption and the propensity for risky behaviors among children and young people. Notably, this includes tendencies toward earlier initiation of sexual activities and an inclination toward riskier sexual behaviors. For example, young people who use pornography are more likely to report having had sex with multiple partners, anal sex, and the use of alcohol and drugs during sex (Braun-Courville & Rojas, 2009). Peter and Valkenburg (2016) also found that pornography use was associated with risky sexual behaviors such as increased incidence of sexual intercourse, casual sex, and sexual aggression (both perpetration and victimization).

As noted by Mattebo et al. (2018), while the association between pornography use and sexual perceptions and behaviors have been strongly linked, the correlations between "pornography consumption and mental and physical health indicators are not as strongly linked, and the state of knowledge remains incomplete" (p. 237). The authors conducted a longitudinal study of senior high school young people in Sweden. Out of 477 participating boys and 400 girls in 2011, 224 boys (47%) and 238 girls (60%) participated in 2013. It was found that pornography use may, for some, be associated with mental health issues. Specifically, psychosomatic symptoms at follow-up were predicted by higher pornography consumption at baseline, being a girl, living with separated parents, and attending a vocational high school program. While depressive symptoms at follow-up were predicted by less pornography consumption at baseline and being a girl. However, it should be noted

that the direction of the relationship between pornography use, and mental health is complex: while it may be that pornography leads to poor psychological wellbeing and/or mental health issues, it may also be that pornography is used as a coping mechanism to deal with existing issues (Ybarra & Mitchell, 2005).

Finally, research has found that a significant minority (5–14%) of young people who watch pornography report compulsive, excessive, or problematic pornography use (PPU), with boys reporting higher levels than girls (Efrati & Dannon, 2019; Efrati & Gola, 2018; Pizzol et al., 2016). In their review of studies on Internet pornography addiction, Love et al. (2015) found that addiction may be associated with physical, social, emotional and functional impairments. These include (but are not limited to): depression, dishonesty, guilt, anxiety, inability to prioritize or keep to schedules, isolation, defensiveness, avoidance of work, agitation, mood swings, fear, loneliness, boredom with routine tasks, procrastination, backache, carpal tunnel syndrome, headaches, insomnia, poor nutrition, poor personal hygiene, neck pain, dry eyes/vision problems, and weight gain or loss (Gregory, 2019). However, other research does not link pornography use in young people to harms (Efrati & Amichai-Hamburger, 2020; Kohut & Štulhofer, 2018; Wright, 2020).

Current study

In this paper, we concentrate on: (i) the prevalence of risky online sexual behaviors – specifically, sexting (including SGSIs) and watching pornography; (ii) the demographic breakdown (age and gender) of young people who engage in these behaviors; and (iii) the association between these risky behaviors and particular individual difference factors – which may be conceptualized as harms – namely: mental health diagnoses and/or conditions, depression, anxiety, and stress. Mental health and wellbeing have been chosen as a particular area of focus due to the relative lack of research – particularly in relation to pornography use – in this area. Although a causal link cannot be established between the risky online sexual behaviors (as outlined in (i) above) and the harms (as outlined in (iii)), we can measure to what extent these are associated or correlated with one another. The findings presented in this paper are based on an original data set from one of the largest multi-national surveys of adolescent online risky sexual behavior to date, shedding light on issues that are still all too little understood.

Methods

Design

The findings presented here were drawn from a youth survey that formed part of the Combating Cyber Criminality by Understanding Human and Technical Drivers (CC-DRIVER) EC funded H2020 Research Program, which included 13 partners from nine European countries. The study explored the drivers behind cyber criminality with a specific focus on the factors that lead young people to online risk-taking and cybercrime. The data is drawn from research completed by CC-DRIVER partners at the Institute for Connected Communities (UEL) and the University of Lausanne.

Prior to conducting the survey an extensive review of available literature surrounding juvenile cybercriminality, cyberdelinquency and cyberdeviancy was undertaken, alongside

a qualitative study with cybercrime experts. The findings from the review and interview informed the development of the survey design, with the following variables being measured: demographics; technology device ownership and use; social media use; prevalence of risky and harmful behaviors; theory of planned behavior variables; tech drivers; cyber-related attitudes; individual difference factors; online disinhibition; self-control; attitudes toward cybercrime; personality traits; deviant peer association; mental health and wellbeing (depression, anxiety, and stress) and offline risky or harmful behaviors. The survey was piloted with young people in three stages, to inform and modify survey content and test whether the survey would take approximately 20 minutes or less to complete.

Participants

Participants were recruited via a Research Agency, using established participant panels. A quota sampling approach was used. The sample was recruited as evenly as possible according to country (or region), gender and age. First, the sample was recruited according to country or region, with 1,000 (12.5%) recruits in each of the seven countries (U.K., France, Spain, Germany, Italy, Netherlands, and Romania) and one region – due to the smaller panel sizes in Nordic countries, panels from Sweden and Norway combined to form a "region" of Scandinavia (comprised of 70.5% of participants from Sweden and 29.5% from Norway). Within each region, the sample was recruited have an even split of the age range (25% 16,17,18, and 19-year-olds) and even split of gender (50% male and female, participants with other gender identities were also recruited). Aside from the demographic variables used to recruit the sample (county, age, and gender), additional demographic variables were measured within the survey, namely household income, residential location, education, occupation, and household makeup. Within each region, the sample was recruited have an even split of the age range (25% 16,17,18, and 19-year-olds) and even split of gender (50% male and female, participants with other gender identities were also recruited). Aside from the demographic variables used to recruit the sample (county, age, and gender), additional demographic variables were measured within the survey, namely household income, residential location, education, occupation, and household makeup. The survey was live for a 3-month period beginning of June to end of August 2021. In this time period 37,346 participants in total were recruited; of this sample 10,155 (27.19%) withdrew or did not complete; 4,387 (11.75%) were excluded for exceeding quota limits; and 14,830 (39.71%) were excluded due to low quality, inconsistent responses, or excessive speeding (completing the survey in less than 7.5 minutes). The sample was, therefore, 7,974 (21.4%) high-quality survey responses. In terms of representativeness, the sample includes a range of different incomes, and is arguably representative of the wider population as only a minority identify as being in the upper income bracket relative to income ranges specific to each country/region. As is common with this age groups, just over a quarter of the sample indicated that they did not know their household income. Additionally, 8.4% chose not to disclose their household income. The sample was recruited according to country or region, with 1,000 (12.5%) recruits in each of the seven countries (U.K., France, Spain, Germany, Italy, Netherlands, and Romania) and one region – due to the smaller panel sizes in Nordic countries, panels from Sweden and Norway combined to form a "region" of Scandinavia (comprised of 70.5% of

participants from Sweden and 29.5% from Norway). Specific achieved samples within these countries were: United Kingdom ($N = 1010$, 12.67%); Spain ($N = 1007$, 12.63%); France ($N = 1009$, 12.65%); Germany ($N = 999$, 12.53%); Italy ($N = 1001$, 12.55%); Romania ($N = 997$, 12.50%); Netherlands ($N = 997$, 12.13%); and Scandinavia ($N = 984$, 12.34%). Within each country, the sample was recruited to have an even split of age range (16 (24.9%); 17 (24.8%); 18 (25.2%); 19 (25.0%)) and even split of gender (female (49.4%); male (47.6%); other gender identity (2.2%); undisclosed (0.8%)).

Procedure

The final survey instrument was uploaded to an online survey platform, using Explor (a GDRP-compliant Communities platform), via Amazon Web Services. Data collection took place over approximately three months (2nd June 2021 – 27th August 2021) and was completed by the Research Agency. Once in the survey environment, participants were presented with an information sheet. Before being able to access the survey, participants had to give informed consent; pass captcha; confirm they were between 16–19 years old; and accept cookies (to prevent multiple responses from one user). Once the survey was accessed, participants were taken sequentially through survey questions. All surveys were completed in the same order, from least to most sensitive in nature, and participants were unable to navigate backwards, only forwards, through the survey. Average time to complete the survey was 32.29 minutes. Participants were free to withdraw at any point in the survey by simply exiting; only complete surveys were taken forward to analysis. Once completed, all participants were debriefed and provided with support links.

Measures

Risky sexual online behaviors

Behavior definitions were informed by CC-DRIVER stakeholders, and piloting studies with participants of the target age group. Watching pornography was defined as: "Look at images or videos that were pornographic (sexual in nature);" sexting was defined as: "Send messages containing sexually explicit content or materials;" and self-generated sexual images was defined as: "Make and share images or videos of yourself that were pornographic (sexual in nature)." Participants were asked: Over the last year, using an Internet-connected device, did you at any point. . ." and to indicate level of involvement on a five item Likert scale: 0 = "Never," 1 = "Often," 2 = "Sometimes," 3 = "Often," 4 = "Very Often."

Depression, anxiety and stress

Levels of depression, anxiety, and stress were measured using the Depression, Anxiety and Stress Scale—21 items (DASS-21) (S. H. Lovibond & P. F. Lovibond, 1995a; P. F. Lovibond & S. H. Lovibond, 1995b). The DASS-21 and full DASS have been widely used and both are considered a highly reliable instrument. Full information about development and application can be found in the DASS manual (Lovibond & Lovibond, 1995a). Items were included as part of an iterative process, initially identified by clinical consensus and then by exploratory and confirmatory factor analysis (Lovibond & Lovibond, 1995b). The DASS has also been shown to have greater separation of factor loadings when compared to other depression and anxiety inventories (Lovibond & Lovibond, 1995b). The efficacy of the shorter 21 item version of the

DASS-21[3] (the full scale contains 42 items) has also been assessed; the DASS-21 shows good internal and discriminative validity, convergent validity, and diagnostic value (Gloster et al., 2008). The DASS-21 has also been validated with younger age groups (adolescents) (Silva et al., 2016) and non-clinical populations (Henry & Crawford, 2005).

Participants were asked to rate their agreement on a scale from 0–3 (0 = "Did not apply to me at all" to 3= "Applied to me very much, or most of the time") on 21 items, assessing Depression, Anxiety and Stress across 3 respective subscales, each containing 7 items. Minimum possible score was 0, indicating low levels of depression, anxiety and stress, to a maximum possible score of 63, indicating extremely severe levels of depression, anxiety and stress. Doubling the DASS-21 score approximates the full DASS score.

Mental health diagnosis status

One multiple choice item was used to assess mental health diagnosis status; participants were asked "Have you ever been diagnosed with a mental health condition?" with responses being "Yes," "No" or "I'd rather not say."

Mental health conditions

Those who indicated "Yes" to the above question were then asked: "Have you been diagnosed with any of the following conditions?" Participants could select one or multiple options from the following list: Depression; ADHD; Generalized Anxiety Disorder; Obsessive Compulsive Disorder (OCD); Social Anxiety Disorder; Post-Traumatic Stress Disorder (PTSD); Borderline Personality Disorder; Eating or Self-Harm Disorder; Addiction/Addictive Type Disorders.

Primary variables included in the study

Risky behaviors: Three risky behaviors were measured using a five point Likert scale response to the question "Over the last year, using an Internet-connected device, did you at any point 'look at images or videos that were pornographic (sexual in nature)'/'send messages containing sexually explicit content or materials'/'make and share images or videos of yourself that were pornographic (sexual in nature)'?" The response options were across all three risky behaviors were: 0 (Never), 1 (Rarely), 2 (Sometimes), 3 (Often), and 4 (Very Often). For analyses, two binary variables were created from each Likert scale. The first variable, "any level of engagement," was defined as those reporting rarely to very often (1) versus never (0). The second variable, "more frequent engagement," was defined as those reporting often and very often (1) versus all other responses (0).

Mental health variables: DASS-21 as described in Lovibond and Lovibond (1995). In the scale, there are seven items each for depression, anxiety, and stress presented mixed so that items for each subscale were not we also categorized depression, anxiety, and depression as normal, mild, moderate, severe, and extremely severe after multiplying by two as advised (Lovibond & Lovibond, 1995s; Lovibond & Lovibond, 1995b).

In addition to DASS-21, there was another question which asked, "Have you been diagnosed with any of the following conditions?." Response to this contained nine specific diagnoses and a response to catch any other conditions. These were used individually as well as a count variable.

Key demographic variables included in the study were age, gender, and country of residency. Participants were asked to indicate their age by selecting from the following

options: 1 (16 years), 2 (17 years), 3 (18 years), and 4 (19 years). Gender identification was recorded on a scale where participants could select 1 (male), 2 (female), 3 (other), or 4 ("prefer not to say"). For the purpose of the analysis, we included binary gender responses as these were the majority after data clearing. Residency was captured through indicator variables, with participants selecting their country from the following list: 1 (UK), 2 (Spain), 3 (France), 4 (Germany), 5 (Italy), 6 (Netherlands), 7 (Romania), 8 (Sweden), and 9 (Norway).

Statistical analyses

As the data were collected from different countries and there existed significant differences according to gender and age in the prevalence of risky behaviors, we used generalized linear models in Stata 18 (Stata Corp, 2023) to predict risky behaviors using age, gender, and countries. Prevalence for both levels of engagement were computed for each category in age, gender and countries using Stata command margins. A similar strategy was used for computing prevalence of depression, anxiety, and stress in those engaging in different risky behaviors.

Ethics

The study was conducted in accordance with the ethical standards of the British Psychological Association (BPS), with approval from The University of East London (application ID number: ETH2021–0065) as well as an independent CC-DRIVER Ethics Board. Data was collected with the strictest privacy and legal regulations and in adherence with (GDPR) data protection regulation.

Results

We conducted descriptive statistical analysis calculating prevalence rates, (Table 1) with 95% Confidence Intervals (Tables 2–5), stratified by variables of interest (depression, anxiety and stress, Table 6). We used generalized linear models to predict the prevalence of risky behaviors by age, gender, and country, which allows for adjusting and understanding the effects of these variables on risky behaviors (Table 7).

Table 1. Prevalence of engaging in risky behaviors at any level by age and gender within countries.

		Risky behaviors (%)														
		Pornography					Sexting					SGSI				
Country	Gender	All ages	16	17	18	19	All	16	17	18	19	All	16	17	18	19
France	Female	31.2	29.0	31.7	29.1	34.9	15.0	12.6	13.0	15.9	17.4	13.2	11.6	10.9	13.6	15.8
	Male	51.8	48.1	52.7	48.4	57.9	23.2	20.3	20.9	25.6	28.1	15.0	13.7	12.9	16.0	18.6
Germany	Female	35.1	32.0	30.7	38.7	36.8	23.6	19.5	17.7	25.7	28.7	18.5	14.8	10.9	21.7	23.7
	Male	52.2	49.0	47.0	59.3	56.5	26.8	23.4	21.3	30.9	34.5	17.7	15.3	11.2	22.5	24.6
Italy	Female	42.9	42.0	43.3	43.5	42.6	18.8	17.2	19.6	18.9	19.1	11.0	10.8	8.8	10.3	13.5
	Male	61.8	60.6	62.6	62.8	61.5	28.9	26.8	30.4	29.3	29.7	16.1	16.2	13.3	15.5	20.3
Netherlands	Female	30.9	26.5	32.2	29.4	34.4	18.1	11.9	18.5	17.3	22.8	14.6	8.3	13.6	14.5	19.5
	Male	56.9	49.6	60.2	55.1	64.4	26.3	18.2	28.3	26.4	34.8	16.7	10.3	16.8	17.9	24.1
UK	Female	28.1	25.5	26.0	31.1	28.6	20.4	18.6	16.1	21.8	23.7	16.3	13.0	14.4	18.7	18.2
	Male	43.8	40.7	41.5	49.7	45.7	17.3	16.4	14.2	19.2	20.9	13.2	10.9	12.1	15.7	15.3
Romania	Female	38.5	30.8	39.2	39.8	41.1	15.8	12.1	17.9	16.0	15.9	10.9	9.3	9.5	13.3	10.9
	Male	49.3	40.9	52.2	53.0	54.7	22.3	17.8	26.2	23.6	23.4	13.8	12.2	12.4	17.3	14.2
Spain	Female	39.1	33.0	40.7	37.4	43.4	19.3	16.8	18.8	21.0	19.5	10.6	10.5	9.4	9.6	12.2
	Male	63.4	54.8	67.6	62.1	72.0	26.7	23.8	26.6	29.7	27.6	16.8	17.2	15.5	15.8	19.9
Scandinavia	Female	36.0	32.5	30.8	41.3	39.3	19.6	15.5	15.9	21.0	26.6	14.2	12.4	10.3	14.7	20.0
	Male	52.8	47.7	45.2	60.6	57.6	27.2	21.2	21.8	28.8	36.6	20.9	18.0	14.9	21.3	28.9

Table 2. Prevalence of engaging in risky behaviors more frequently by age and gender.

		Risky behaviors % (95%CI)			
	N	Pornography	Sexting	SGSI	Any
Age (Years)					
16	1,988	13.83 (12.40, 15.25)	3.57 (2.77, 4.37)	2.56 (1.88, 3.24)	15.95 (14.44, 17.47)
17	1,979	14.57 (13.09, 16.05)	3.88 (3.04, 4.72)	2.71 (2.00, 3.42)	17.11 (15.53, 18.69)
18	2,010	13.19 (11.67, 14.71)	4.89 (3.92, 5.86)	3.69 (2.84, 4.53)	16.56 (14.89, 18.22)
19	1,997	14.06 (12.53, 15.60)	5.14 (4.16, 6.12)	4.67 (3.73, 5.60)	17.50 (15.83, 19.17)
p value for trend		0.021	<0.001	0.026	0.297
Gender					
Female	4,179	7.71 (6.90, 8.52)	3.33 (2.79, 3.87)	2.67 (2.19, 3.16)	9.94 (9.03, 10.84)
Male	3,795	20.75 (19.45, 22.04)	5.52 (4.78, 6.26)	4.22 (3.57, 4.88)	24.33 (22.96, 25.70)

Table 3. Prevalence of engaging in risky behaviors at any level by age and gender.

		Risky behaviors % (95%CI)			
	N	Pornography	Sexting	SGSI	Any
Age (Years)					
16	1,988	39.78 (37.74, 41.82)	18.24 (16.57, 19.91)	12.76 (11.31, 14.22)	42.70 (40.63, 44.77)
17	1,979	43.79 (41.71, 45.87)	20.21 (18.46, 21.96)	12.18 (10.75, 13.61)	47.07 (44.96, 49.18)
18	2,010	45.59 (43.47, 47.72)	23.04 (21.17, 24.90)	16.18 (14.55, 17.81)	49.99 (47.86, 52.13)
19	1,997	47.64 (45.53, 49.76)	25.33 (23.41, 27.25)	18.57 (16.86, 20.28)	51.85 (49.73, 53.96)
p value for trend		0.001	<0.001	<0.001	<0.001
Gender					
Female	4,179	34.89 (33.46, 36.33)	18.51 (17.35, 19.68)	13.41 (12.38, 14.43)	39.02 (37.56, 40.49)
Male	3,795	54.47 (52.90, 56.05)	25.24 (23.84, 26.64)	16.62 (15.42, 17.82)	57.71 (56.14, 59.27)

We found the prevalence of risky and illegal behaviors to vary with age, gender, country, types of behavior and levels of use. All the results are presented separately for types of behavior and levels of use and mutually adjusted for age, gender, and country of origin of the sample.

Prevalence of risky behaviors

The prevalence for viewing adult pornography, sexting and SGSI were 44.1%, 21.7% and 14.9%. Overall, 47.8% engaged in one or more risky behaviors of which more than half (54.6%) were limited to a single behavior and the remaining were equally divided between those who engaged in any two (22.0%) or those engaging in all three behaviors (3.4%). More frequent usage of one or more behavior was prevalent in 16.7% and the prevalence for pornography, sexting and SGSI were 13.9%, 4.4%, and 3.4% respectively.

In Table 1 we present the prevalence of the risky behaviors according to age, adjusted for gender and country. Looking at usage at any level for one or more of the behaviors, the prevalence of engagement steadily increased from 42.70% (95%CI 40.63, 44.77) at age 16 to 51.85% (95%CI 49.73, 53.96) at age 19. The individual behaviors showed a similar pattern with prevalence from 40% to 48% for porn, from 18% to 25% for sexting, and 13% to 19% for SGSI. The prevalence of behaviors characterized by more frequent usage was about a third of usage at any level. For engagement with one or more behaviors the prevalence increased from 15.95% (14.44, 17.47) at sixteen to 17.50 (15.83, 19.17) at nineteen. In the case of watching porn more frequently, the prevalence at 16,17,18, and 19 years were 13.8%,

Table 4. Prevalence of engaging in risky behaviors at any level.

		Risky behaviors % (95%CI)			
	N	Porn	Sexting	SGSI	Any
All	7974	44.13 (43.06, 45.20)	21.66 (20.76, 22.56)	14.90 (14.12, 15.68)	47.82 (46.75, 48.90)
France	1,009	41.25 (38.29, 44.22)	19.01 (16.59, 21.42)	14.07 (11.93, 16.20)	45.53 (42.52, 48.53)
Germany	999	43.19 (40.23, 46.16)	25.06 (22.39, 27.72)	18.12 (15.74, 20.50)	48.86 (45.89, 51.83)
Italy	1,001	51.29 (48.38, 54.20)	23.60 (20.99, 26.22)	13.41 (11.31, 15.52)	54.27 (51.36, 57.18)
Netherlands	967	43.85 (40.76, 46.94)	22.04 (19.43, 24.66)	15.57 (13.29, 17.85)	47.77 (44.66, 50.88)
UK	1,010	35.55 (32.67, 38.44)	18.72 (16.34, 21.10)	14.78 (12.60, 16.95)	38.97 (36.04, 41.90)
Romania	997	43.04 (40.10, 45.98)	18.87 (16.46, 21.28)	12.27 (10.25, 14.30)	45.62 (42.65, 48.59)
Spain	1,007	51.08 (48.13, 54.03)	22.79 (20.22, 25.36)	13.61 (11.50, 15.72)	53.84 (50.90, 56.79)
Scandinavia	984	43.82 (40.84, 46.80)	23.27 (20.64, 25.90)	17.45 (15.09, 19.82)	47.80 (44.81, 50.80)

Table 5. Prevalence of engaging in risky behaviors more frequently.

		Risky behaviors % (95%CI)			
Countries	*N*	Porn	Sexting	SGSI	Any
All	7974	13.93 (13.19, 14.67)	4.35 (3.90, 4.80)	3.39 (2.99, 3.78)	16.76 (15.96, 17.57)
France	1,009	12.31 (10.32, 14.30)	2.98 (1.93, 4.02)	2.77 (1.76, 3.78)	15.37 (13.19, 17.55)
Germany	999	14.93 (12.78, 17.09)	5.79 (4.34, 7.23)	4.80 (3.48, 6.12)	18.50 (16.16, 20.83)
Italy	1,001	18.11 (15.79, 20.43)	4.10 (2.88, 5.33)	3.31 (2.20, 4.41)	20.53 (18.08, 22.97)
Netherlands	967	14.37 (12.17, 16.57)	4.60 (3.28, 5.93)	3.86 (2.64, 5.08)	17.64 (15.26, 20.03)
UK	1,010	11.87 (9.92, 13.81)	4.63 (3.34, 5.92)	3.25 (2.16, 4.33)	14.64 (12.53, 16.76)
Romania	997	9.53 (7.74, 11.32)	3.50 (2.36, 4.64)	2.09 (1.21, 2.98)	11.72 (9.76, 13.68)
Spain	1,007	16.82 (14.57, 19.08)	4.77 (3.45, 6.08)	3.09 (2.02, 4.15)	19.34 (16.96, 21.72)
Scandinavia	984	13.53 (11.42, 15.63)	4.46 (3.18, 5.75)	3.97 (2.75, 5.19)	16.45 (14.16, 18.73)

14.6%, 13.2%, and 14.1%. The more frequent of both sexting (3.6% to 5.1%) and SGSI (2.6% to 4.7%) increased steadily from 16 to 19 years. Except for the variable more frequent use of one or more behaviors, all other trends were significant. The trends were all positive except for more frequent use of porn (slope = −0.008, p-value = .021).

Table 3 shows prevalence of risk behaviors by gender. While 57.7% of male participants engaged at any level with some type of risk behavior, only 39.0% of female participants did so and in case of more frequent usage the proportions were 24.3% and 9.9%. This yielded male to female risk ratios of 1.48 and 2.45. Examining individual behaviors, the pattern remained the same. The male to female differences were highest for watching pornography and lowest in case of sexting, and the differences were higher in more frequent usage for all three behaviors.

The prevalence in CC-DRIVER countries is shown in Table 4. UK (39.0%) had the lowest, and Italy had (54.3%) the highest prevalence in one or more behaviors at any level of usage. Three clusters of counties, based on statistical differences in prevalence, can be seen: 1) UK 2) Spain and Italy, and 3) rest of the countries. When examining more frequent usage one or more behaviors, the lowest prevalence was for Romania (11.72%) and highest for Italy (20.53%) (see Table 5 below). Again, three groups of countries can be seen: 1) Romania 2) Germany, Spain, Italy, and 3) rest of the countries.

Table 6 presents the results on prevalence of different levels of depression, anxiety, and stress according to the type of risky behavior. Prevalence of depression and anxiety was similar with about 60% of the participants reporting mild to extreme depression and/or anxiety. While in the case of depression, a similar prevalence was found for mild/moderate

Table 6. Prevalence of risky behaviors by levels of depression, anxiety, and stress.

	Prevalence of Risky behavior (%(95%CI))					
	Pornography		Sexting		SGSI	
Engagement	Any	More frequent	Any	More frequent	Any	More frequent
Depression						
Normal	35.20 (33.71, 36.70)	9.84 (8.93, 10.81)	13.65 (12.59, 14.75)	2.22 (1.78, 2.72)	8.94 (8.07, 9.87)	1.54 (1.18, 1.97)
Mild	50.00 (46.25, 53.75)	17.28 (14.56, 20.28)	24.50 (21.37, 27.85)	4.96 (3.48, 6.83)	17.00 (14.30, 19.98)	2.97 (1.85, 4.51)
Moderate	51.64 (48.93, 54.34)	15.87 (13.96, 17.94)	27.65 (25.27, 30.12)	5.29 (4.15, 6.63)	20.57 (18.43, 22.83)	4.40 (3.36, 5.63)
Severe	58.01 (54.40, 61.56)	20.79 (17.95, 23.87)	34.97 (31.56, 38.49)	9.27 (7.30, 11.57)	24.90 (21.85, 28.15)	8.08 (6.24, 10.26)
Extreme	53.21 (50.34, 56.07)	18.93 (16.75, 21.27)	31.44 (28.82, 34.16)	6.92 (5.55, 8.51)	20.77 (18.50, 23.18)	5.67 (4.43, 7.13)
Anxiety						
Normal	36.25 (34.77, 37.74)	10.95 (10.01, 11.95)	13.76 (12.72, 14.86)	2.35 (1.91, 2.86)	8.52 (7.68, 9.42)	1.49 (1.14, 1.92)
Mild	48.63 (43.86, 53.42)	15.07 (11.85, 18.77)	22.37 (18.56, 26.57)	4.11 (2.45, 6.42)	13.93 (10.82, 17.53)	2.05 (0.94, 3.86)
Moderate	51.44 (48.55, 54.33)	15.85 (13.81, 18.06)	25.93 (23.45, 28.53)	4.49 (3.38, 5.83)	17.71 (15.57, 20.01)	3.14 (2.22, 4.30)
Severe	54.00 (49.87, 58.09)	18.40 (15.34, 21.77)	34.07 (30.24, 38.06)	6.47 (4.62, 8.78)	24.87 (21.42, 28.58)	4.60 (3.05, 6.62)
Extreme	53.56 (51.14, 55.96)	17.91 (16.11, 19.83)	33.27 (31.03, 35.58)	8.42 (7.14, 9.85)	25.15 (23.09, 27.29)	8.07 (6.81, 9.47)
Stress						
Normal	38.32 (36.99, 39.66)	11.78 (10.91, 12.69)	15.80 (14.82, 16.83)	2.78 (2.35, 3.27)	10.15 (9.34, 11.01)	1.73 (1.39, 2.12)
Mild	52.66 (48.87, 56.43)	17.70 (14.93, 20.74)	29.21 (25.85, 32.74)	5.76 (4.14, 7.76)	21.58 (18.58, 24.83)	4.75 (3.29, 6.60)
Moderate	58.63 (55.32, 61.89)	18.05 (15.58, 20.73)	33.30 (30.21, 36.50)	7.29 (5.67, 9.19)	25.11 (22.30, 28.09)	8.07 (6.37, 10.06)
Severe	54.15 (50.61, 57.65)	16.08 (13.60, 18.82)	35.30 (31.98, 38.73)	7.29 (5.58, 9.32)	23.99 (21.07, 27.12)	5.65 (4.15, 7.49)
Extreme	51.23 (46.49, 55.95)	20.58 (16.93, 24.63)	29.75 (25.55, 34.23)	9.17 (6.66, 12.24)	22.60 (18.80, 26.76)	6.94 (4.76, 9.70)

Table 7. Prevalence of mental health diagnoses in those engaging and not engaging in risky behaviors.

	Risky behavior					
	At least one $N = 3581$ %		None $N = 3872$ %		Difference %	Significance
Any diagnosis	676	18.88 (17.61, 20.20)	473	12.22 (11.20, 13.29)	6.66	<0.001
One diagnosis	231	6.06 (5.32, 6.86)	164	3.94 (3.37, 4.58)	2.12	0.001
Two diagnoses	161	4.22 (3.61, 4.91)	105	2.52 (2.07, 3.05)	1.70	<0.001
Three diagnoses	119	3.12 (2.59, 3.72)	99	2.38 (1.94, 2.89)	1.74	0.046
Four diagnoses	89	2.33 (1.88, 2.86)	50	1.20 (0.89, 1.58)	1.11	<0.001
Five or more diagnoses	76	1.99 (1.57, 2.49)	55	1.32 (1.00, 1.72)	0.67	0.022
Depression	413	61.09 (57.30, 64.79)	299	63.21 (58.69, 67.57)	−2.12	0.497
Social Anxiety Disorder	249	36.83 (33.19, 40.60)	188	39.75 (35.31, 44.32)	−2.92	0.324
Eating or Self-Harm Disorder	231	34.17 (30.60, 37.88)	160	33.83 (29.57, 38.29)	0.34	0.95
Generalized Anxiety Disorder	234	34.62 (31.03, 38.34)	156	32.98 (28.76, 37.42)	1.64	0.57
Attention Deficit Hyperactivity Disorder (ADHD)	170	25.15 (21.92, 28.60)	103	21.78 (18.14, 25.77)	3.37	0.205
Post-Traumatic Stress Disorder (PTSD)	96	14.20 (11.66, 17.06)	72	15.22 (12.10, 18.78)	−1.02	0.672
Obsessive Compulsive Disorder (OCD)	81	11.98 (9.63, 14.67)	61	12.90 (10.01, 16.26)	−0.92	0.65
Addiction/Addictive Type Disorders	78	11.54 (9.23, 14.19)	38	8.03 (5.75, 10.86)	3.51	0.059
Borderline Personality Disorder	71	10.50 (8.29, 13.06)	38	8.03 (5.75, 10.86)	2.47	0.184
Other	96	14.20 (11.66, 17.06)	84	17.76 (14.42, 21.51)	−3.56	0.117

Inference: Highly significant relationship between risky behaviors and mental health diagnoses. This is retained at every level of clustering of diagnoses. However, for specific diagnoses there is no such association.

and severe/extreme forms of anxiety. In contrast, stress was not reported by nearly 60% of the participants and when reported it was of often mild/moderate stress. The patterns of prevalence of depression, anxiety, and stress were similar for the three different risk behaviors.

The mean (95%CI) of the scores for depression, anxiety, and stress are shown on Table 6. In all cases the means were significantly higher in those engaging in risky behaviors and it was more so in those engaging in these behaviors more frequently.

Information on mental health diagnoses was missing on 521 participants. Of the remaining, 15.42% had received one or more diagnoses. While specific diagnoses did not significant associations with risky behaviors, receiving one or more mental health diagnoses was highly significant (Table 7). Among those who engaged in any risky behavior 18.9% (95%CI 17.6% to 20.2%) had received a diagnosis compared to 12.2% (95%CI% 11.2% to 13.3%) among those who were not engaging in risky behaviors.

Discussion

Summary of findings

This study shows that a significant number of European youths engage in sexting, the sharing of indecent sexual images, and watching adult pornography. Prevalence rates of 18% to 25% were found for sexting (sending messages with explicit content). This rate is slightly higher than other studies, which fits with research that suggests that sexting has been increasing over time (Molla-Esparza et al., 2020). For example, Klettke et al. (2014) meta-analysis found that, among those aged 10–19, 10.2% to 11.96% have sent a sext. While the more recent meta-analysis by Madigan et al. (2018) found that 14.8% of young people had sent sexts. The figure found in this research fits with this upward trend. While prevalence for sending SGSIs was 13% to 19%. This figure is broadly in line with research by Youthworks (2020), who found that 17% of those aged 15 and over had sent a SGSI.

Prevalence rates of 40% to 48% were found for watching adult pornography. At the highest end, this figure is in line with that found by the Children's Commissioner (2023), where half (50%) of survey respondents – with 58% of boys and 42% of girls aged 16–21 – reported watching online adult pornography. These rates are, however, lower than large-scale nationally representative adolescent studies from Europe, the US, and Canada (e.g., Bőthe et al., 2020, 2021; Lobe et al., 2011; Wolak et al., 2007; Wright, 2020), where 63–68% of young people report lifetime pornography use. Differences in findings may be attributable to many factors, including varied definitions of the behaviors, age of participants, data collection methods, and location/country.

Looking at differences in age and gender, it was found that all three behaviors increased with age, and that males engaged in all three behaviors more than females. This is supported by previous research. For example, Madigan et al. (2018) meta-analysis found that sexting increases with age, while CSEW data found that girls (16%) are more likely to have received such messages than boys (6%). Looking at SGSIs, the Children's Commissioner (2023) report found that the receivers of SGSIs are disproportionately girls, with half (51%) of girls aged 16–21 having been sent SGSIs, as compared to one-third (33%) of boys. When it comes to age, Youthworks (2020)[4] found that while just 4% of children aged 13 had sent SGSIs, this

rises to 7% aged 14, and one in six (17%) aged 15. While a synthesis of research on adolescent pornography use found that males use pornography more frequently than females and at a more advanced stage of puberty (Peter & Valkenburg, 2016). Supporting this, a survey of 1,500 young people found that pornography use was related to being male and older (Farré et al., 2020).

Finally, engaging in all three risky sexual online behaviors was associated with significantly higher levels of depression, anxiety, and stress, which rose with more frequent engagement. The patterns of prevalence of depression, anxiety, and stress were similar for the three different risk behaviors. This is supported by the literature review by Gassó et al. (2019), who found that, in 12/14 studies considered, there was a positive association between depressive symptoms and sexting. However, while we found similar numbers of young people suffering from depression or anxiety (around six in ten), Chaudhary et al. (2017) found a significantly lower number, between 20% and 27%, had depression, while between 57% and 61% had anxiety.

Sexting and SGSIs

This research supports the association between depression, anxiety and stress, and engaging in sexting. As seen in the Introduction, sexting (which includes SGSIs) may be associated with various harms, including sexual risk behaviors, trauma, relationship violence, sexual victimization, and mental health and wellbeing issues such as anxiety and depression; however, other research has found no such associations. The issue is not, however, clearcut. Firstly, the issue of correlation versus causation has been highlighted throughout this report. Secondly, even if causation can be shown, a key question is: are certain circumstances and situations more likely than others to cause harms? In considering this, an important distinction is the different motivations for these behaviors are and how these may affect, and the implications they may have on outcomes.

It is plausible that the association between sexting and negative impacts on mental health and wellbeing harms, may be mediated by the type of sexting and motivations for it, which was not measured by this research. Various models which look at motivations for sexting have been developed. For example, Cooper et al. (2016) identified four main sexting motivators: (i) flirting and seeking attention from a potential partner; (ii) expressing normal sexuality in a relationship; (iii) experimenting with sexuality/identity; and (iv) pressure to conform to perceived normal behavior. While Bianchi et al. (2021) identified three primary forms of sexting motivation: (i) sexual expression and exploration; (ii) body image reinforcement; and (iii) instrumental/aggravated reasons. More recently, a taxonomy of four forms of sexting has been developed by Dodaj and Sesar (2020), including: (i) relational sexting; (ii) reactive sexting; (iii) forced sexting; and (iv) violent sexting.

Thus, it may be hypothesized that young people who engage in sexting as a means of (e.g.) flirtation, expression of sexuality, experimentation, and exploration within a relationship may be more likely to see sexting as a positive experience and not experience mental health harms. As noted by Strasburger et al. (2019), sexting that occurs within an existing or committed relationship between young people may involve less coercion and fewer risky health behaviors. While those who feel pressured, coerced or forced into engaging in sexting may be more likely to experience negative outcomes/harms. Wood et al. (2015) found both positive and negative experiences of sexting in

their sample of 724 young people aged 14–17. Half (51%) of the sample said that they engaged in sexting to feel sexy/be flirtatious and just under half (45%) did so because their partner asked them to. However, coercion was also found, with one fifth (20%) who sent sexual images feeling pressured into it, with over a quarter (27%) of girls feeling this, compared to less than one in ten (7%) of boys. Crucially, almost all (98%) of girls who felt pressured into sexting experienced negative impacts. The Cyber survey by Youthworks (2020) of over 6,000 young people also found that of those who had shared nude or explicit images, 18% said they were pressured or blackmailed into doing it. The importance of context was more recently reiterated by Mori et al. (2019), who found that as young people get older, mental health symptoms appear to be increasingly correlated with aggravated or non-consensual sexting, but not consensual or experimental sexting.

The different motivations and circumstances under which sexts are sent and received may therefore go some ways toward explaining why there are mixed findings in the research regarding harms, where sexting can be seen as either a positive or negative experience. On the one hand it may be experienced as a normal and enjoyable form of sexual development, exploration, and communication in contemporary relationships (Döring, 2014; Symons et al., 2018). While, on the other hand, it may be a risky or even "deviant" behavior defined as violating societal norms and which may or may not overlap with cybercrimes, and which may involve coercion, harassment, and victimization (Phillips et al., 2022; Ringrose et al., 2012; Wood et al., 2015) and lead to harms such as sexually risky behaviors and mental health issues (Williamson, 2021), reputational damage, psychological distress, and online/offline sexual violence (Doyle et al., 2021). However, it is important to note that even sexting that may begin as consensual, fun and explorative, may later become harmful, for example if the images are non-consensually shared, which may lead to reputational damage, shame, embarrassment, anxiety and distress.

Pornography and harms

This research also found positive associations between watching pornography, depression, anxiety and stress. As seen in the Introduction, pornography use among young people has been linked to various harms, such as risky sexual behaviors, unrealistic/maladaptive sexual attitudes, loneliness, addiction, and mental health issues. However, this is not always, or necessarily, the case. For example, Kohut and Štulhofer's (2018) study of pornography use, subjective well-being and mental health in Croatian adolescents, found that levels of pornography use were not significantly associated with decreases in subjective well-being. There may, however, be gender differences, with pornography use being associated with increases in symptoms of depression and anxiety among adolescent females in one sample.

As with sexting, motivations for watching pornography may play an important role in outcomes. For example, motivations for watching pornography may include using it as an educational resource, and/or to gain information and knowledge about sex and relationships that they may be unable to access elsewhere (Brown & L'Engle, 2009; Štulhofer et al., 2010). Supporting this, in a survey of young people in New Zealand, 71% reported using pornography as a means of learning about sex and sexuality (Talbot et al., 2018). Particularly in the absence of input from appropriate adults (e.g., caregivers), pornography may also act as a means of sexual socialization (Pound et al., 2016; Priebe et al., 2013). In

addition to aiding in sexual development and knowledge, it may be used for sexual gratification or as a leisure activity (Albury & Byron, 2014), help to increase sexual confidence, and allow for experimentation with sexual attraction/sexual identification of gender identity and sexual orientation (McCormack & Wignall, 2017). Participants in The Children's Commissioner study (2023) also gave various motivations for using pornography, including: sexual gratification, curiosity, to "learn" about sex, and pressure to "fit in" with peers.

We might, therefore, hypothesize that if pornography is used as an educational resource, it may be more likely to lead to more positive than negative outcomes than, for example, if it is used for sexual gratification. However, it is vital to remember that while some adolescents' motivations for using pornography may be benign, the outcomes may still not be. This may occur, for example, when an adolescent seeks out pornography for educational purposes and inadvertently comes across extreme or violent pornography – e.g., through pop ups or on social media sites like Snapchat – which may result in a range of distressing emotions. For example, research by the Children's Commissioner (2023) found that children are frequently exposed to violent pornography, with eight in ten (79%) of 18–21-year-olds having seen content involving sexual violence before the age of 18; this is significantly more likely to be violence perpetrated against a woman (65%) than against a man (29%).

Given the increased number of young people using pornography, Jhe et al. (2023) argue that we need to balance both the negative and positive effects of pornography use in order to have "an unbiased understanding" of the impact and function of pornography use in adolescents. They believe this is key to supporting young people in their sexual development, equipping them with accurate and useful knowledge regarding pornography, and enabling them to think critically about using it, as: "The more we stigmatize pornography, the more we push it underground and the less we will be able to understand its impact on sexual health among adolescents." Among their recommendations are for caregivers to create an open, trusting and comfortable environment for communicating about pornography, and primary care providers (PCPs) to play an active role in screening, conducting assessments and providing guidance such as promoting "porn literacy," and using it as an intervention for promoting sexual health.

Recommendations and future research

This research has highlighted the negative impact that illegal and risky sexual online behavior can have on young people's mental health and wellbeing, whilst also acknowledging that not all young people engaging in such behavior will have a negative experience. However, it is also clear that not enough is known about the impact of this behavior upon young people and their relationships, particularly in the longer term. Whilst effective legislative and regulatory frameworks are an essential aspect in addressing industry response and platform safety by design issues, impactful educational awareness raising is key in enabling young people to better understand the risks and consequences of engaging in online risky and illegal sexual behavior. Ideally this work needs to be located within a broader education curriculum focusing on relationships and sex education. It has been argued, however, that schools may still struggle, or fail, to deliver consistent and up to date information about online harms and children's needs; and may make use of educational initiatives that are not grounded in evidence-based practice, quality assured or evaluated.

Findings from the CC-Driver European Youth Survey have significant implications for criminal justice policy and practice as they point toward a more general concept of deviancy, risk-taking and harm. For example, previous work has focused upon cybercrime in the context of youth perpetration of hacking (Davidson et al., 2023; Kioskli & Polemi, 2020), and financially motivated offending (Leukfeldt & Holt, 2022), and hasn't included risk-taking sexual behaviors. Findings from this research could thus be used to support the development of a framework for youth cybercrime that can be utilized across multiple jurisdictions that is inclusive of the full range of cybercrimes. Raising the public's, and particularly young people's, awareness of different types of cybercrime and online risk-taking, and providing educational initiatives addressing illegal online behavior and risk-taking are key in addressing this issue. Tackling cybercrime and cyberdeviant behaviors could also include initiatives to divert young people perpetrating cybercrime from prosecution and custody. Findings from this study have already been translated into evidence-based education and awareness, and intervention initiatives, disseminated broadly in Europe as part of Safer Internet Day 2023 and via Europol EC3. 10. CC-DRIVER intervention materials (for youth, parents, caregivers and guardians, and educators) can be readily adopted by key stakeholders (including LEAs, Academics, Criminal Justice, Policy Makers, and Educators) for community awareness raising and formal online safety education (see the next section for these materials).

It is suggested that future research explicitly measure the different motivations for sexting and watching adult pornography, to shed more light upon the circumstances under which these may result in positive or negative experiences. It is important to provide a balanced perspective and not simply assess these behaviors through a harms-based lens. This can, in turn, inform how we talk to young people about online safety, both in educational and domestic settings. Furthermore, as most of the research in this area is cross-sectional and/or correlational – so causal relationships cannot be established – it would be useful to conduct experimental research in this area. Finally, while age and gender were considered here, it would be interesting to look at other demographic factors, such as sexuality and ethnicity.

Using a large multi-national data set of adolescents, this research found that a significant number of young people engage in sexting, SGSIs and watching pornography, with all three behaviors increasing with age and males engaging in all three behaviors more than females. Engaging in all three risky sexual online behaviors was also associated with significantly higher levels of depression, anxiety, and (albeit to a lesser extent) stress. These findings are important as there is a paucity of research on the association between mental health and online risky sexual behaviors, particularly the watching of pornography. However, as has been noted throughout, association/correlation is not causation, and we have also considered how the context in which these behaviors take place is important in considering harms. We recommend that both young people and their parents/caregivers should be educated about potentially risky online sexual behaviors – considering both the negatives and positives associated with them – and furthermore that changes in approach to educational awareness raising are made to better mitigate possible harms.

X handle

Professor Julia Davidson OBE @JuliaDavidson13
Professor Mary Aiken @maryCyPsy

Notes

1. Although there is an ongoing debate regarding the extent and the nature of the risks, it is widely acknowledged that pornography is considered risky for youth, with documented associations to sexual violence and various other behaviors such as sextortion, sexting, and revenge porn, as highlighted by evidence https://www.ccdriver-h2020.com/_files/ugd/0ef83d_a8b9ac13e0cf4613bc8f150c56302282.pdf and https://www.bbc.com/future/article/20170926-is-porn-harmful-the-evidence-the-myths-and-the-unknowns
2. Under the new Online Safety Act 2023 https://www.legislation.gov.uk/ukpga/2023/50/enacted in the UK, platforms must ensure that children are unable to access adult pornography
3. Downloaded from http://www2.psy.unsw.edu.au/dass//down.htm
4. https://www.thecybersurvey.co.uk/

Acknowledgments

We want to acknowledge the contribution of Research Assistant Kirsty Phillips to the CCDriver survey research.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 883543. H2020 Societal Challenges [GRANT AGREEMENT NUMBER 883543]

ORCID

Julia Davidson http://orcid.org/0000-0003-0811-6086
Mary Aiken http://orcid.org/0000-0001-9800-3952

References

Albury, K., & Byron, P. (2014). Queering sexting and sexualisation. *Media International Australia*, *153*(1), 138–147. https://doi.org/10.1177/1329878x1415300116

Anderson, M., Faverio, M., & Gottfried, J. (2023, December 11). *Teens, social media and technology 2023*. Pew Research Center. https://www.pewresearch.org/internet/2023/12/11/teens-social-media-and-technology-2023/

BetterHelp. (2024, January 3). *Storm and stress: The turbulence of adolescence*. https://www.betterhelp.com/advice/stress/storm-and-stress-the-turbulence-of-adolescence/

Bianchi, D., Morelli, M., Nappa, M. R., Baiocco, R., & Chirumbolo, A. (2021). A bad romance: Sexting motivations and teen dating violence. *Journal of Interpersonal Violence*, *36*(13–14), 6029–6049. https://doi.org/10.1177/0886260518817037

Bőthe, B., Tóth-Király, I., Bella, N., Potenza, M. N., Demetrovics, Z., & Orosz, G. (2021). Why do people watch pornography? The motivational basis of pornography use. *Psychology of Addictive Behaviors*, *35*(2), 172–186. https://doi.org/10.1037/adb0000603

Bőthe, B., Tóth-Király, I., Potenza, M. N., Orosz, G., & Demetrovics, Z. (2020). High-frequency pornography use may not always be problematic. *The Journal of Sexual Medicine*, *17*(4), 793–811. https://doi.org/10.1016/j.jsxm.2020.01.007

Braun-Courville, D. K., & Rojas, M. (2009). Exposure to sexually explicit web sites and adolescent sexual attitudes and behaviors. *Journal of Adolescent Health*, *45*(2), 156–162. https://doi.org/10.1016/j.jadohealth.2008.12.004

Brewer, R., Whitten, T., Logos, K., Sayer, M., Langos, C., Holt, T. J., Cale, J., & Goldsmith, A. (2023). Examining the psychosocial and behavioral factors associated with adolescent engagement in multiple types of Cyberdeviance: Results from an Australian study. *Journal of Child & Family Studies*, *32*(7), 2046–2062. https://doi.org/10.1007/s10826-023-02586-0

Brown, J. D., & L'Engle, K. L. (2009). X-Rated: Sexual attitudes and behaviors associated with US early adolescents' exposure to sexually explicit. *Communication Research*, *36*(1), 129–151. https://doi.org/10.1177/0093650208326465

Chaudhary, P., Peskin, M., Temple, J. R., Addy, R. C., Baumler, E., & Shegog, R. (2017). Sexting and mental health: A school-based longitudinal study among youth in Texas. *Journal of Applied Research on Children: Informing Policy for Children at Risk*, *8*(1). https://doi.org/10.58464/2155-5834.1329

Children's Commissioner. (2023). *A lot of it is actually abuse. Young people and pornography*. https://www.childrenscommissioner.gov.uk/wp-content/uploads/2023/02/cc-a-lot-of-it-is-actually-just-abuse-young-people-and-pornography-updated.pdf

Cooper, K., Quayle, E., Jonsson, L., & Svedin, C. G. (2016). Adolescents and self-taken sexual images: A review of the literature. *Computers in Human Behavior*, *55*, 706–716. https://doi.org/10.1016/j.chb.2015.10.003

Davidson, J., Aiken, M., Phillips, K., & Farr, R. (2023). *CC-DRIVER policy brief No. 8: European youth survey*. https://repository.uel.ac.uk/item/8wz17

Davidson, J., Gekoski, A., Phillips Birkbeck, K., & Rosemarie Farr, R. (2021). *Research on protection of minors: A literature review and interconnected frameworks. Implications for VSP regulation and beyond*. Institute of Connected Communities. *University of East London for Ofcom*. https://doi.org/10.13140/RG.2.2.22659.22567

Dodaj, A., & Sesar, K. (2020). Sexting categories. *Mediterranean Journal of Clinical Psychology*, *8*(2). https://doi.org/10.6092/2282-1619/mjcp-2432

Döring, N. (2014). Consensual sexting among adolescents: Risk prevention through abstinence education or safer sexting? *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *8*(1). https://doi.org/10.5817/CP2014-1-9

Doyle, C., Douglas, E., & O'Reilly, G. (2021). The outcomes of sexting for children and adolescents: A systematic review of the literature. *Journal of Adolescence*, *92*(1), 86–113. https://doi.org/10.1016/j.adolescence.2021.08.009

Efrati, Y., & Amichai-Hamburger, Y. (2020). Are adolescents who consume pornography different from those who engaged in online sexual activities? *Children & Youth Services Review*, *111*, 111. https://doi.org/10.1016/j.childyouth.2020.104843

Efrati, Y., & Dannon, P. (2019). Normative and clinical self-perceptions of sexuality and their links to psychopathology among adolescents. *Psychopathology*, *51*(6), 380–389. https://doi.org/10.1159/000495842

Efrati, Y., & Gola, M. (2018). Treating compulsive sexual behavior. *Current Sexual Health Reports*, *10*(2), 57–64. https://doi.org/10.1007/s11930-018-0143-8

Farré, J. M., Montejo, A. L., Agulló, M., Granero, R., Actis, C. C., Villena, A., Maideu, E., Sánchez, M., Fernández-Aranda, F., Jiménez-Murcia, S., & Mestre-Bach, G. (2020). Pornography use in

adolescents and its clinical implications. *Journal of Clinical Medicine*, *9*(11), 3625. https://doi.org/10.3390/jcm9113625

Fisoun, V., Floros, G., Siomos, K., Geroukalis, D., & Navridis, K. (2012). Internet addiction as an important predictor in early detection of adolescent drug use experience—Implications for research and practice. *Journal of Addiction Medicine*, *6*(1), 77–84. https://doi.org/10.1097/ADM.0b013e318233d637

Gámez-Guadix, M., Borrajo, E., & Almendros, C. (2016). Risky online behaviors among adolescents: Longitudinal relations among problematic internet use, cyberbullying perpetration, and meeting strangers online. *Journal of Behavioral Addictions*, *5*(1), 100–107. https://doi.org/10.1556/2006.5.2016.013

Gámez-Guadix, M., de Santisteban, P., & Resett, S. (2017). Sexting among Spanish adolescents: Prevalence and personality profiles. *Psicothema*, *29*(1), 29–34. https://doi.org/10.7334/psicothema2016.222

Gassó, A. M., Klettke, B., Agustina, J. R., & Montiel, I. (2019). Sexting, mental health, and victimization among adolescents: A literature review. *International Journal of Environmental Research and Public Health*, *16*(13), 2364. https://doi.org/10.3390/ijerph16132364

Gloster, A. T., Rhoades, H. M., Novy, D., Klotsche, J., Senior, A., Kunik, M., Wilson, N., & Stanley, M. A. (2008). Psychometric properties of the depression anxiety and stress scale-21 in older primary care patients. *Journal of Affective Disorders*, *110*(3), 248–259. https://doi.org/10.1016/j.jad.2008.01.023

Gregory, C. (2019). *Internet addiction disorder*. PSYCOM. https://www.psycom.net/iadcriteria.html

Healy-Cullen, S., Taylor, J. E., Ross, K., & Morison, T. (2022). Youth encounters with internet pornography: A survey of youth, caregiver, and educator perspectives. *Sexuality & Culture*, *26*(2), 491–513. https://doi.org/10.1007/s12119-021-09904-y

Henry, J. D., & Crawford, J. R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, *44*(2), 227–239. https://doi.org/10.1348/014466505X29657

Horvath, M. A. H., Alys, L., Massey, K., & Adler, J. R. (2013). Basically… porn is everywhere. In *Arapid evidence assessment on the effects that access and exposure to pornography has on children and young people* (pp. 88). Office of the Children's Commissioner.

Jhe, G. B., Addison, J., Lin, J., & Pluhar, E. (2023). Pornography use among adolescents and the role of primary care. *Family Medicine and Community Health*, *11*(1), e001776. https://doi.org/10.1136/fmch-2022-001776

Johnson, S. B., Blum, R. W., & Giedd, J. N. (2009). Adolescent maturity and the brain: The promise and pitfalls of neuroscience research in adolescent health policy. *Journal of Adolescent Health*, *45*(3), 216–221. https://doi.org/10.1016/j.jadohealth.2009.05.016

Joshi, S. V., Stubbe, D., Li, S. T. T., & Hilty, D. M. (2019). The use of technology by youth: Implications for psychiatric educators. *Academic Psychiatry*, *43*(1), 101–109. https://doi.org/10.1007/s40596-018-1007-2

Kim, S., Martin-Storey, A., Drossos, A., Barbosa, S., & Georgiades, K. (2020). Prevalence and correlates of sexting behaviors in a provincially representative sample of adolescents. *The Canadian Journal of Psychiatry*, *65*(6), 401–408. https://doi.org/10.1177/0706743719895205

Kioskli, K., & Polemi, N. (2020). Psychosocial approach to cyber threat intelligence. *International Journal of Chaotic Computing*, *7*(1), 159–165. https://doi.org/10.20533/ijcc.2046.3359.2020.0021

Klettke, B., Hallford, D. J., & Mellor, D. J. (2014). Sexting prevalence and correlates: A systematic literature review. *Clinical Psychology Review*, *34*(1), 44–53. https://doi.org/10.1016/j.cpr.2013.10.007

Klettke, B., Mellor, D., Silva-Myles, L., Clancy, E., & Sharma, M. K. (2018). Sexting and mental health: A study of Indian and Australian young adults. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *12*(2). https://doi.org/10.5817/CP2018-2-2

Kohut, T., & Štulhofer, A. (2018). Is pornography use a risk for adolescent wellbeing? An examination of temporal relationships in two independent panel samples. *PLOS ONE*, *13*(8), e0202048. https://doi.org/10.1371/journal.pone.0202048

Leukfeldt, E. R., & Holt, T. J. (2022). Cybercrime on the menu? Examining cafeteria-style offending among financially motivated cybercriminals. *Computers in Human Behavior*, *126*, 126. https://doi.org/10.1016/j.chb.2021.106979

Livingstone, S. (2013). Online risk, harm and vulnerability: Reflections on the evidence base for child internet safety policy. *Zer: Revista de Estudios de Comunicación*, *18*(35), 13–28.

Livingstone, S., Davidson, J., Bryce, J., & Batool, S. (2017). Children's online activities, risks and safety: A literature review by the UKCCIS evidence group. In *The UK Council for child internet safety* (pp. 1–110). London School of Economics and Political Science. https://www.gov.uk/government/publications/childrens-online-activities-risks-and-safety-a-literature-review-by-the-ukccis-evidence-group

Lobe, B., Livingstone, S., Ólafsson, K., & Vodeb, H. (2011). *Cross national comparison of risks and safety on the internet: Initial analysis from the EU kids online survey of European children. EU kids online, deliverable D6*. EU Kids Online Network. http://eprints.lse.ac.uk/39608/DOI

Love, T., Laier, C., Brand, M., Hatch, L., & Hajela, R. (2015). Neuroscience of internet pornography addiction: A review and update. *Behavioral Sciences*, *5*(3), 388–433. https://doi.org/10.3390/bs5030388

Lovibond, S. H., & Lovibond, P. F. (1995a). Manual for the Depression Anxiety Stress Scales. In *Psychology Foundation of Australia* (2nd ed., Vol. 56, pp. 42). https://doi.org/10.1037/t01004-000

Lovibond, P. F., & Lovibond, S. H. (1995b). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the beck depression and anxiety inventories. *Behaviour Research and Therapy*, *33*(3), 335–343. https://doi.org/10.1016/0005-7967(94)00075-U

Madigan, S., Ly, A., Rash, C. L., Van Ouytsel, J., & Temple, J. R. (2018). Prevalence of multiple forms of sexting behavior among youth: A systematic review and meta-analysis. *JAMA Pediatrics*, *172*(4), 327. https://doi.org/10.1001/jamapediatrics.2017.5314

Maheux, A. J., Evans, R., Widman, L., Nesi, J., Prinstein, M. J., & Choukas-Bradley, S. (2020). Popular peer norms and adolescent sexting behavior. *Journal of Adolescence*, *78*(1), 62–66. https://doi.org/10.1016/j.adolescence.2019.12.002

Martellozzo, E., Monaghan, A., Adler, J., & Davidson, J. (2017). *I wasn't sure it was normal to watch it . . . " a quantitative and qualitative examination of the impact of online pornography on the values, attitudes, beliefs and behaviours of children and young people*. Middlesex University, NSPCC, OCC. https://doi.org/10.6084/m9.figshare.3382393

Mattebo, M., Tydén, T., Häggström-Nordin, E., Nilsson, K. W., & Larsson, M. (2018). Pornography consumption and psychosomatic and depressive symptoms among Swedish adolescents: A longitudinal study. *Upsala Journal of Medical Sciences*, *123*(4), 237–246. https://doi.org/10.1080/03009734.2018.1534907

Matza, D. (1990). *Delinquency and drift* (2nd ed.). Routledge.

McCormack, M., & Wignall, L. (2017). Enjoyment, exploration and education: Understanding the consumption of pornography among young men with non-exclusive sexual orientations. *Sociology*, *51*(5), 975–991. https://doi.org/10.1177/0038038516629909

McGlynn, C., Rackley, E., & Houghton, R. (2017). Beyond 'Revenge Porn': The continuum of image-based sexual abuse. *Feminist Legal Studies*, *25*(1), 25–46. https://doi.org/10.1007/s10691-017-9343-2

Molla-Esparza, C., Losilla, J. M., López-González, E., & Brandelli Costa, A. (2020, December). Prevalence of sending, receiving and forwarding sexts among youths: A three-level meta-analysis. *PLOS ONE*, *15*(12), e0243653. https://doi.org/10.1371/journal.pone.0243653

Morelli, M., Bianchi, D., Baiocco, R., Pezzuti, L., & Chirumbolo, A. (2016). Sexting, psychological distress and dating violence among adolescents and young adults. *Psicothema*, *28*(2), 137–142. https://doi.org/10.7334/psicothema2015.193

Mori, C., Temple, J. R., Browne, D., & Madigan, S. (2019). Association of sexting with sexual behaviors and mental health among adolescents: A systematic review and meta-analysis. *JAMA Pediatrics*, *173*(8), 770. https://doi.org/10.1001/jamapediatrics.2019.1658

Nesi, J., Choukas-Bradley, S., & Prinstein, M. J. (2018). Transformation of adolescent peer relations in the social media context: Part 2—application to peer group processes and future directions for research. *Clinical Child & Family Psychology Review*, *21*(3), 295–319. https://doi.org/10.1007/s10567-018-0262-9

Ngo, F., Jaishankar, K., & Agustina, J. R. (2017). Sexting: Current research gaps and legislative issues. *International Journal of Cyber Criminology*, *11*(2). https://doi.org/10.5281/zenodo.1037369

NSPCC. (2023). *Sexting: Sharing nudes and semi-nudes*. https://learning.nspcc.org.uk/online-safety/sexting-sharing-nudes-semi-nudes

Odgers, C. L., & Jensen, M. R. (2020). Adolescent development and growing divides in the digital age. *Dialogues in Clinical Neuroscience*, *22*(2), 143–149. https://doi.org/10.31887/DCNS.2020.22.2/codgers

The Office of Communications. (2023). *Children and parents: Media use and attitudes*.

Parker, I. (2014, August). *Young people, sex and relationships the new norms*. Institute for Public Policy Research.

Parliament of the United Kingdom. (2024). *Protection of children act 1978*. https://www.legislation.gov.uk/ukpga/1978/37

Peter, J., & Valkenburg, P. M. (2016). Adolescents and pornography: A review of 20 years of research. *Journal of Sex Research*, *53*(4–5), 509–531. https://doi.org/10.1080/00224499.2016.1143441

Phillips, K., Davidson, J. C., Farr, R. R., Burkhardt, C., Caneppele, S., & Aiken, M. P. (2022). Conceptualizing cybercrime: Definitions, typologies and taxonomies. *Forensic Sciences*, *2*(2), 379–398. https://doi.org/10.3390/forensicsci2020028

Pizzol, D., Bertoldo, A., & Foresta, C. (2016). Adolescents and web porn: A new era of sexuality. *International Journal of Adolescent Medicine and Health*, *28*(2), 169–173. https://doi.org/10.1515/ijamh-2015-0003

Pluhar, E., Kavanaugh, J. R., Levinson, J. A., & Rich, M. (2019). Problematic interactive media use in teens: Comorbidities, assessment, and treatment. *Psychology Research and Behavior Management*, *12*, 447–455. https://doi.org/10.2147/PRBM.S208968

Pound, P., Langford, R., & Campbell, R. (2016). What do young people think about their school-based sex and relationship education? A qualitative synthesis of young people's views and experiences. *BMJ Open*, *6*(9). https://doi.org/10.1136/bmjopen-2016-011329

Priebe, G., Mitchell, K. J., & Finkelhor, D. (2013). To tell or not to tell? Youth's responses to unwanted internet experiences. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *7*(1). https://doi.org/10.5817/CP2013-1-6

Quayle, E. (2022). Self-produced images, sexting, coercion and children's rights. *ERA Forum*, *23*(2), 237–251. https://doi.org/10.1007/s12027-022-00714-9

Ringrose, J., Gill, R., Livingstone, S., & Harvey, L. (2012). *A qualitative study of children, young people and "sexting": A report prepared for the NSPCC*. National Society for the Prevention of Cruelty to Children.

Rousseau, A., Bőthe, B., & Štulhofer, A. (2021). Theoretical antecedents of male adolescents' problematic pornography use: A longitudinal assessment. *Journal of Sex Research*, *58*(3), 331–341. https://doi.org/10.1080/00224499.2020.1815637

Royal College of Psychiatrists. (2020). *Technology use and the mental health of children and young people*. https://www.rcpsych.ac.uk/improving-care/campaigning-for-better-mental-health-policy/college-reports/2020-college-reports/Technology-use-and-the-mental-health-of-children-and-young-peoplecr225

Scheller, S. H. (2015). A picture is worth a thousand words. *The Legal Implications of Revenge Porn*, *93*(2), Article 5. https://scholarship.law.unc.edu/nclr/vol93/iss2/5

Scott, A. J., & Gavin, J. (2018). Revenge pornography: The influence of perpetrator-victim sex, observer sex and observer sexting experience on perceptions of seriousness and responsibility. *Journal of Criminal Psychology*, *8*(2), 162–172. https://doi.org/10.1108/JCP-05-2017-0024

Ševčíková, A., & Daneback, K. (2014). Online pornography use in adolescence: Age and gender differences. *The European Journal of Developmental Psychology*, *11*(6), 674–686. https://doi.org/10.1080/17405629.2014.926808

Silva, H. A. D., Passos, M. H. P. D., Oliveira, V. M. A. D., Palmeira, A. C., Pitangui, A. C. R., & Araújo, R. C. D. (2016). Short version of the depression anxiety stress scale-21: Is it valid for Brazilian adolescents? *Einstein (São Paulo)*, *14*(4), 486–493. https://doi.org/10.1590/S1679-45082016AO3732

Spear, L. P. (2000). The adolescent brain and age-related behavioral manifestations. *Neuroscience & Biobehavioral Reviews*, *24*(4), 417–463. https://doi.org/10.1016/S0149-7634(00)00014-2

Stanley, N., Barter, C., Wood, M., Aghtaie, N., Larkins, C., Lanau, A., & Överlien, C. (2018). Pornography, sexual coercion and abuse and sexting in young people's intimate relationships: A European study. *Journal of Interpersonal Violence*, *33*(19), 2919–2944. https://doi.org/10.1177/0886260516633204

StataCorp, L. L. C. (2023). *Stata 18* [Statistical software]. https://www.stata.com/company/

Statista. (2024). *Number of internet and social media users worldwide as of January 2024*. https://www.statista.com/statistics/617136/digital-population-worldwide/

Strasburger, V. C., Zimmerman, H., Temple, J. R., & Madigan, S. (2019). Teenagers, sexting, and the law. *Pediatrics*, *143*(5). https://doi.org/10.1542/peds.2018-3183

Štulhofer, A., Buško, V., & Landripet, I. (2010). Pornography, sexual socialization, and satisfaction among young men. *Archives of Sexual Behavior*, *39*(1), 168–178. https://doi.org/10.1007/s10508-008-9387-0

Svedin, C. G., Donevan, M., Bladh, M., Priebe, G., Fredlund, C., & Jonsson, L. S. (2023). Associations between adolescents watching pornography and poor mental health in three Swedish surveys. *European Child & Adolescent Psychiatry*, *32*(9), 1765–1780. https://doi.org/10.1007/s00787-022-01992-x

Symons, K., Ponnet, K., Walrave, M., & Heirman, W. (2018). Sexting scripts in adolescent relationships: Is sexting becoming the norm? *New Media & Society*, *20*(10), 3836–3857. https://doi.org/10.1177/1461444818761869

Talbot, H., Hoyle, S., Wilkinson, C., & Mohamed, M. (2018). *NZ youth and porn : Research findings of a survey on how and why young New Zealanders view online pornography*. Colmar Brunton Social Research Agency. https://natlib.govt.nz/records/40425394?search%5Bi%5D%5Bcategory%5D=Books&search%5Bpage%5D=1&search%5Bpath%5D=items&search%5Btext%5D=Henry%2C+Sue

Van Ouytsel, J., Walrave, M., Ponnet, K., & Heirman, W. (2015). The association between adolescent sexting, psychosocial difficulties, and risk behavior: Integrative review. *The Journal of School Nursing*, *31*(1), 54–69. https://doi.org/10.1177/1059840514541964

White, C. M., Gummerum, M., & Hanoch, Y. (2015). Adolescents' and young adults' online risk taking: The role of gist and verbatim representations. *Risk Analysis*, *35*(8), 1407–1422. https://doi.org/10.1111/risa.12369

Williamson, L. (2021). *Youth sexting: A critical review of the research literature report*. Saskatchewan Prevention Institute.

Willoughby, B. J., Young-Petersen, B., & Leonhardt, N. D. (2018). Exploring trajectories of pornography use through adolescence and emerging adulthood. *Journal of Sex Research*, *55*(3), 297–309. https://doi.org/10.1080/00224499.2017.1368977

Wolak, J., & Finkelhor, D. (2016). *Sextortion: Findings from a survey of 1,631 victims*. Crimes Against Children Research Center. https://www.wearethorn.org/wp-content/uploads/2016/08/Sextortion_Report.pdf

Wolak, J., Mitchell, K., & Finkelhor, D. (2007). Unwanted and wanted exposure to online pornography in a national sample of youth internet users. *Pediatrics*, *119*(2), 247–257. https://doi.org/10.1542/peds.2006-1891

Wood, M., Barter, C., Stanley, N., Aghtaie, N., & Larkins, C. (2015). Images across Europe: The sending and receiving of sexual images and associations with interpersonal violence in young people's relationships. *Children & Youth Services Review*, 59. https://doi.org/10.1016/j.childyouth.2015.11.005

Wright, P. J. (2012). A longitudinal analysis of US adults' pornography exposure. *Journal of Media Psychology*, *24*(2), 67–76. https://doi.org/10.1027/1864-1105/a000063

Wright, P. J. (2020). Pornography and sexual behavior: Do sexual attitudes mediate or confound? *Communication Research*, *47*(3), 451–475. https://doi.org/10.1177/0093650218796363

Ybarra, M. L., & Mitchell, K. J. (2005). Exposure to internet pornography among children and adolescents: A national survey. *Cyberpsychology & Behavior*, *8*(5), 473–486. https://doi.org/10.1089/cpb.2005.8.473

Youthworks. (2020). *The Cybersurvey*. https://www.thecybersurvey.co.uk/

Youthworks. (2023). *The Cybersurvey*. https://www.thecybersurvey.co.uk/